



School of Business, Economics and IT

Division of Informatics

## **Hi, I am the new digital co-worker**

- **A qualitative study on employees within the public sector's expectations and experiences of implementing AI chatbots**

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## **Abstract**

Chatbots are becoming increasingly common within both private and public sectors as they are implemented for organizations to provide service at any time. Within related research on the topic, the focus lies on the private sector and chatbot users, while the research on how chatbot implementation may affect the employees within the public sector is lacking. The focus of this thesis is therefore to provide more information about chatbot implementation within the public sector. More specifically, to understand how the employees expect and experience that the implementation of chatbots can affect them in their work and ways to communicate information.

In this study, eight semi-structured interviews with a duration of one hour each were conducted, where the interviewees were employees in municipalities and universities who are working with chatbot implementation. The results show that the interviewees expect that there will be a decreased workload and increased time to work on more complex tasks. However, the time that is liberated because of the chatbot needs to be reinvested into its upkeep, and the interviewees experience that new tasks are added to fill that time, indicating that their expectations are unfulfilled.

The results also show that the interviewees expect the chatbot to increase their availability and that it will be a new, less formal way to communicate information. It is experienced that people can contact them any time through the chatbot. They experience that the chatbot uses a simple language to communicate information and that it presents information like it would be presented by a human.

*Keywords: Chatbots, Public sector, Work impact, Communication*

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# Table of content

Abstract .....	ii
Acknowledgments.....	iii
<b>1. Introduction.....</b>	<b>1</b>
<b>2. Background .....</b>	<b>1</b>
<b>2.1. Problem .....</b>	<b>3</b>
2.1.1. Purpose .....	3
2.1.2. Research question .....	4
2.1.3. Limitations .....	4
<b>2.2. Related research.....</b>	<b>4</b>
2.2.1. Chatbot use .....	4
2.2.2. Trust in chatbots.....	5
2.2.3. Automizing tasks .....	6
2.2.4. Ethics in chatbot implementation and use.....	7
<b>2.3. Theoretical underpinnings in related research.....</b>	<b>8</b>
2.3.1. Routine theory and affordance theory.....	8
2.3.2. Media richness theory.....	9
2.3.3. Uses and gratifications theory .....	9
2.3.4. Lack of suitable theories .....	10
<b>3. Method.....</b>	<b>11</b>
<b>3.1. Research method.....</b>	<b>11</b>
3.1.1. Semi-structured interviews.....	12
3.1.2. Data collection .....	14
3.1.3. Data analysis.....	16
<b>3.2. Research ethics.....</b>	<b>19</b>
<b>4. Results.....</b>	<b>20</b>
<b>4.1. Implementing chatbots.....</b>	<b>20</b>
<b>4.2. Impact on work .....</b>	<b>21</b>
4.2.1. Workload and tasks .....	21
4.2.2. Time management .....	23
<b>4.3. Communication.....</b>	<b>25</b>
4.3.1. Availability.....	26
4.3.2. Communicating information .....	29
<b>5. Analysis and discussion .....</b>	<b>32</b>
<b>5.1. Impact on workload .....</b>	<b>33</b>
<b>5.2. Chatbot as a communication channel.....</b>	<b>35</b>
<b>6. Conclusions .....</b>	<b>37</b>
<b>6.1. Study limitations.....</b>	<b>38</b>

6.2. Recommendations for future research.....	38
References.....	40
Attachments.....	44
<i>Attachment A: Interview guide</i> .....	44
<i>Attachment B: Information letter</i> .....	46

## Table of figures

Table 1: Participants.....	15
Table 2: Themes and subthemes.....	16
Table 3: Framework example, Way of work.....	17
Table 4: Framework example, Communication. ....	17
Table 5: Framework example, Expectations.....	18
Table 6: Thematization of Topics.....	18

## **1. Introduction**

This thesis focuses on Artificial Intelligence (AI) chatbots and their implementation within the public sector. AI-driven chatbots are becoming increasingly common for companies to provide efficient and more personalized service at any time (Shumanov & Johnson, 2021; Cheng & Jiang, 2020). However, chatbots have been predominantly adopted by companies in the private sector, while organizations in the public sector have not implemented chatbots to the same extent (Androutsopoulou et al., 2019). On a similar note, the research on the topic of chatbot implementation primarily keeps a focus on chatbot use within the private sector, meaning that the available research on chatbot implementation in the public sector is sparse (Aoki, 2020). For the organizations within the public sector that intend to adopt chatbots or similar systems, there is a need to have a reference that can be used to prepare and understand what it means to implement and work with such systems. This reference image is something that is currently lacking (Aoki, 2020; Desouza, Dawson & Chenok, 2020).

This need for a reference image has also been presented by employees at the IT department at University West who are currently working with implementing a chatbot. The work of this thesis is done in association with their project, and the purpose is to expand the available research on chatbot implementation in the public sector to create the reference image that is needed. Chatbot implementation is thereby of relevance to different organizations in the public sector, such as universities, who are implementing the technology or intend to implement chatbots soon. Thus, the topic of chatbots is of high relevance to ongoing and future projects within the public sector and is a current topic to explore further.

## **2. Background**

Digitalization of service is becoming increasingly common among companies and organizations within both the public sector and private sector (Chung et al., 2020; Desouza, Dawson & Chenok, 2020; Shumanov & Johnson, 2021). Specifically, the use and implementation of chatbots has substantially increased during the past few years and is expected to continue to rise (Cheng & Jiang, 2020; Toader et al., 2020) as companies digitalize and automate customer service (Brandtzaeg & Følstad, 2017; Nordheim, Følstad & Bjørkli, 2019; Meyer-Waarden et al., 2020; Følstad, Nordheim & Bjørkli, 2018).

Chatbots exist under various names, in a variety of types, and with different purposes. Westerman, Cross and Lindmark (2019) present chatbots as social robots whose design purpose is to be able to interact with and hold a conversation with humans online. This definition is agreed upon by Ischen et al. (2020), among other authors (Abdul-Kader & Woods, 2015; Nordheim, Følstad & Bjørkli, 2019; Androutsopoulou et al., 2019; Moriuchi et al., 2020; Følstad, Nordheim & Bjørkli,

2018). Moriuchi et al. (2020) and Androutsopoulou et al. (2019) further define chatbots as software or computer programs that use natural language to interact with humans. Natural language is the language that is used in the everyday life, for example normal sentences that can be written in a chat-conversation, or spoken sentences (Androutsopoulou et al., 2019). The term chatbot can therefore apply to both programs using written language (Ischen et al., 2020; Huang & Rust, 2020), and can also refer to digital conversational agents who use spoken language to communicate (Androutsopoulou et al., 2019; Grimes, Schuetzler & Giboney, 2021; Sands et al., 2021; Sidau, Jaakkola & Burton, 2020).

Although there has been a rise in the interest and implementation of chatbots lately (Chung et al., 2020), it is not a brand-new thing (Przegalinska et al., 2019; Brandtzaeg & Følstad, 2017; Følstad, Nordheim & Bjørkli, 2018). Chatbots have existed since the 1960s' when the chatbot ELIZA was used for simulating therapeutic sessions by using preprogrammed scripts (Westerman, Cross & Lindmark, 2019; Przegalinska et al., 2019), and has evolved into the AI-driven chatbots that are increasingly common today (Chaves & Gerosa, 2021; Cheng & Jiang, 2020). AI enables chatbots to understand and interpret information and learn over time by continuously gather and access knowledge (Trivedi, 2019; Grimes, Schuetzler & Giboney, 2021; Toader et al., 2020). With AI, chatbots interpret the information provided by the user and can use previous knowledge to identify appropriate responses (Aoki, 2020; Sands et al., 2021; Shumanov & Johnson, 2021; Androutsopoulou et al., 2019; Rutschi & Dibbern, 2020).

The purpose of implementing chatbots can differ depending on if they are used within the private sector, such as in e-commerce (Chung et al., 2020; Ischen et al., 2020), or if they are used in the public sector, such as in municipalities, governments, or public institutions (Aoki, 2020; Desouza, Dawson & Chenok, 2020; Yen & Chiang, 2020; Androutsopoulou et al., 2019). Companies tend to implement chatbots as e-service agents that can provide product or service recommendations to customers (Chung et al., 2020; Ischen et al., 2020), increase customer loyalty (Cheng & Jiang, 2020), or use chatbots for marketing purposes (Brandtzaeg & Følstad, 2017; Sands et al., 2021). These purposes are most common in e-commerce and companies within the private sector as they implement such types of chatbots on their websites to provide a new way to assist customers at any time (Toader et al., 2020; Chung et al., 2020). When focusing on the public sector, the chatbots are required to meet other criteria such as a higher demand of transparency in the information, closely follow legal guidelines and policies when distributing information, and apply to a more inclusive and diverse group of users (Desouza, Dawson & Chenok, 2020; Androutsopoulou et al., 2019). For example, while chatbots in e-commerce can have a purpose to provide personalized sales assistance to the customers and promote sales (Toader et al., 2020; Moriuchi et al., 2020; Chavez & Gerosa, 2021), chatbots implemented on websites belonging to municipalities or public authorities could rather focus on responding to questions (Aoki, 2020; Androutsopoulou et al., 2019), assist with website navigation (Huang & Rust, 2020; Desouza, Dawson & Chenok, 2020)

or help execute actions (Grimes, Schuetzler & Giboney, 2021) with nonprofit-oriented purposes (Desouza, Dawson & Chenok, 2020).

In general, chatbots can be implemented as an alternative or a supplement to human service agents (Sands et al., 2021; Brandtzaeg & Følstad, 2017). Companies and public authorities can therefore provide service at any time and enable users to find answers to their inquiries themselves (Toader et al., 2020; Chung et al., 2020), thereby creating a more automatized way to provide customer service (Huang & Rust, 2020). In relation to this, Nordheim, Følstad and Bjørkli (2019), Toader et al. (2020), and Meyer-Waarden et al. (2020) highlight the importance of customers' trust in chatbots for the technology to be accepted by the users. Similar statements are presented by Przegalinska et al. (2019) who clarify that the users' trust in a chatbot is crucial for users to be comfortable with sharing more personal information when necessary. When implementing chatbots for service purposes, the users' trust is thereby an important aspect to take into consideration both if the technology is used within the private sector or the public sector.

## **2.1. Problem**

As shown, the purposes of implementing chatbots in commercial and profit-oriented organizations and companies are defined multiple times in existing research. However, the available research focusing on chatbot implementation and use within the public sector is limited, and there is a need to provide more information for these organizations to be able to prepare for stepping into the AI era (Aoki, 2020). Expanding on this, Desouza, Dawson and Chenok (2020) express how there is an urgent need for organizations in the public sector to be able to view similar situations as a reference when they are new to implementing and using these types of system. These statements prove the need to extend the research of this topic, as they highlight the request to increase available information that can help organizations in the public sector understand the implementation of chatbots, as well as providing information as guidance in their own preparations of implementation. The focus of the existing research tends to highlight what chatbots are, the purpose of implementing chatbots, and the importance of user trust in chatbots. In turn, while highlighting these factors, it also reveals a gap in the research when it comes to employees within the public sector's expectations and experiences of implementing chatbots, and how the implementation of such robots has affected them in their way of work and ways to communicate information. This gap is what this study has its focus on and aims to narrow down.

### *2.1.1. Purpose*

The purpose of this study is to provide more research related to the implementation of chatbots within the public sector. With this, this study aims to contribute with information regarding what impact the employees in the public sector experience that the implementation of chatbots have had, and can have, on their work and ways to communicate information.



### *2.1.2. Research question*

“How do employees in the public sector expect and experience that the implementation of chatbots can affect them in their work and ways to communicate information?”

### *2.1.3. Limitations*

As the focus of this thesis is on chatbot implementation in the public sector, the study will not include the use of profit-oriented purposes of chatbot use such as companies in the private sector. This study will therefore maintain a focus on the public sector and chatbot implementation within universities and municipalities. The aim is to focus on the expectations and experiences of employees in the public sector, in particular employees in municipalities or universities who already have implemented or are actively in the process of implementing chatbots. This is as they have a view on how they expect the chatbot may affect their work and ways to communicate and can share experiences and perspectives on how the implemented technology may have affected their work. This work will also be limited to chatbot interaction through written text, hence excluding chatbots whose main form of communication is spoken language. This study keeps a focus on chatbots that are implemented as service, guidance, and to answer questions from the public, not used as chatbots internally in the organizations.

## **2.2. Related research**

As mentioned above, there is limited research on the topic of chatbot implementation in the public sector. However, previous research explores related topics, such as the use of chatbots (Aoki, 2020; Nordheim, Følstad & Bjørkli, 2019; Cheng & Jiang, 2020; Brandtzaeg & Følstad, 2017), or presents research with a more technical focus of implementing chatbots (Androutsopoulou et al., 2019; Rutschi & Dibbern, 2020). In this section, research is presented which touch on these different aspects of chatbot use and implementation, as well as studies focusing on similar topics from a public sector perspective.

### *2.2.1. Chatbot use*

The research regarding chatbots tends to focus on the users, why they use the technology, and what affects their willingness to use chatbots. Brandtzaeg and Følstad (2017) studied to understand why people choose to use chatbots, what motivates them to engage with the technology. They found that the most common reason for use stated by the users was that they interacted with chatbots for productivity purposes. Factors that were related to productivity were speed, ease, and convenience when using the chatbots, as well as the chatbots being able to provide information and assist the users whenever they need help. The users expressed that through the chatbots they could get the answers they required quickly, thereby they did not need to spend time to look through large amounts of text or contact people to find information. As an addition, some users described that

they prefer to use chatbots rather than interacting with human assistants. This is because they got the answers to their questions instantly and interacting with a chatbot was experienced as less intimidating compared to interacting with a human (Brandtzaeg & Følstad, 2017). Følstad, Nordheim and Bjørkli (2018) bring up similar findings in their study regarding users' perceived benefits and challenges of using chatbots for customer service. The findings present that the possibility to get instant help at any time is seen as the main benefit of using chatbots, as well as being able to ask simpler questions without feeling judged. The authors add that one of the main challenges experienced by users is the limitations of the chatbots, such as the chatbot being unable to understand what they are asking, or that the chatbot cannot access certain information (Følstad, Nordheim & Bjørkli, 2018).

Besides the aspects of using chatbots for productivity, Brandtzaeg and Følstad (2017) also found that people use them for entertainment purposes, social purposes, and out of curiosity. They revealed that the chatbots both provided the social aspect of having someone to talk to, and at the same time could improve productivity (Brandtzaeg & Følstad, 2017). Cheng and Jiang (2020) touch on similar areas of chatbot use. In their work, they found that information, entertainment, convenience and ease of use, and the chatbots' ability to fulfill social needs are all factors that have a positive impact on user satisfaction when using services provided by chatbots. The user satisfaction with the chatbot could then have a positive impact on the users' intention to continue using the services and their loyalty to the organization providing the services. They also found that users' loyalty can positively affect the probability of the users continuing using the services (Cheng & Jiang, 2020).

### *2.2.2. Trust in chatbots*

According to what has been mentioned above, user trust in chatbots is an important factor for chatbots to be accepted by the public (Nordheim, Følstad & Bjørkli, 2019; Toader et al., 2020; Meyer-Waarden et al., 2020; Przegalinska et al., 2019). Aoki (2020) explored this topic concerning chatbot use in a municipal government in Japan. The study found that the initial public trust in the chatbot varied based on the topic of the interaction and the declared reasons for implementing chatbots. The public trust in the chatbot was also found to be related to their trust in the human administrators, which also varied in relation to the area of inquiry and purposes of introducing chatbots (Aoki, 2020). Nordheim, Følstad and Bjørkli (2019) conducted a study on a similar topic where they investigated what explains users' trust in customer service chatbots. Their study found that different aspects of the expertise of the chatbot were experienced as important factors which increased the users' trust. Specifically, correct and concrete answers along with quick responses were frequently stated as factors that had an impact on users' trust in the chatbot (Nordheim, Følstad & Bjørkli, 2019). In their previous work, Følstad, Nordheim and Bjørkli (2018) revealed that the chatbots' ability to correctly interpret the users' questions, as well as provide correct and relevant responses, was the most named factor to affect the users' trust in the chatbot. Further, the

users experienced that the communication style of the chatbot had an impact on their trust. Human-like communication, such as the chatbot being humorous and displaying a personal way to communicate increased their trust. Another factor to impact the users' trust was the chatbots' honesty, such as clarifying its expertise and in what ways it could help the user, along with being honest about any potential limitations of its abilities (Følstad, Nordheim & Bjørkli, 2018). The aspect of expertise is also highlighted as a prominent trust factor by Przegalinska et al. (2019), who states that expertise is connected to credibility, which in turn has an impact on the trustworthiness of the chatbot. Another prominent trust-factor that was identified by Nordheim, Følstad and Bjørkli (2019) was the users' trust in the service provider where the chatbot is used, which agrees with the findings in the study conducted by Aoki (2020), where user trust in the chatbot was related to their trust in the human administrators in the municipal government.

### *2.2.3. Automizing tasks*

As has been mentioned, chatbots are implemented to automate communication and customer service tasks in the public sector (Cheng & Jiang, 2020; Toader et al., 2020). On a similar note, there are software robots that are implemented to automate administrative tasks that prior have been performed by humans (Ranerup & Henriksen, 2020; Rutschi & Dibbern, 2020). These are called Robotic Process Automation robots (RPA). On this topic, the aspect of trust is brought up by Ranerup and Henriksen (2020) who studied implementing RPA in the public sector. Contrary to research related to chatbots, the focus of their study is instead on the perspective of the employees in the public sector, where RPA was implemented to automate decision-making in social services. In their case study, they found that the citizens need to trust the public sector. In turn, the public sector also needed to trust that the citizens intend to do their best when using their services (Ranerup & Henriksen, 2020). In their work, they also found that by automizing decision-making, the human administrators and caseworkers in the public sector had more time to focus on other tasks such as more complex issues since the simpler processes and decisions were managed by the RPA. The citizens became more independent since digital assistance and online applications were implemented, hence also decreasing the citizens' need to contact civil servants at a help desk. However, based on their findings the authors highlight that experts are needed in order to further develop the automation of processes (Ranerup & Henriksen, 2020). This is something that is mentioned by Rutschi and Dibbern (2020) in their study about implementing RPA and chatbots. They present a framework consisting of six guidelines to follow when developing these types of software robots to automate tasks and communication in organizations. Within their framework, they highlight how humans are needed to develop the robots and ensure they work as intended, and as for both RPA and chatbots, humans need to test the robots and see what is required for the robots to work without errors. Thus, humans are needed to ensure the software robots work, and to further develop them both before and after they have been implemented. For chatbots this can be to gather commonly asked questions and implement more responses, hence developing it further as a complement to the chatbots' ability to learn on its own from previous interactions (Rutschi &

Dibbern, 2020). Androutsopoulou et al. (2019) add to the topic of implementing chatbots to automatize communication in the public sector. Based on their findings, they suggest that chatbots are suitable to implement due to their media richness. This means that chatbots have more information-carrying capacity compared to other communication channels used in the public sector, such as filling out forms in e-services or searching on websites using keywords. This is because chatbots use natural language and machine learning to communicate with citizens and therefore can respond to questions in intelligent ways, meaning that they can provide the requested information, and can manage more expressive communication with citizens (Androutsopoulou et al., 2019).

#### *2.2.4. Ethics in chatbot implementation and use*

In the framework created by Rutschi and Dibbern (2020), they point out the importance of understanding what a software robot can do when tasks and routines are automatized. As humans can perform the same task in a variety of ways, it is important to be aware of how the range of human routines can be recoded into standardized routines for the chatbot or RPA to understand and perform them (Rutschi & Dibbern, 2020). On this note, Ranerup and Henriksen (2020) mention that by automatizing tasks, the human factor is minimized. As the routines and tasks are standardized, the risk of unethical or biased behavior toward users decreases as the software robots are following the same rules and principles regardless of who is using their services (Ranerup & Henriksen, 2020). This is agreed upon by Henman (2020), who adds that such AI systems do not base their decisions on subjective perceptions as humans might do, but base decisions on facts and laws that are programmed into the systems. However, when AI systems such as chatbots are implemented to automate human tasks, some ethical considerations and challenges arise. As the human factor decreases, so do the human discretion related to decision making and complex situations, as these may require the professional judgment of human administrators. Henman (2020) presents that there is a grey zone regarding what is considered to be biased, and what is rather an appropriate level of personalization of certain services. The author explains that systems implemented in the public sector need to be analyzed and subjected to testing of biases to ensure the AI systems uphold ethical, social, and legal standards (Henman, 2020). It is clarified by Desouza, Dawson and Chenok (2020) that biases can easily occur in chatbots and therefore it is important to go over the systems and algorithms. By inspecting the systems, it is possible to detect if there exist any biases that can cause unethical behavior, such as discrimination against certain groups of people. The authors highlight how organizations within the public sector therefore should keep a focus on values such as fairness and protecting the vulnerable, as well as upholding principles and laws, to ensure that the systems act ethically (Desouza, Dawson & Chenok, 2020).

Cheng and Jiang (2020) add the issue of privacy. The authors point out that the users' concern regarding their information being misused or not protected is a factor that strongly affects their satisfaction in the chatbot service. In their study, they found that the higher privacy risk the users'

experience, the less satisfied the users are with the chatbot. Therefore, it is of high importance that organizations regulate how to use and store the user data safely (Cheng & Jiang, 2020), something that is agreed upon by Shumanov and Johnson (2021) as they explain there is a need to analyze how customer data is collected, used, and stored to prevent misuse of the information. Privacy breaches or misuse of the users' personal data can cause distrust from the users. Because of this, organizations need to understand what information needs to be collected from their users to be able to provide personalized user journeys, but also to be aware of how the risk of data breaches may increase when they have more user data due to the human factor or subversive causes (Shumanov & Johnson, 2021).

As can be seen, the previous research on related topics focuses on different related aspects, but no research pinpoints the perspective of the employees in the public sector on implementing chatbots and their impact on their communication. Instead, the focus remains on the users and their experiences of using chatbots, as well as their trust in chatbots. In the public sector, there is a focus on the technical point of implementing chatbots and what aspects to keep in mind during development and deployment. This shows a lack of research focusing on specifically how chatbots have had an impact on communication in the public sector, which is why this study will explore this topic more in-depth.

### **2.3. Theoretical underpinnings in related research**

In this section, theories from related research are presented that touch on different areas related to chatbot implementation. The theories do not fully capture the expectations and experiences of implementing chatbots from the perspectives of the employees in the public sector, but the related theories that are presented below explain what may affect users' experiences of why they use chatbots, and technical considerations that are present when implementing chatbots and other types of task automizing-robots. The theories that are presented in this section are evaluated to determine if they are suitable to use as an analytical perspective later in the thesis.

Since related research has maintained a strong focus on chatbot users, the theoretical foundations of the research have been directed toward user behavior, preferences, and experiences, as well as theories focusing on creating chatbots and similar robots. Some examples of theories that serve as the theoretical underpinnings of the research are routine theory, affordance theory, media richness theory (MRT), and uses and gratifications theory (U&G).

#### *2.3.1. Routine theory and affordance theory*

Rutschi and Dibbern (2020) created a framework for developing software robots. Their framework has its theoretical base in routine theory and affordance theory. With routine theory, the authors focus on understanding how a human routine can be broken down for it to be possible to transfer

it to a robot. They describe how routines consist of the ostensive aspect, meaning the formal procedures, and the performative aspect, which is performing these procedures. It is crucial to understand the translation from ostensive to performative to be able to transform human tasks into tasks that the robot can understand and perform. By understanding the routine, it is possible to see how it can be changed and adapted for a robot to take over the performance of the task (Rutschi & Dibbern, 2020). The affordance theory is applied to explain what needs to be done in the transformation process from a human task to a robotized task and focuses on how a routine can be coded into the robot. The affordances refer to which actions are possible to perform with a certain object, and the authors specify that the affordances in a software robot are viewed by the people responsible for creating the robot. In short, Rutschi and Dibbern (2020) use routine theory to define what needs to be translated in a human task for it to be applicable to a software robot, and the affordance theory is used to define the affordances, what the robot can do.

### *2.3.2. Media richness theory*

Androutsopoulou et al. (2020) add the view on a chatbot as a communication channel in the public sector and apply MRT as the theoretical underpinning of their study. Media richness is explained as the capability of different mediums to carry information. It is determined by whether a communication channel can carry different types of information or is limited in how it can carry information. Based on this definition, communicating face-to-face is viewed as having the highest media richness as various types of information can be conveyed at the same time, while searching on a website is considered to having a low richness with limited possibilities to carry multiple modes of information (Androutsopoulou et al., 2020). Additionally, the MRT addresses how people chose the communication channel based on what communication task they need to perform. As an example, if the users have simple communicative tasks, such as searching information, they use a communication channel of lower richness to complete their task as they do not require the complexity of a high richness channel. With the MRT, Androutsopoulou et al. (2020) suggest chatbots as a communication channel with higher richness as users can communicate more expressively through natural language.

### *2.3.3. Uses and gratifications theory*

U&G is applied as the theoretical foundation by Cheng and Jiang (2020), as well as Brandtzaeg and Følstad (2017). U&G specifies what motivates people to use certain types of media or communication channels to fulfill their needs, (Brandtzaeg & Følstad, 2017; Cheng & Jiang, 2020). As both studies investigate what motivates people to use chatbots, the theory is suitable as a basis for their work. Cheng and Jiang (2020) point out four types of gratifications: utilitarian gratifications, hedonic gratifications, technology gratifications, and social gratifications. The utilitarian gratifications are focused on the ability to meet the need for information seeking. This is fulfilled by the ability of the medium to convey information to the user. Hedonic gratifications

refer to the entertainment of the medium, and these gratifications are fulfilled if the users enjoy using the medium. Technology gratifications, also called media appeal, focuses on the convenience of being able to use the medium anywhere at any time. The social gratifications aim to fulfill the social needs of the user. Related to social presence theory, this social gratification type refers to how people use mediums to establish connections, or a feeling of the presence of other people (Cheng & Jiang, 2020). Brandtzaeg and Følstad (2017) base their study on the same theory and use it to understand why and how people use a medium, specifically chatbots, to satisfy their needs. The authors clarify how U&G is directed towards the users and their use of specific types of medium and indicate that users base their choice of medium depending on which needs they want to fulfill. Hence, the expected gratifications from certain types of mediums are what motivates people to use the specific medium.

#### *2.3.4 Lack of suitable theories*

There are theories that focus on the chatbot users and the technical aspect of creating chatbots and similar automating systems. However, theories that address how people in organizations experience the adoption of the technology are lacking. This lack is pointed out by Ranerup and Henriksen (2020), who use a framework of digital discretion as the theoretical base in their work. Given the purpose of this thesis, to expand the available research focusing on employees in the public sector, and their expectations and experiences of how chatbot implementation may affect their way of work and ways to communicate information, the theories and frameworks mentioned above do not fully capture the phenomena to serve as a theoretical base for the study itself. This is as this study does not focus on the technical aspect of how human tasks are transferred to a robot, which is what the routine and affordance theories bring up. The digital discretion framework focuses on ethical issues in digital decision-making (Ranerup & Henriksen, 2020), which is not the focus of this work, and the framework will therefore not be applied in this study. The MRT has qualities that could add an analytical perspective when analyzing the phenomena, but due to the scope and timeframe of this study, this work does not focus on the information-carrying capacity of the chatbots. Because of this, the MRT will not be applied in this study. However, as Cheng and Jiang (2020), and Brandtzaeg and Følstad (2017) investigate why people use chatbots, there is a similarity to this study. The U&G theory brings up what needs a medium can fulfill, which can be connected to what this study aims to research: the expectations and experiences related to chatbot implementation. According to U&G, associated with different mediums are different expectations and experiences of which needs they can fulfill (Brandtzaeg & Følstad, 2017). The U&G theory includes, as mentioned above, utilitarian, hedonic, technological, and social gratifications, which all aim to fulfill different needs (Cheng & Jiang, 2020). As chatbots are a way to automate communication (Androutsopoulou et al., 2019), these expected gratifications might be present in how the employees in the public sector think the implementation of a chatbot can affect their way of work and ways to communicate information. Based on this, the U&G theory will provide an analytical perspective to gain a more complete view and understanding of the phenomena.

### **3. Method**

In this section, the chosen method, and reasons why the method is suitable for this study, are presented. It is also presented how the data is collected and analyzed, and ethical considerations related to the research and the topic are included.

#### **3.1. Research method**

This study has a qualitative approach with semi-structured interviews to get a more in-depth understanding of the expectations and experiences of employees in municipalities and universities of implementing chatbots, and if this has had an impact on their work and ways to communicate information. The focus of the interviews is therefore the perspective of employees in the public sector. Most of the existing research related to the implementation and use of chatbots have so far been conducted through questionnaires, as well as maintaining a focus on the users and their experiences (See for example Aoki, 2020; Chaves & Gerosa, 2021; Chung et al., 2020; Sands et al., 2021; Toader et al., 2020). However, some research has aimed to gain qualitative data either through interviews or open-ended questions in surveys (Brandtzaeg & Følstad, 2017; Nordheim, Følstad & Bjørkli, 2019). Brandtzaeg and Følstad (2017) used questionnaires ending with an open question where the respondents could write freely to answer why they use chatbots, a method that was also used by Nordheim, Følstad and Bjørkli (2019) in their study on the topic of what affects the users' trust in chatbots. Through open-ended questions in the surveys, the respondents could express themselves through free text and be encouraged to use their own words. Although there is a lack of the use of qualitative methods in the current research, there are a few examples where semi-structured interviews have been used to collect data.

With a focus on chatbot users, Følstad, Nordheim and Bjørkli (2018) conducted semi-structured interviews on the topic of users' experienced benefits, challenges, and trust in chatbots. By conducting a semi-structured interview, the authors collected qualitative data about the users' experiences, perceptions, and reflections related to the topic of their study (Følstad, Nordheim & Bjørkli, 2018). As can be seen, the qualitative research relating to chatbots focuses on the users' experiences and perceptions. In order to bring the focus to the public sector and experiences of implementing software robots, the studies presented in the section of related research instead explores the implementation of RPA. An example is Ranerup and Henriksen (2020) who conducted qualitative interviews to explore the management and use of RPA technology used in a Swedish municipality and additionally investigated perspectives and tasks related to RPA. Through their interviews, the authors took part in perspectives from different people working with social assistance in different organizations of the municipality.

As can be seen based on the related research, the number of qualitative studies is limited. Most research about chatbot implementation and use has opted for questionnaires as their research



method to gather more quantitative data of the chatbot users, such as investigating what may affect the users' trust (Aoki, 2020; Przegalinska, 2019; Toader et al., 2020). The qualitative research that does exist focuses on the users of chatbots (Brandtzaeg & Følstad, 2017), or explores other types of software robots when focusing on the perspective of the employees in the public sector (Ranerup & Henriksen, 2020). With their focus on these topics, there is a lack of research addressing the perspective of the employees in the public sector on the topic of chatbot implementation. As has been mentioned, Aoki (2020) expresses how research focusing on chatbots in the public sector is limited and there is a need to add information to the topic that is of relevance to the public sector. Similarly, Souza, Dawson and Chenok (2020) state that for organizations in the public sector who are new to such systems, there is limited access to comparative experiences for them to use as reference in their implementation. Although there is research that focuses on the public sector and the perspectives of the employees (Ranerup & Henriksen, 2020), the focus is on software robots that automatize administrative tasks rather than communication, which is the common aim of chatbots (Rutschi & Dibbern, 2020). Ranerup and Henriksen (2020) suggest more comparative studies to broaden their findings. As the authors have their focus on RPA in the public sector, this study adds to the topic by investigating experiences related to chatbot implementation as another type of automatizing software robot. This study acknowledges these requests for expanding the research. With this, this study aims to collect qualitative data focusing on the perspective of the employees working in the public sector and their view of the impact of chatbot implementation, hence decreasing the current research gap.

### *3.1.1. Semi-structured interviews*

Semi-structured interviews are a suitable method to collect qualitative data, in particular when exploring perspectives, perceptions, experiences and aiming to gain an understanding of the point of view of the interviewees (Bryman, 2012; Denscombe, 2018). As this study aims to understand the expectations and experiences of employees working with chatbot implementation in the public sector, semi-structured interviews are fitting as a method for conducting the research. This is as the personal views and experiences related to the topic can be explored further to provide a deeper understanding of the interviewees' expectations and experiences. With this method of collecting data, the interviewer guides the interview based on some predetermined topics but remains flexible in how the topics are brought up. Semi-structured interviews allow for the interviewer to ask follow-up questions when needed and can focus on what appears to be of importance to the interviewee, and to let them expand on topics they find interesting (Denscombe, 2018; Bryman, 2012). The construction of the interview guide was primarily based on the research question of this study:

*“How do employees in the public sector expect and experience that the implementation of chatbots can affect them in their work and ways to communicate information?”*

*Hi, I am the new digital co-worker*  
*Kvarnåsen, J.*

A few topics were selected related to the research question to guide the creation of the interview questions (Bryman, 2012). The topics for the interviews were: *Chatbot implementation*, *Way of work*, *Communicate information*. The topic of *Chatbot implementation* was created based on the study conducted by Brandtzaeg and Følstad (2017), as they studied why people use chatbots, and the work by Følstad, Nordheim and Bjørkli (2018), who conducted semi-structured interviews to understand the perceived benefits, challenges, and trust factors of using chatbots. Although these studies have their focus on the experiences of the users, they create the foundation of studying these areas from the perspective of the employees in the public sector. Therefore, this topic served as a base to understand *why* the universities and municipalities are implementing chatbots and to gain an understanding of the potential associated benefits and challenges from their point of view as implementors of the chatbots. The topic *Way of work* has its primary scientific base in the study conducted by Ranerup and Henriksen (2020) where they investigate RPA robots in a municipality and present how the automation of tasks has had an impact on the employees' way of work. As chatbots are a way to automatize communication and communicative tasks (Rutschi & Dibbern, 2020), the work of Ranerup and Henriksen (2020) serves as a base to investigate the expected and experienced impact on the work in the municipalities and universities that may come from implementing a chatbot. The topic *Communicate information* is based on the research by Androutsopoulou et al. (2019), as well as the research by and Rutschi and Dibbern (2020), as their study bring up chatbots being used to automatize communication, and the work by Følstad, Nordheim and Bjørkli (2018) also serves as a base for this topic as their study bring up communicative aspects of chatbot use. Together, these studies form the foundation of the topic communicating information and open for questions that explore what expectations the employees in the public sector have regarding chatbots as an automatized communication channel and their experiences of how it may have affected how they communicate with the public.

With these topics as a base, the interview questions could be formulated to build an understanding of how they are working with chatbot implementation and their views on the topic. With inspiration from how previous studies have focused on investigating the users' experiences, additional questions were shaped to focus on the experiences of the employees in the public sector to address why they use chatbots. The questions were formulated, reviewed, reformulated before they were compiled into the finalized interview guide (see [Attachment A](#)). Follow-up questions, probing questions, specifying questions, and interpreting questions are not included in the interview guide as these are directly related to what has previously been said in each interview (Bryman, 2012). The interview guide is constructed to have several questions on each topic. As the interviews are semi-structured, this means that depending on what is brought up during the interview, some questions may be answered related to other questions, while other questions are explored further based on the interests and what is of relevance to the interviewees (Bryman, 2012; Denscombe, 2018).

### *3.1.2. Data collection*

The sampling for the interviews was done through purposive sampling. This means that the interviewees were selected and contacted based on criteria related to their ability to share information that can lead to answering the research question of the study (Bryman, 2012). The interviewees were therefore not selected randomly as they were asked to participate in the study based on the following criteria:

- The interviewee is currently working in the public sector at a university or in a municipality with chatbot implementation.
- The interviewee has a relevant perspective on how chatbot implementation may affect their way of work as an employee in the public sector.

These criteria were applied to the selection of all interviewees, and the sampling was done by using snowball sampling. This means that a small group of participants is initially sampled by the researcher based on their relevance for the study, and this group then suggests other people whose participation can add to the topic being studied (Bryman, 2012). The initial sample consisted of 5 individuals, of which 3 agreed to participate in the study. At the end of their interviews, they were asked to recommend people who would be relevant to interview for the study. Based on these suggestions through the snowball sampling, 6 additional individuals were contacted based on their relevance and experiences of working with chatbot implementation within universities and municipalities. Of the 6 individuals who were contacted, 5 agreed to participate in the study. This gave a total of 8 participants in the study.

When using a snowball sample, there is a risk that the participants recommend people that might not be relevant for the study. This risk was minimized as the participants explained how the recommended individuals were involved in their national chatbot implementation-project in universities. The recommended individuals within universities therefore had central roles in a collaborative project of implementing chatbots at several universities in Sweden. When recommending municipalities, it was explained how long different municipalities had had their chatbot implemented and how they had worked with their collaborative project of implementing chatbots within several municipalities in Sweden. Only examples of municipalities who had implemented chatbots were recommended, not specific individuals within these municipalities. Therefore, when contacting municipalities, the author asked to get in contact with the individual who worked with the chatbot implementation in the municipality. This was requested to find participants who were actively working with the chatbot and could share how the implementation may have affected their work and thoughts related to this topic, rather than someone less familiar with the possible impacts of the chatbot implementation. Ahead of contacting municipalities for their participation in the study, their websites were visited to ensure a chatbot was implemented for the public to interact with. This was as the employees in municipalities would contribute with most information on the topic related to the experience of already having an implemented chatbot.

*Hi, I am the new digital co-worker*  
*Kvarnåsen, J.*

In the table below the participants are listed with their work titles, area of Sweden, chatbot status, and time and length of each interview. As the participants were contacted based on their work with their chatbot, there are a variety of work titles present among the individuals. This is because there is no specific work title that has been established for those who are working on the implementation and upkeep of the chatbots since they are working with other tasks simultaneously. The geographic difference between the participants is primarily based on there being a limited number of municipalities that have implemented and active chatbots, and specific recommendations of people who are central to the project of implementing chatbots at universities. Therefore, the recommendations presented by the initial sample were of high relevance when determining which people working at universities and municipalities to contact. As clarified earlier, all participants were selected to be interviewed based on the two criteria stated above. If a suggested participant did not appear to be relevant to the study in relation to the criteria, they were not contacted. All 8 participants are listed in the table below.

<b>Participant</b>	<b>Work title</b>	<b>Area</b>	<b>Chatbot status</b>	<b>Interview</b>
<b>P1</b>	Business developer	Municipality in Region Stockholm	Implemented and active	50 minutes, full transcript: 6411 words
<b>P2</b>	Business developer and project leader	University in Region Västra Götaland	Not yet implemented	65 minutes, full transcript: 9678 words
<b>P3</b>	System developer	University in Region Västra Götaland	Not yet implemented	55 minutes, full transcript: 6244 words
<b>P4</b>	Digitalization strategist	Municipality in Skåne Region	Implemented and active	60 minutes, full transcript: 6057 words
<b>P5</b>	System administrator	University in Region Östergötland	Not yet implemented	65 minutes, full transcript: 9235 words
<b>P6</b>	Head of customer center	Municipality in Region Västra Götaland	Implemented and active	60 minutes, full transcript: 7865 words
<b>P7</b>	Business developer	University in Region Västra Götaland	Not yet implemented	60 minutes, full transcript: 7772 words
<b>P8</b>	Head of customer center	Municipality in Region Västra Götaland	Implemented and active	50 minutes, full transcript: 6534 words

*Table 1: Participants. (The table presents each participant, their work title, in which region they work, status of the chatbot, and time and transcript length of the interviews. The participants have received aliases, P1-P8. All participants working in universities have not yet implemented chatbots, all participants working in municipalities have implemented and active chatbots.)*

All interviews were conducted in Swedish, they were recorded through audio and video and transcribed verbatim. The transcription process was done by using an automatic transcription tool in Microsoft Word that transcribed the interviews based on the recorded material, followed by manually going through the transcripts thoroughly while listening to the recordings to correct mistakes and add missing material in each transcript. By using this method to transcribe the interviews, there was an aim to save time since the automatically generated transcripts would provide a base to work with instead of the researcher having to transcribe everything manually. According to Bryman (2012), a researcher can expect that a one-hour interview takes approximately 5 to 6 hours to transcribe. Depending on the sound quality of the recordings and how the interviewees were speaking, some automatically generated transcripts turned out more complete than others. The time spent transcribing thereby varied as some transcripts required up to 6 hours of work to be completed, while other transcripts required 2 to 3 hours.

### *3.1.3. Data analysis*

The data from each interview was analyzed through thematic analysis, meaning that themes and subthemes were identified in the transcripts based on codes related to the research question (Bryman, 2012). As suggested by Bryman (2012), to identify themes the researcher can focus on commonly mentioned topics that reoccur in several interviews, as well as similarities and differences between interviews. These two aspects have been the focus when identifying themes in the transcripts. The identified themes and subthemes are shown in the table below:

<b>Theme: Way of work</b>	<b>Theme: Communication</b>	<b>Theme: Expectations</b>
Positive impact	Communication improvements	Goals, aims
Negative impact	Communication drawbacks	Risks, challenges
Changes, adaptations, automatization	Tonality, information	Expected benefits, hopes

*Table 2: Themes and subthemes. (The table lists all themes and subthemes. The first column shows the theme Way of work with its associated subthemes. The second column shows the theme Communication with its associated subthemes underneath. The third column shows the theme Expectations with its associated subthemes.)*

When identifying themes and coding the transcripts, they were color-coded according to which theme the statements were related to, and comments were added to specify which subtheme the statement was belonging to. Statements on the theme of Way of work were highlighted yellow, statements on the theme of Communication were highlighted green, and statements on the theme of Expectations were highlighted purple. The color-coding was followed by inserting quotes from the interviews into one framework for each theme, where all subthemes had their own column, and each participant had their own row. By doing this, similar views and contrasting views from the interviews were collected in one place in a structured way. The framework where the quotes were

Hi, I am the new digital co-worker  
Kvarnåsen, J.

collected according to each theme and subtheme was constructed as the examples below. Keywords and statements were highlighted with the corresponding color.

Theme: Way of work		
Positive impact	Negative impact	Change, adaptations, automatization
<p>“We <b>have time</b> to do things that are a bit more fun.” (P1)</p> <p>“It means <b>I will have time for other things</b>, that is the greatest, greatest <b>benefit</b>.” (P2)</p> <p>“There are many thoughts that this can be a <b>realistic relief</b> [of the workload] and an <b>availability question</b> of several dimensions.” (P3)</p>	<p>“It <b>takes time</b>. It is a <b>demanding</b> job.” (P1)</p> <p>“We have <b>not had time</b> to get into how <b>big of a job</b> this is.” (P2)</p> <p>“We see that part of this ‘liberated time’ might <b>not necessarily get freed up</b>.” (P3)</p>	<p>“To have a robot generates <b>another task</b>, which is to <b>help the robot</b> get better.” (P1)</p> <p>“You might get a <b>different competence</b> to be able to work in a customer center that is dealing with these questions.” (P2)</p> <p>“‘Bot-trainer’ is a sort of thing, it will be a <b>new role</b> that is in demand.” (P3)</p>

Table 3: Framework example, Way of work. (The table displays quotes that have been coded into the subthemes of the theme Way of work. Quotes in the theme Way of work was color coded yellow in the transcripts, key words and expressions are therefore highlighted yellow in the table. All quotes are connected to the assigned alias of each participant.)

Theme: Communication		
Communication improvements	Communication drawbacks	Tonality, information
<p>“The <b>availability</b>, for us to be there at <b>any time</b>” (P4)</p> <p>”The <b>availability</b> makes it so we might not get as many questions because we can <b>respond to them before they come in</b>, so to say.” (P5)</p> <p>“It is about the <b>general questions</b> that often is on the website in some way, but that you <b>easier get the answer</b> to with the help from a chatbot.” (P8)</p>	<p>”It is really important that <b>if there is a question it cannot answer</b>, then it should be simple to understand that you can chat with someone at the service center.” (P2)</p> <p>“It is <b>difficult</b>, because we do not have that type of <b>written content today</b>” (P5)</p> <p>”Sometimes we get a question and they say, “I have spoken with your chat”, and I notice <b>they have not understood it is a chatbot</b> they have been speaking with” (P6)</p>	<p>“We have an <b>official language</b> that can be needed in some cases in order to be clear, but in this it needs to be <b>simple and easygoing</b>.” (P2)</p> <p>“A chat is a quite <b>relaxed communication channel</b>, and we need to adapt ourselves according to a <b>language that the users are using</b>.” (P5)</p> <p>“We try to have it as if you were <b>talking to us at the customer center</b>. <b>Polite, quite short responses</b> and not sugarcoat it too much.” (P6)</p>

Table 4: Framework example, Communication. (The table displays quotes that have been coded into the subthemes of the theme Communication. Quotes in the theme Communication was color coded green in the transcripts, key words and expressions are therefore highlighted green in the table. All quotes are connected to the assigned alias of each participant.)

**Theme: Expectations**

Goals, aims	Risks, challenges	Expected benefits
<p>“There are several <b>goals</b> with having a chatbot. The <b>most important</b> we see is to relieve the service center staff from responding to these repeated questions” (P3)</p> <p>“We have an <b>ambition</b> that we will be able to <b>merge</b> especially that type of errand management, to <b>make it more effective</b>” (P4)</p> <p>“My <b>biggest goal</b> is availability. <b>Availability</b> and <b>increased quality</b> on the responses you get” (P5)</p>	<p>“One of the <b>problems</b> with a chatbot is that you need to be <b>very covering</b> within one area” (P3)</p> <p>“It could be a <b>challenge</b> to <b>not lose anything</b>, because as soon as it falls behind then <b>the information in the chatbot becomes inaccurate.</b>” (P4)</p> <p>“The <b>challenge is to get people to try it</b>, I think many have <b>condemned</b> chatbots from the start” (P6)</p>	<p>“I think it can have an <b>impact in the future</b>, that it will relieve [the workload].” (P1)</p> <p>”I think <b>you get this satisfaction</b>, [...] I think to be able to take the time to take on more complex questions, maybe learn new tasks [...], <b>then you feel that you do a good job.</b>” (P5)</p> <p>“It is rather that <b>they get a better work environment</b>, it is not a goal they can work towards really, but <b>something we hope they get</b> from the chatbot” (P7)</p>

Table 5: Framework example, Expectations. (The table displays quotes that have been coded into the subthemes of the theme Expectations. Quotes in the theme Expectations was color coded purple in the transcripts, key words and expressions are therefore highlighted purple in the table. All quotes are connected to the assigned alias of each participant.)

With the quotes gathered in the frameworks, the data could be further thematized to identify topics within the subthemes. By highlighting specific expressions, two topics were found in the theme Way of work, and two topics were found in the theme Communication. In the theme Way of work, the identified topics were Workload and tasks, and Time management. In the theme Communication, the identified topics were Availability and Communicating information. The quotes within the previously identified subthemes were then sorted according to which topic they belonged in. The subthemes from the theme Expectations were inserted into all topics. The themes, topics, and subthemes can be seen in the table below.

Way of work		Communication	
Workload and tasks	Time management	Availability	Communicating information
Positive impact	Positive impact	Communication improvements	Communication improvements
Negative impact Challenges, risks	Negative impact Challenges, risks	Communication drawbacks Challenges, risks	Communication drawbacks Challenges, risks
Change, adaptations, automation	Change, adaptations, automation	Tonality, information	Tonality, information
Goals, aims Expected benefits, hopes	Goals, aims Expected benefits, hopes	Goals, aims Expected benefits, hopes	Goals, aims Expected benefits, hopes

Table 6: Thematization of Topics. (The table displays how the previously identified subthemes within the theme Way of work have been sorted into the topics Workload and tasks and Time management, and how the previously identified subthemes within the theme Communication have been sorted into the topics Availability and Communicating information. The subthemes of the theme Expectations have been inserted within all topics.)

### **3.2. Research ethics**

Research ethics is of high importance as the researcher must assure that the study is conducted in fair and just ways, and that all participants in the study must know what they participate in, why, and if there are any potential consequences of their participation (Bryman, 2012). The researcher must respect the participants' integrity, handle all material confidentially, and guarantee their anonymity in all publications of the work unless the participants have been informed about and specifically approve to be identified (Denscombe, 2018). The Swedish Research Council (2017) states that the researcher should be truthful about the research and the methods used, be honest about commercial associations or interests, be organized in the documentation of the research, and strive to conduct research that is of no harm to the environment, individuals, or other living creatures.

Based on these ethical principles and guidelines, a document with information about the study and the participation was created. The document, called information letter, was sent to all participants ahead of their interviews to inform them about the context and purpose of the study, as well as ethical aspects related to their participation (see [Attachment B](#)). In the letter, all participants were informed that it was voluntary to participate, and that they could end their participation at any time. If they wished to end their participation, the data gathered from their interview would not be used in the study. They were informed that the interviews would be recorded with audio and video to be transcribed afterward. Before the start of each interview, the participants were asked if they had read the information letter and if they agreed to participate based on the prerequisites stated in the letter. The participants were also reminded of the interviews being audio- and videorecorded and were asked if they agreed to this, something that is important to do according to the Swedish Research Council (2017). If the participants had any questions regarding the study or their participation, they were encouraged to ask them as it is important to be truthful about the research so the participants understand what they participate in (Bryman, 2012; Swedish Research Council, 2017).

As for the anonymity of the participants, I, as a researcher, can only ensure anonymity in the specific data used in the final thesis by anonymizing the used material. As all participants work within the public sector, mail that is sent to and from any government authority, including municipalities, are considered official documents. Therefore, these documents can be requested by anyone according to the Freedom of the Press Act (SFS 1949:105), more specifically chapter 2, § 1, 5, 9, and 10 (Sveriges Riksdag, 2016). All participants were contacted and had their interviews scheduled by e-mail. This means that there is a risk that their participation in this study could be revealed, even if specific statements cannot be connected to them in the final thesis.



## **4. Results**

In this section, the information derived from the interviews is presented as quotes. All quotes have been translated from Swedish to English with an aim to keep the content of the quotes as accurate as possible. Anonymizing edits, or edits made for clarity of the quotes, are written within [brackets]. The results are presented according to the topics that were identified within the main themes during the thematic analysis. The topics contain quotes from the various subthemes to include both the expected impact on way of work and communication, as well as the experienced impact on these topics.

### **4.1. Implementing chatbots**

Early in all interviews, the participants were asked about the reasons why they chose to implement a chatbot. This was asked for the researcher to gain an understanding of what the interviewees perceive as important to them in their chatbot implementation, and to take part in initial expectations of implementing chatbots. The interviewees mentioned the availability as a fundamental reason to implement a chatbot.

*P5: “Partly it is a desired communication channel from our students, it is not something they are hiding, but it is also an availability question. We only have staff 8-17, it demands that you email or call, it becomes an errand in our errand management system and you get a response. [...] I believe that there is an increased availability from our side to easier provide answers outside of our working hours, first and foremost.”*

*P6: “It is of course very expensive to be open seven days a week. [...] We want to evaluate and see how much it is used, and if it makes it so we can let our digital co-worker in more and perhaps decrease our open hours. Primarily that is why we chose [the chatbot], for us to be as digitally available as possible, you should be able to get your question answered.”*

The aim of implementing a chatbot was to be able to provide service at any time as they wanted to make it easier to respond to questions, as well as making it easier for people to contact them. By increasing the digital availability, it could lead to them not needing to be physically available on-site as much in the future since people can be assisted by the chatbot instead. Besides the reason to increase the availability, the interviewees also presented an aim for the chatbot implementation to decrease the workload among the employees:

*P3: “There are several goals with having a chatbot. The most important we see is to relieve the service center staff from responding to these repeated questions where you give the same response again, and again, and again. To lift that type of questions from their immediate... Well, to make them less present at hand [...] and free up their time to handle more complex matters instead.”*

*Hi, I am the new digital co-worker  
Kvarnåsen, J.*

*P7: “Primarily it is to relieve the administration, to lower the pressure, because there are very high peaks by the start of the semesters, for example. [...] What motivates us, in the end, is the work environment for the administrators.”*

With this, two primary reasons are highlighted for implementing chatbots: Being more available and thereby being able to respond to questions at any time, and decreasing the workload that comes from repeated questions, and thereby being able to free up time to work on other tasks. It is added by some participants that they find chatbots to be a way to keep up with the development of technology and digitalization:

*P1: “Chatbots have existed for a long time, primarily in the private sector. Public sector and municipalities have been behind in general when it comes to digitalization.”*

*P4: “I believe we are lagging behind in general as a municipality. If you look at other authorities, the digital development is... It is ahead of the municipal. [...] I think it is completely obvious that we should be able to offer the same thing as many private actors do. It is expected, I think, the around-the-clock service in some way.”*

The interviewees express that by implementing chatbots, they experience that they keep up with private actors in the digital progress. It is seen as a way to meet expectations of being always available, and to show that they are willing to work with current, and future, technological solutions to keep up with both the private sector and authorities in the public sector.

## **4.2. Impact on work**

To build on the presented expectations of implementing a chatbot, the interviewees were asked about what impact the chatbot implementation may have on their work. The participants shared both expected benefits and challenges on the topic, as well as aspects that they had seen as results of the chatbot implementation. Two primary topics were presented by the interviewees, *Workload and tasks*, and *Time management*.

### *4.2.1. Workload and tasks*

Related to the reasons why they implement chatbots, the interviewees presented hopes that the chatbot would have an impact on the workload:

*P4: “The thought is that they can take on other tasks that demand more time in the long run, to relieve the workload. We are looking forward to that, how it actually makes our work more effective.”*

*Hi, I am the new digital co-worker  
Kvarnåsen, J.*

*P7: "It is to decrease the volume of questions so that they don't have to work so hard. It is about 6-8 weeks a year that there are a lot of questions. So, it is actually to decrease the workload of it."*

The interviewees expressed that they expect the chatbot to decrease the incoming questions so the employees can have a lower workload, and thereby allowing them to work more effectively with other tasks. However, it is also presented that they see challenges associated with the chatbot implementation that can have an impact on their way of work:

*P4: "The challenge as we saw it, in the beginning, was how to handle the ongoing management after the implementation and further development. Which people who were best for the job and really make sure that this bridge from our side is not forgotten."*

*P8: "It is a job to keep it updated based on new parameters and new areas that are built up all the time, that development is going fast with new areas that the chatbot can answer. You need to have some people who are actively working with it, it does not upkeep itself, so to say."*

The implementation of a chatbot is expected to demand a lot of work when it comes to its upkeep. The interviewees mention that there needs to be an understanding and a clear structure of how to work with it, and who should do the job. It is an ongoing work process for its information to remain accurate and for the technology to be maintained. If the technology is not being maintained, then the system decays, and it is especially so for chatbots as they contain current information.

*P7: "To do nothing is to slowly die in an IT world, that is common for all systems, as well as this one. It is probably so that this one is rotting faster as there is information that is time-critical in it."*

To face this necessity of maintaining the chatbot, the interviewees explain that the work changes and other tasks are appearing.

*P1: "Having a robot generates another task, which is to help the robot get better. We will never just automatize everything and then people will not have any jobs, we just get new tasks."*

When implementing a chatbot, a new task consisting of improving the chatbot is added. Other interviewees see this rather as a change of the already existing tasks:

*P3: "You change a lot of caseworkers' tasks, or at least there is a shift in what the tasks are. The tasks may be more about writing a sensible solution to a problem once, instead of writing or copy and pasting the same thing 8, 9, 10 times every day. The result is that you liberate that resource and time to solve more complex problems, such things that you only answer once a month, or once a year. So, there will be a certain shift in the tasks, but no bigger difference, I think."*

*Hi, I am the new digital co-worker  
Kvarnåsen, J.*

*P5: “I don’t think it is that tasks are disappearing, but we change tasks really. We move from emails and responding to non-complex and simple questions, to working more systematically in different digital systems. [...] We have our little area on the scale of tasks of where we are working, and instead of working there, we are just moving where we are working along the scale. [...] It just shifts where on the spectrum you are working, rather than taking something away.”*

By improving the chatbot and provide it with the solutions to the less complex problems, they see that they can work more systematically and focus more on the issues that occur less frequently. The tasks will thereby change and focus on the more difficult problems, instead of repeatedly answer the same simple questions. When asked if they had experienced any impact on the workload since their implementation of the chatbot, the interviewees working in municipalities had seen some reduction of phone calls and incoming errands, but not that it had been a big change.

*P1: “I can’t say that [the chatbot] has relieved the customer center ‘away’. Mainly because we are always delegated new tasks, which means that people like to call us about new questions, new things, all the time. [...] I don’t know if you can call it a relief, but of course the chatbot takes [over] some of the communication between us and the citizens.”*

*P6: “Of course there was a thought somewhere that you want to reduce the pressure on our telephones so you can put that time into more qualified tasks, rather than repeating what is on the website. It was our hope, and I would say we have landed in that quite well.”*

*P8: “They are not calling in and ask where to find a particular e-service, but maybe some rather use the chatbot and get to that e-service. [...] So, it has been a small reduction of phone calls and emails, but I cannot see any clear trends that it would be only because of the chatbot. Our phone calls have decreased over the years.”*

Their chatbots helped respond to some questions, but they still received new tasks and did not see that the reduction had been so big that the chatbot would cover the same number of errands and questions as a person would do. Even if the incoming calls and emails had decreased, it was not clear if this was only because a chatbot had been implemented as the phone calls had been already decreasing over the years.

#### *4.2.2. Time management*

The other aspect that was related to the impact the chatbot implementation may have on their work was the hope to free up time. Interviewees pointed out the potential of how the implementation of the chatbot could allow them to focus on other tasks:

*P2: “We sit and respond to the same questions over, and over again. Those simple questions of where to find the schedule, or find parking spots, and so on. Those repetitive questions, that*

*Hi, I am the new digital co-worker  
Kvarnåsen, J.*

*we can get rid of those. [...] You get 1000 questions about this daily, you do not have time to work with anything else. It is to distinguish these and create time for other things.”*

*P4: “We experience already that we gain time on the simple questions, so we don’t need to have the telephone errands that take time from the administrators. So, if someone calls about [an errand], you can be helpful and put that time into more qualitative treatment.”*

By reducing the time spent on repetitive tasks, they have time to spend on doing other things, such as investing more time into the errands that require further assessments or help. The questions that require more from the employees can be experienced as more satisfactory work among the staff as they get to use their competence, as well as get a chance to learn new things:

*P5: “It is quite psychologically exhausting if the only thing you have done today is taken the same response and copied and pasted it into about 1000 errands, which it unfortunately can be some days. Then I think to actually be able to use your brain and work with complex tasks can improve the satisfaction among the employees.”*

*P6: “Many want to have a more qualified job, and then I think it is what we offer those who [keep working here]. So, the questions you get, that is where your competence is needed.”*

*P7: “There is more time to learn new things and increase the competence level. That is not something to underestimate, because often you do not have time to do so, you have just enough to stay afloat. [...] You will be able to work with more advanced tasks.”*

The repetitive tasks can be experienced as being a psychological challenge when they do not get the chance to get into more complex issues. By enabling employees to take on more advanced tasks, their competence is put to good use, and they will have time to increase their competence levels so they can take on more complex tasks. However, there is concern that the time they gain from automizing simple questions through the chatbot might not actually be free to use however they want.

*P3: “We see that part of this ‘liberated time’ might not necessarily get freed up, but you need to keep working with those types of questions. Not to answer them over the phone or emails, but to make sure the bot gives the correct response from the beginning.”*

*P7: “You will probably need more qualified manpower to maintain the chatbot. You liberate time in the little less qualified manpower, which is problematic as in general, it is the more qualified who already have a lot to do. It is something we notice in general, that unqualified tasks are taken away with the digitalization, and then we have more and more advanced things, unfortunately.”*

The time that is gained by implementing a chatbot needs to be reinvested into developing the chatbot to ensure it can provide the correct solutions to the problems. There is also an issue that

*Hi, I am the new digital co-worker  
Kvarnåsen, J.*

the upkeep of the chatbot is expected to require more qualified personnel, compared to the competence that is needed to respond to the common questions of lower complexity. This can be problematic as it is the employees with the higher qualifications who already are very busy, and they will have more tasks added when they need to work with the maintenance of the chatbot as well. Reflecting on this topic, one interviewee mentions the need to develop competence:

*P2: “You might get a different competence to be able to work in a customer center that is dealing with these questions so you can feed the system with information. I am not saying we have the wrong competence; I am saying we need to develop our skills.”*

By developing the competence, they can be able to work with improving the system and add information into the chatbot. However, it is pointed out by other interviewees that it is important to be aware of the need to invest the required time into both implementing the chatbot, as well as developing the system further:

*P7: “The time you put into responding to questions, you need to put at least half of that time on maintaining the chatbot instead. It has a certain potential to save time, but a whole lot of that save you need to invest into it all the time in continuous work.”*

It is mentioned that one needs to be willing to put time into working with the implementation of the chatbot. Once it has been implemented, there is a need to take the time that is saved and spend some of it toward the continuous work with its maintenance and development. Although there is an awareness that it requires time to maintain it and develop it, not everyone is prepared to spend that time.

*P6: “Someone needs to add [information] and work with the chatbot for it to be able to answer. I try to say that it is help to self-help, the more time you put into it now, the fewer questions you will get about this eventually. Everyone might not be on board with that. Many people want [to get the result], but everyone wants someone else to do it.”*

*P7: “We can’t get the staff that is needed to create and maintain the questions. They don’t have time really, don’t think they have time to work on something that can save time later, so they find it is difficult to invest to move forward.”*

The more time they put into adding information into the chatbot, the less time they will need to spend on such questions in the future, but the willingness to spend time working with the chatbot varies.

### **4.3. Communication**

Several interviewees stated that the increased availability was a fundamental reason why they chose to implement a chatbot as it would be a way to respond to questions at any time. When

*Hi, I am the new digital co-worker  
Kvarnåsen, J.*

expanding on the topic of increased availability, the interviewees shared their expectations related to having the chatbot as a communication channel, as well as both benefits and potential risks and challenges associated with the chatbot as a communication channel.

#### *4.3.1. Availability*

A common expectation of how the chatbot will increase the availability is that it can respond to questions at any time and not be limited to the regular office hours:

*P5: “My biggest goal is availability. Availability and increased quality on the responses you get, if you get a response from the chatbot it should be a response of good quality and a correct answer, and it is available 24/7.”*

*P8: “It is a compliment in the availability, that you can get help whenever you want, evenings and weekends when we are closed. It becomes a little better quality or faster management, maybe, if you do it yourself at home.”*

A chatbot is seen as a way to both being available to answer questions around the clock, and as a way to increase the quality of the service and the responses as the public can get help with their errands sooner when they use the chatbot. A chatbot is also seen as an opportunity for people to contact them, people who may have been unable to do so earlier.

*P1: “We can absolutely see that many choose to chat with the chatbot on weekends when we are closed, and then primarily late in the evenings. We assume that it is people we pick up then who feel that they don’t have the opportunity, can, or want to contact the municipality by telephone or email.”*

*P3: “There is an availability thought, that it is not only that we should be available to respond to questions around-the-clock. It is also that some people are not comfortable talking over the phone, or talk in person, or even send an email or chat with a person in real-time, it can be uncomfortable for them. [...] One of the points derived from a focus group was that they thought it was quite comfortable to chat with a machine.”*

People might feel more comfortable interacting with a chatbot compared to contacting the organizations through other communication channels. This could be either because they do not have the time or the ability to contact them on the phone or through emails, or that they are uncomfortable reaching out using the channels that put them in contact with a person. By implementing a chatbot it is assumed that they give those people an opportunity to interact with a machine instead and that they can get assistance from it. However, there is a concern that people might not be keen on using this channel:

*Hi, I am the new digital co-worker  
Kvarnåsen, J.*

*P4: “You don’t get away from that we as a municipality have the type of inhabitants as we do, many people get older that are not friends with the technology and prefer to call or walk-in because they think it is socially pleasant.”*

*P5: “It is definitely a risk that you experience that you are forced into a communication channel where you have to talk to a machine that does not understand you on an emotional level, and I think it is of great importance to get to talk to a person.”*

While some people may be more comfortable with using the chatbot, others might have a social or emotional need that cannot be met by the chatbot, and thereby may be hesitant to use it. When implementing the chatbot, it is thereby a risk that users feel pressured into using the communication channel that is unable to satisfy those needs. At the same time, the interviewees see the present issue of getting people to use the chatbot:

*P6: “You can have a great chatbot, but if you don’t let people know it exists it does not matter. The challenge is to get people to try it, I think many have condemned chatbots from the start, saying “No, I don’t get any good answers”.”*

It is limited in how many times the users are willing to give it a try as there is an issue that some people already have a negative view of the communication channel beforehand. With this issue, they see the need to clarify the abilities of the chatbot and both ensure people know it exists, as well as being able to offer alternative communication channels. They do not want the chatbot to be a dead-end, an alternative communication channel should always be offered to those who need it.

*P5: “To really be clear that it is a machine you are talking to, it is limited, and it is absolutely possible to talk to a human. It does not need to go through this channel, you can call, email, fill out a web form, you name it, or you can come by and visit us, that is no problem, so it is experienced as an alternative, and not the only alternative.”*

They express the need to ensure that the users are aware that a chatbot has its limitations, it is not the only available communication channel, but other alternatives are offered if the chatbot fails to help the user. It is also mentioned that it is important that the employees are aware of what the chatbot can do and what to expect from it:

*P5: “Without support from the co-workers it will be like if a teacher gets a question, they will say “Yes, we have a chatbot, but send me an email directly instead and I will take care of it” because they don’t have any trust or interest in it.”*

*P7: “People think it is much more general than it actually is, overestimating the ability of the technology. [...] I think they get their expectations crushed when they see what it actually can*



*Hi, I am the new digital co-worker  
Kvarnåsen, J.*

*do, then say that it is not an interesting technology and shut down the project, even if it is a technology that probably has potential.”*

*P8: “It is that the expectations are reasonable on what it can do and how it works, that you cannot reduce the staff with a few people, or one person, just because you have a chatbot, it is more about a complement in the availability to increase it around the clock. [...] It is about having a dialogue with those out in the organization, and to have a dialogue with the communicators so they can communicate what the expectations should be.”*

There needs to be a common understanding among the employees of what to expect from implementing a chatbot so the expectations are not exceeding what is possible, as that can lead to disappointment when they see that the chatbot is capable of. The interviewees state that if there is a lack of knowledge among employees of what the chatbot can do, then the staff might not trust that it can do what it is implemented for, which is to increase the availability. Although there are various expectations of the chatbot to act as an around-the-clock communication channel, the interviewees working in municipalities have seen different types of interactions with their chatbots. One explains that they feel that their expectations availability wise have been met since implementing the chatbot:

*P4: “We see on our statistics that what we thought it would offer availability wise so also is the case, we got what we were promised.”*

Later in the interview, the same participant expanded on the topic of availability by clarifying when people primarily use their chatbot:

*P4: “If you look at which times [the chatbot] responds to questions, it is a peak 9-10-11 in the evening, but strangely very late during the nights as well around 2-3 in the morning.”*

Other interviewees see that the chatbot receives questions when there is a higher pressure on other communication channels:

*P1: “When we have the biggest waiting time on the telephone, that is when people in general chat more with [the chatbot], and when we are closed. When we are closed is not something we can change, so we are just happy that we have gotten extended open hours.”*

*P6: “It is quite interesting. You would think they use [the chatbot] a lot during the evenings and weekends when we are out of the office. Sure, it occurs, but it still follows the pattern of when we are open. We get most calls between 9-14 during the day, and that is when they ask the chatbot the most questions as well, between 9-14, weekdays. We had hoped that they would see it as another alternative during the evenings or weekends, but we haven’t quite landed there yet. Of course, our chatbot is used then as well, but not to the same extent as daytime, weekdays.”*

*Hi, I am the new digital co-worker  
Kvarnåsen, J.*

The interviewees primarily see that the chatbot receives questions during the workdays at the same time as people are usually contacting them by phone or other communication channels. Their chatbots do receive questions when they are closed as well, but only one interviewee experiences that they get more questions in the evening compared to how many questions they get during the daytime. One interviewee state that their hopes of the chatbot being used more during evenings and weekends have not been met yet.

#### *4.3.2. Communicating information*

On the topic of communication, the interviewees shared both expectations and experiences of communicating information through a chatbot. Something that was brought up by several interviewees was the importance of ensuring that the information the chatbot has access to is accurate:

*P2: “It is really important that we sync the information in the chatbot with the information that is on the website and other communication channels. [...] It won’t describe everything on the website, it will describe a small part, but it has to be the same words.”*

*P4: “The one we have today based its answers on the information we provide on the website depending on which variables exist, so that is why it is of great importance that we keep our website completely updated at all times with the correct information.”*

As the information in the chatbot is based on the information on the websites, it is therefore of great importance to ensure the information the chatbots have access to is accurate for them to convey the same information regardless of which communication channel it is provided from.

*P1: “Since it is an additional information channel it sometimes can get a bit sprawled out. It is the information on the website, and the chatbot needs to know the same information, as well as we who sit and take phone calls to need to have that information.”*

*P8: “If you get the wrong information, that you don’t have time to update based on new prerequisites, then it is the same as on a website, there is a risk that the customer gets the wrong answers.”*

It can be a challenge to ensure that all communication channels have access to the same information, meaning that there is a risk that the chatbot present inaccurate information if is not updated. At the same time, they see the chatbot as a help to see what information needs to be updated on the websites:

*P1: “It has been very positive for us to have a chatbot, and still is. Partly because we can see where we lack information on the municipality website for example because many write to [the*

*Hi, I am the new digital co-worker  
Kvarnåsen, J.*

*chatbot] and ask because they think it is inexplicit [on the website], they can't find information."*

The chatbot can work as a tool to detect which parts of the websites might need to be updated or clarified. They can see what areas people ask questions about and get an understanding of which information areas need to be clarified. Even though the information needs to be accurate, it is also expressed that not all type of communication is suitable to use a chatbot for:

*P3: "The problem with the more complex questions is that you often require quite a lot of personal information to be able to solve the more complex errands, and I don't know if I think a chatbot is a right place to share that type of personal information."*

As some more complex errands might require more personal information, they do not see the chatbot as a suitable channel to share such information. Instead, the information that is communicated through the chatbots is focused on providing information that answers simpler questions.

*P6: "It might be the simpler questions, many experiences that they can use their phone to check open hours themselves, they think it takes too much time to go to our website and find open hours there or find forms and such things. We experience that many have found [the chatbot] that serves it directly on the website, the forms, the open hours, the contact information if you need it. I find that it is those questions that dominates, those simple questions."*

Questions about simple and general topics have been the focal point for the chatbots to be able to communicate such information, which also appears to be the most dominating questions that are asked to the chatbots. One interviewee expands on the topic, explaining that the things that people ask their chatbot are new questions:

*P8: "I think that many of the questions, since it is general questions we receive, we have not seen that these questions have come to the customer center previously. I think they have found [the answers] on the website anyways, but it has taken more time or maybe has been more complicated."*

The questions they get are things they have not previously been asked about. They assume that the people asking these questions had found the information on their own on the website, but now communicate with the chatbot to easier find the information. The chatbots communicate information by providing short answers and tend to be informal in their way to communicate information.

*P6: "Friendly, a simple language. It cannot be any management or official language; it should be a language everyone can understand. Not pompous, simple. [...] You should not need to be an academic to understand our websites or the chatbot."*

*Hi, I am the new digital co-worker  
Kvarnåsen, J.*

*P7: "I think it is quite good that it will be short and simpler because we notice that students don't have much patience to read on our website. I think the shorter format that it means to have a chatbot is something positive, it forces us to write in a different way."*

The shorter messages and less formal language used in the chatbots is favored as it makes it easy for the users to understand the messages. Furthermore, the chatbot is seen as pleasant to interact with as it can provide responses that might surprise the user:

*P8: "It is pleasant and entertaining, and I think it is good to try to make it a bit more human. [...] It's not just standard, basic responses, but it is something you might not expect, you feel that it is fun to talk to it."*

However, as the chatbot's language and behavior seem more human, it presents a risk that the users might not understand that they are communicating with a robot.

*P1: "It can go wrong. I think if you chat with a chatbot and really understand that it is a robot, I do not think you get very offended if it is a humorous tone, but I notice when I read chat logs that some does not understand that it is a robot, and then they can take offense. Often it is not humorous like that, but if someone writes about something serious, [...] then you don't want to hear something lighthearted, you just want to know whom to turn to."*

When the users do not understand that they are communicating with a robot and not a human, the informal manner of the robot might not be appreciated as it might be a serious topic and they expect a serious response. It, therefore, needs to be made clear to the users that they are communicating with a robot and not a human.

*P4: "You should know it is not a human sitting there, but it should also not cause any wild fantasies about something robotic either. It should not be too boring and static, just simple comebacks, but there should be some tonality and flow through the conversation."*

The communication with a chatbot should not be too static and robotic, as a less formal tonality might bring a better flow in the conversations. However, the informal language that is favored among the interviewees might be a contrast to how they are required to communicate information:

*P5: "To give that type of playful responses might be contrary to our brand, but maybe provide an understanding that you can talk to a chatbot and not just be guided through some sort of question tree. But it is very difficult because we are a public authority, which means there are certain requirements for how we express ourselves."*

Even if they want the chatbot to give lighthearted responses, it might not be easy to do so due to regulations and requirements that need to be followed by public authorities. Still, it is an aim that

*Hi, I am the new digital co-worker  
Kvarnåsen, J.*

the chatbot uses a similar language as the users as chats are viewed as a relaxed communication channel.

*P5: “A chat is a quite relaxed communication channel, and we need to adapt ourselves according to a language that the users are using.”*

On this note, an interviewee adds that they want the communication through the chatbot to be as if the people would talk to the people working at a customer center:

*P6: “We try to have it as if you were talking to us at the customer center. Polite, quite short responses and not sugarcoat it too much.”*

As this interviewee had expressed earlier, a simple language was preferred over more formal official languages. This is as they want the conversations with the chatbot to be like interacting with employees either through other communication channels or in person.

To summarize, the interviewees expect that the chatbots can help them reduce incoming errands and simple, repetitive questions, and thereby give them more time to work with more complex tasks. A challenge with this is that they also expect, and experience, that it is a continuous work to maintain the chatbot. This can result in new tasks being added, or previous tasks being replaced with tasks that require a different type of competence. The time that potentially is liberated by the chatbot thereby needs to be reinvested to work with its maintenance. The interviewees also expect a chatbot to increase availability as it can assist users at any time. It is revealed that the chatbots are primarily used when it is high pressure on other channels, but they do see that people use the chatbot outside of their office hours as well. As the chatbots are seen as additional communication channels, they experience that there is a need to ensure all communication channels convey the same information, so the information that is presented by the chatbot is accurate. The interviewees add that the way to communicate information through the chatbot should be less formal than the language that is used in their other communication channels. With this, there might be a risk that people do not understand that they are interacting with a robot as a less formal language could make it seem more human.

## **5. Analysis and discussion**

In this section, the result is analyzed and discussed with a connection to the related research and using the Uses and Gratifications theory (U&G) as an analytical perspective to get a more complete view and understanding of the expectations and experiences of the employees when implementing chatbots.

## **5.1. Impact on workload**

In the interviews, several participants mentioned that one fundamental reason why they implement a chatbot was to decrease the workload among the employees. They expected that the chatbot would handle the simple, repeated questions and thereby give the staff time to focus on other tasks. These expectations were primarily presented by interviewees working at universities, who had not yet implemented chatbots, but similar hopes were present among the interviewees working in municipalities as well. For them, it was a need to reduce the number of incoming questions that are seen as non-complex tasks. Whether this is an expectation or a need that can be met by the implementation of a chatbot is the question. By using a medium, such as chatbots, there are expectations of which needs it can fulfill (Brandtzaeg & Følstad, 2017). A chatbot can gratify the needs of the users, but it is unclear if the same goes for the implementors of the medium. The technology gratification is described by Cheng and Jiang (2020) as the convenience of the medium, that it can be used whenever and wherever, and convenience is the focal point when the interviewees express the need for a decreased workload.

The need for convenience could be the basis of why they choose to implement chatbots, but as they are not the users of the chatbots, the technology gratification of U&G does not frame how the chatbot could gratify their needs since the employees do not interact with the chatbot in that way. To further analyze this, another theoretical framework would be needed to provide a deeper understanding of how a medium can fulfill the convenience needs of the implementors. However, the related research brings up what impact there might be on the workload. As was mentioned earlier, Ranerup and Henriksen (2020) found that this is something that has been a consequence of implementing a robotic process automation robot (RPA), as the robot automizes simple tasks and the employees gained more time to work with more complex issues. Like RPA, chatbots are automizing robots, primarily automizing communication and associated communicative tasks (Androutsopoulou et al., 2019). It is therefore possible that the automation a chatbot offers can take care of the repetitive questions so employees can focus on other tasks. However, the interviewees working in municipalities state that although they experience that the incoming calls have decreased, it does not necessarily mean that it is solely because of the implementation of the chatbot as their phone calls have been decreasing prior to the implementation. At the same time, they are delegated new tasks and receive new types of questions and therefore do not experience a drastically reduced workload. This highlights a difference in how other automating robots have relieved the workload of repetitive tasks.

When implementing chatbots, the interviewees also share expectations that the tasks will change, or that new tasks will be added, hence having an impact on their way of work and workload. This can present a contrast to what is stated by Rutschi and Dibbern (2020) who mention that chatbots do not require maintenance to the same extent as other software robots as they can learn on their own based on previous interactions, thereby maintaining themselves in a way. The role humans take on is to ensure the technology work as intended before its implementation, and when

maintaining chatbots the work is primarily to collect questions to add to the system (Rutschi & Dibbern, 2020).

Like the maintenance of chatbots described by Rutschi and Dibbern (2020), the interviewees expect that the existing tasks change from answering common questions repeatedly, to writing suitable responses for such common questions once and inserting them into the chatbot. However, the interviewees expect the maintenance of the chatbots to be a continuous work, which is something that is experienced by interviewees working in municipalities that they continuously need to improve the chatbot. This is something that was pointed out by Henman (2020) and Desouza, Dawson and Chenok (2020), that systems and chatbots need to be continuously checked and tested. As mentioned by interviewees, it is of great importance to work with the upkeep of the system so the technology and the information in the system does not decay, as other technological systems do if they are not maintained. These statements indicate that there is more to the maintenance of the chatbot than only adding new questions into the system as was suggested by Rutschi and Dibbern (2020). Instead, the interviewees see a demand for new skills for them to maintain and update the chatbots. This expectation aligns with what is stated by Ranerup and Henriksen (2020), who mentions that experts are required for automation to be further developed. However, as was mentioned before, their study focuses on RPA, not chatbots. Therefore, it might not apply to the maintenance and development of chatbots. The interviewees who shared these expectations of needing higher expertise work at universities and have thereby not implemented their chatbots yet. It is possible that these interviewees based their expectations on experiences of working with other systems, which might make them expect that the needed competence must be the same as what is required to maintain those systems. The requirement of higher expertise to maintain the chatbots did not appear to be a present issue for the employees in municipalities as the more complex tasks were welcomed. With this, the employees could put their competence where it was needed when they no longer had to focus on non-complex tasks as much as before.

When reducing the repetitive tasks, there are hopes that it increases the satisfaction among the employees. The reason is that it is experienced as psychologically exhausting to perform repetitive tasks. Since the repetitive tasks are seen as something they want to reduce, it can be assumed that these are tasks that are not seen as enjoyable. As a chatbot is implemented to take over such tasks, it may lead to hedonic needs being met. The hedonic gratifications focus on how the use of a medium can fulfill the need for entertainment and fun (Cheng & Jiang, 2020). Instead of working with repetitive tasks, the more complex tasks, such as maintaining the chatbot, could require more cognitive effort which can be experienced as more rewarding and enjoyable compared to the previous tasks. As the employees would primarily work with the upkeep of the chatbot, it means that the chatbot itself would not provide hedonic gratifications. These gratifications would rather be a consequence of its implementation and not come from interacting with the medium. Because of this, the U&G theory is unable to fully capture the phenomena but still adds an analytical perspective to understand which needs that might be fulfilled.

Although the reduction of low-complexity tasks may let the employees focus on the advanced errands, it adds a problem that at the time of writing appears to have been overlooked in the related research. An interviewee pointed out that as the simple tasks are reduced and advanced tasks increases, the staff that might have lower competence will gain more time, while the employees with higher expertise will have more to do, especially if higher expertise is needed to maintain the chatbot. It becomes an unbalanced situation as the employees with a higher competence already tend to have a lot to do. The necessity to increase the expertise among the employees thereby becomes apparent if they want to avoid this unbalance. The need to develop the skills could be seen as a utilitarian need, the need to acquire information (Cheng & Jiang, 2020). The chatbot itself would not be the source of the needed information, but its implementation could be the reason why the employees need to gain more information and increase their competence. As the interviewees explained, when the simple tasks are reduced, it gives these employees more time to learn new things. There appear to be various concerns of whether time will be liberated or not by implementing a chatbot. As was mentioned above, Ranerup and Henriksen (2020) found that RPA robots allowed employees to focus on other tasks. This indicates that time was indeed liberated by implementing an automizing robot. In contrast with this, the interviewees in the municipalities stated that although there were fewer incoming calls, new tasks were added. This shows that the time that they gained by having a chatbot was limited, as it was taken up by new tasks, or needed to be reinvested in the upkeep of the chatbot.

## **5.2. Chatbot as a communication channel**

The aim to be more available by implementing a chatbot was commonly mentioned by the interviewees. By implementing a chatbot, they hoped that it would make it easier for people to contact them at any time and for them to be able to always help and respond to questions. According to Brandtzaeg and Følstad (2017), the fact that chatbots are always available and can provide fast responses at any time is a common reason to why people use them. This is connected to the utilitarian and technological gratifications that can come from using chatbots (Cheng & Jiang, 2020), as the utilitarian needs are met when the users receive the information they require, and the technological needs are met as the chatbots can be used at any time. It can therefore be seen that increased availability and the possibility to provide service at any time are probable consequences of implementing chatbots.

This aspect of increased availability is of particular importance as the interviewees expect that the chatbot makes it possible for people to contact them who might be uncomfortable with reaching out through other communication channels. Similar findings were brought up by Brandtzaeg and Følstad (2017) and Følstad, Nordheim and Bjørkli (2018), as they found that some people prefer to interact with chatbots over humans. This is as communication with chatbots can be experienced as less intimidating and judgmental than interacting with a human. As is stated by the interviewees



*Hi, I am the new digital co-worker*  
*Kvarnåsen, J.*

working in municipalities, their chatbots are used outside of office hours, but in general, they are mainly used when it is high pressure on other communication channels. It could indicate that chatbots are a preferred communication channel for the users when they want to get answers to their questions fast, hence gratifying technological needs of convenience (Cheng & Jiang, 2020). At the same time, there is also a concern that some people do not want to use chatbots, which reveals contrasts in the interviewees' expectations.

It was mentioned during the interviews that some people prefer the social aspect of interacting with a human because a robot cannot fulfill emotional or social needs as humans can. This is different from what Brandtzaeg and Følstad (2017) and Cheng and Jiang (2020) state in their studies, as they found that a reason why people use chatbots was to fulfill social needs. With this, related research on the topic has a mainly positive view on what needs can be fulfilled by using chatbots, thereby failing to acknowledge problematic aspects. Based on what was stated by the interviewees, chatbots might lack social gratifications rather than fulfilling those needs. Therefore, they think it is important to always offer alternative communication channels to meet social needs.

On a similar note, the interviewees point out that besides the lack of social gratifications there is also a risk that the chatbots provide inaccurate or insufficient information. If so, the chatbots could fail to fulfill the utilitarian needs, and the users' trust in the chatbot decreases (Følstad, Nordheim & Bjørkli, 2018). The interviewees bring up the issue that users might feel they get insufficient or faulty information from a chatbot and expect that it makes people distrust the chatbot's expertise. The expected risk of distrust is present both among users and employees, as it is said by interviewees that users might condemn the chatbots from the start due to lacking information, while employees fail to see the potential of the technology if the expertise of the chatbot does not meet their expectations. This agrees with what was discovered by Nordheim, Følstad and Bjørkli (2019) and Przegalinska et al. (2019), that the expertise of the chatbot has an impact on user trust as it is related to the credibility of the information the chatbot can provide. This thereby highlights why the interviewees find it important that the same information is presented regardless of which communication channel is used to convey it. Having the same information available in all channels decreases the risk of the chatbot providing inaccurate information and increases the chances of the chatbot being able to gratify utilitarian needs and expectations of both users and employees.

Although there is a necessity to provide the same information through all communication channels, the interviewees pointed out that it might differ between the channels how the information is communicated. The expectation shared by the interviewees is that chatbots should provide short and concise responses using simple and informal language. They explain that chats tend to be a relaxed way to communicate and easy for the users to understand. Additionally, they express that a more humanlike and natural language can make it enjoyable to interact with a chatbot, something that according to Cheng and Jiang (2020) gratifies hedonic needs. This confirms what is brought up by Nordheim, Følstad and Bjørkli (2019), that when a chatbot uses a more humanlike language,

such as adding humor and personal behavior, the user trust increases. With this way to present information, is expected that the informal language will require a new way for them to express themselves compared to how they communicate information in other channels. The interviewees see that a chatbot is a more relaxed way to communicate and express the need to adapt the language of the chatbot to how users communicate naturally, thereby giving the impression that a chatbot responds as a human would.

However, the interviewees experience that there is a problem that arises when a chatbot has a humanlike behavior, which is that it might not be clear to all users that they are interacting with a robot. If the chatbot has a humorous tone, there is a risk that the information given to the users is not what they expect it to be. The easygoing manner may not be suitable to communicate serious information as the users might take offense. The interviewees also do not find that chatbots are appropriate channels to help solve such complex and serious issues. This can be connected to what was stated by Henman (2020), that by implementing a chatbot the human factor decreases, including decreasing the human discretion and professional judgment that could be required for more complex issues. This could explain why the focus of the interviewees remains on communicating simple information and doing so through short and concise messages. They expect that the short and simple messages will be appreciated as users might not have the patience to read extensive text on the websites. This relates to what is stated by Nordheim, Følstad and Bjørkli (2019), that the chatbot's ability to provide accurate and concrete responses increases the trust in its expertise. It is possible that this not only affects the users' trust in the chatbot. It can also affect the employees' trust in its expertise and thereby might give them an understanding of what information it can communicate.

## **6. Conclusions**

This study aimed to answer the question *“How do employees in the public sector expect and experience that the implementation of chatbots can affect them in their work and ways to communicate information?”*.

The findings of this study reveal that employees in the public sector expect the implementation of a chatbot to have an impact on their workload. As the chatbot is intended to respond to simple questions, they believe they will have more time to focus on complex tasks. There are expectations that some of the time gained by implementing a chatbot needs to be reinvested into its maintenance, and that this requires higher qualifications compared to the competence needed to work with non-complex tasks. Therefore, they expect that employees need to acquire new skills. The employees in municipalities reveal that they do not experience that the chatbot implementation has led to a big reduction of the workload as new tasks are added, such as maintaining the chatbot. They experience that it is a continuous job to maintain the chatbot, but it is not expressed that this would

*Hi, I am the new digital co-worker  
Kvarnåsen, J.*

require higher competence among the employees. They experience that the possibility to focus on more complex tasks lets the employees use the competence they have.

The employees expect that the chatbot will affect their communication as the chatbot will make it easier for people to contact them anytime. Chatbots are expected to be a new way to communicate as their way to express themselves through the chatbot can be a contrast to how they communicate information through other channels since it uses a less formal language. It is experienced that the chatbot implementation has resulted in increased availability as people use the chatbots outside of office hours, as well as when there is high pressure on other communication channels. Chatbots can thereby communicate information at any time, and it is seen as important that the information is correct for both users and employees to trust the technology and expertise of the chatbots. They experience that the language used by the chatbots is easy to understand and that the chatbots are responding similarly to how a human would present the information. Therefore, it is a new channel to provide information, but not different from how they communicate information through other channels.

## **6.1. Study limitations**

This study has focused on the expectations and experiences of implementing chatbots in the public sector. As the focus has been on universities and municipalities, this has excluded chatbot implementation within other types of organizations within the public sector. It is thereby possible that there are expectations and experiences of implementing chatbots in the public sector that have been left out in this study.

Another limitation is that the participants in this study work in universities that have not implemented chatbots yet, and municipalities that have implemented chatbots. Although both universities and municipalities are within the public sector, it does not necessarily mean that the expectations and experiences are the same. It is possible that interviewees have provided expectations and experiences that are specific to either universities or municipalities that cannot be applied to the others' implementation process and outcome.

## **6.2. Recommendations for future research**

For future research, it is suggested to study chatbot implementation in other organizations in the public sector to get a more complete view of the phenomena and possibly add more aspects of what can be expected and experienced with a chatbot implementation. It is also suggested to conduct research focusing on either chatbot implementation in universities, or chatbot implementation in municipalities to further expand on this work and capture expectations and experiences specific to each type of organization.

*Hi, I am the new digital co-worker*  
*Kvarnåsen, J.*

An addition to the existing research could be to explore how chatbot implementation has affected employees in the private sector, as the previous research has an exclusive focus on the users' experiences or the technological aspect of developing and implementing chatbots. This may add a perspective that shows why the public sector wants to follow the digitalization process that is done in the private sector.

The last recommendation is to create a theoretical framework that can be used to analyze and gain a deeper understanding of the phenomena, as theories mentioned in current research fail to focus on the experiences of the people who implement the chatbots.

## References

- Abdul-Kader, S.A. & Woods., J. (2015). Survey on Chatbot Design Techniques in Speech Conversation Systems. [Electronic]. (*IJACSA*) *International Journal of Advanced Computer Science and Applications*, Vol. 6(7), pp. 72-80. Available: Web of Science. [2021-04-07]. DOI: 10.14569/IJACSA.2015.060712
- Androutsopoulou, A., Karacapilidis, N., Loukis, E. & Charalabidis, Y. (2019). Transforming the communication between citizens and government through AI-guided chatbots. [Electronic]. *Government Information Quarterly*, Vol. 36(2), pp. 358-367. Available: ScienceDirect [2021-04-19]. DOI: 10.1016/j.giq.2018.10.001
- Aoki, N. (2020). An experimental study of public trust in AI chatbots in the public sector. [Electronic]. *Government Information Quarterly*, Vol. 37(1), no. 101490. Available: ScienceDirect. [2021-03-30]. DOI: 10.1016/j.giq.2020.101490
- Brandtzaeg, P.B. & Følstad, A. (2017). *Why people use chatbots*. Paper presented at 4th International Conference on Internet Science (INSCI 2017), 22-24 November, 2017, Thessaloniki, Greece. DOI: 10.1007/978-3-319-70284-1\_30
- Bryman, A. (2012). *Social research methods*. 4th ed. New York: Oxford University Press
- Chaves, A.P. & Gerosa, M.A. (2021). How Should My Chatbot Interact? A Survey on Social Characteristics in Human-Chatbot Interaction Design. [Electronic]. *International Journal of Human-Computer Interaction*, Vol. 37(8), pp. 729-758. Available: Business Source Ultimate. [2021-04-08]. DOI: 10.1080/10447318.2020.1841438
- Cheng, Y. & Jiang, H. (2020). How Do AI-driven Chatbots Impact User Experience? Examining Gratifications, Perceived Privacy Risk, Satisfaction, Loyalty, and Continued Use. [Electronic]. *Journal of Broadcasting & Electronic Media*, Vol. 64(4), pp. 592-614. Available: Academic Search Premiere. [2021-03-30]. DOI: 10.1080/08838151.2020.1834296
- Chung, M., Ko, E., Joung, H. & Kim, S.J. (2020). Chatbot e-service and customer satisfaction regarding luxury brands. [Electronic]. *Journal of Business Research*, Vol. 117, pp. 587-595. Available: ScienceDirect [2021-04-06]. DOI: 10.1016/j.jbusres.2018.10.004
- Denscombe, M. (2018). *Forsknings-handboken: För småskaliga forskningsprojekt inom samhällsvetenskaperna*. 4 uppl. Lund: Studentlitteratur.

*Hi, I am the new digital co-worker*  
*Kvarnåsen, J.*

- Desouza, K.C., Dawson, G.S. & Chenok, D. (2020). Designing, developing, and deploying artificial intelligence systems: Lessons from and for the public sector. [Electronic]. *Business Horizons*, Vol. 63(1), pp. 205-213. Available: ScienceDirect. [2021-03-30]. DOI: 10.1016/j.bushor.2019.11.004
- Følstad, A., Nordheim, C.B. & Bjørkli, C.A. (2018). *What Makes Users Trust a Chatbot for Customer Service? An Exploratory Interview Study*. Paper presented at 5th International Conference on Internet Science (INSCI 2018), 24-26 October, 2018, St. Petersburg, Russia. DOI: 10.1007/978-3-030-01437-7\_16
- Grimes, G.M., Schuetzler, R.M. & Giboney, J.S. (2021). Mental models and expectation violations in conversational AI interactions. [Electronic]. *Decision Support Systems*, Vol. 144(1), no. 113515. Available: ScienceDirect. [2021-04-06]. DOI: 10.1016/j.dss.2021.113515
- Henman, P. (2020). Improving public services using artificial intelligence: possibilities, pitfalls, governance. [Electronic]. *Asia Pacific Journal of Public Administration*, Vol. 42(4), pp. 209-221. Available: Supplemental Index. [2021-04-19]. DOI: 10.1080/23276665.2020.1816188
- Huang, M-H. & Rust, R.T. (2020). Artificial Intelligence in Service. [Electronic]. *Journal of Service Research*, Vol. 21(2), pp. 166-172. Available: Business Source Ultimate. [2021-04-11]. DOI: 10.1177/1094670517752459
- Ischen, C., Araujo, T., van Noort, G., Voorveld, H. & Smit, E. (2020). "I Am Here to Assist You Today": The Role of Entity, Interactivity and Experimental Perceptions in Chatbot Persuasion. [Electronic]. *Journal of Broadcasting & Electronic Media*, Vol. 64(4), pp. 615-639. Available: Academic Search Premiere. [2021-04-06]. DOI: 10.1080/08838151.2020.1834297
- Meyer-Waarden, L., Pavone, G., Poocharontou, T., Prayatsup, P., Ratinaud, M., Tison, A. & Torné, S. (2020). How Service Quality Influences Customer Acceptance and Usage of Chatbots? [Electronic]. *Journal of Service Management Research*, Vol. 4(1), pp. 35-51. Available: Business Source Ultimate. [2021-04-06].
- Moriuchi, E., Landers, V.M., Colton, D. & Hair, N. (2020). Engagement with chatbots versus augmented reality interactive technology in e-commerce. [Electronic]. *Journal of Strategic Marketing*. Available: APA PsychInfo. [2021-04-07]. DOI: 10.1080/0965254X.2020.1740766
- Nordheim, C.B., Følstad, A. & Bjørkli, C.A. (2019). An Initial Model of Trust in Chatbots for Customer Service – Findings from a Questionnaire Study. [Electronic]. *Interacting with*

*Hi, I am the new digital co-worker*  
*Kvarnåsen, J.*

*Computers*, Vol. 31(3), pp. 317-335. Available: Academic Search. Premiere. [2021-04-08]. DOI: 10.1093/iwc/iwz022

Przegalinska, A., Ciechanowski, L., Stroz, A., Gloor, P. & Mazurek, G. (2019). In bot we trust: A new methodology of chatbot performance measures. [Electronic]. *Business Horizons*, Vol. 62(1), pp. 785-797. Available: ScienceDirect. [2021-04-06]. DOI: 10.1016/j.bushor.2019.08.005

Ranerup, A. & Henriksen, H.Z. (2020). Digital Discretion: Unpacking Human and Technological Agency in Automated Decision Making in Sweden's Social Services. [Electronic]. *Social Science Computer Review*, pp. 1-17. Available: Academic Search Premiere. [2021-04-19]. DOI: 10.1177/0894439320980434

Rutschi, C. & Dibbern, J. (2020). Towards a Framework of Implementing Software Robots: Transforming Human-executed Routines into Machines. [Electronic]. *Database for Advances in Information Systems*, Vol. 51(1), pp. 104-128. Available: Complementary Index. [2021-04-19]. DOI: 10.1145/3380799.3380808

Sands, S., Ferraro, C., Campbell, C. & Tsao, H-Y. (2021). Managing the human-chatbot divide: how service scripts influence service experience. [Electronic]. *Journal of Service Management*, Vol. 32(2), pp. 246-264. Available: Emerald Insight. [2021-04-06]. DOI: 10.1108/JOSM-06-2019-0203

SFS 1949:105. *The Freedom of the Press Act*. Stockholm: Justitiedepartementet.

Shumanov, M. & Johnson, L. (2021). Making conversations with chatbots more personalized. [Electronic]. *Computers in Human Behavior*, Vol. 117(1), no. 106627. Available: ScienceDirect. [2021-04-08]. DOI: 10.1016/j.chb.2020.106627

Sidaii, K., Jaakkola, M. & Burton, J. (2020). AI feel you: customer experience assessment via chatbot interviews. [Electronic]. *Journal of Service Management*, Vol. 31(4), pp. 745-766. Available: Emerald Insight. [2021-04-06]. DOI: 10.1108/JOSM-11-2019-0341

Sveriges Riksdag. (2016). *The Constitution of Sweden The Fundamental Laws and the Riksdag Act*. Available: <https://www.riksdagen.se/globalassets/07.-dokument--lagar/the-constitution-of-sweden-160628.pdf> [2021-05-03].

Swedish Research Council. (2017). *Good Research Practice*. Stockholm: Swedish Research Council. Available: <https://www.vr.se/english/analysis/reports/our-reports/2017-08-31-good-research-practice.html> [2021-04-27]

*Hi, I am the new digital co-worker*  
*Kvarnåsen, J.*

- Toader, D-C., Boca, G., Toader, R., Măcelaru, M., Toader, C., Ighian, D. & Rădulescu, A.T. (2020). The Effect of Social Presence and Chatbot Errors on Trust. [Electronic]. *Sustainability*, Vol. 12(1), no. 256. Available: Directory of Open Access Journals. [2021-03-30]. DOI: 10.3390/su12010256
- Trivedi, J. (2019). Examining the Customer Experience of Using Banking Chatbots and Its Impact on Brand Love: The Moderating Role of Perceived Risk. [Electronic]. *Journal of Internet Commerce*, Vol. 18(1), pp. 91-111. Available: Business Source Ultimate. [2021-04-09]. DOI: 10.1080/15332861.2019.1567188
- Westerman, D., Cross, A.C. & Lindmark, P.G. (2019). I Believe in a Thing Called Bot: Perceptions of the Humanness of “Chatbots”. [Electronic]. *Communication Studies*, Vol. 70(3), pp. 295-312. Available: APA PsychInfo. [2021-04-08]. DOI: 10.1080/10510974.2018.1557233
- Yen, C. & Chiang, M-C. (2020). Trust me, if you can: a study on the factors that influence consumers’ purchase intention triggered by chatbots based on brain image evidence and self-reported assessments. [Electronic]. *Behaviour & Information Technology*. Available: APA PsychInfo. [2021-04-07]. DOI: 10.1080/0144929X.2020.1743362



## **Attachments**

### **Attachment A: Interview guide.**

Thank you for wanting to participate in this study, your participation is of great value to this study. My name is Josefine, and I will be conducting this interview. With this interview, I want to take part in your perspective and experiences related to chatbot implementation. The aim of the thesis is to create a picture that other organizations in the public sector can use as a reference when they implement their own chatbots. I sent an information letter to you about the study and the interview, have you taken part in it? \_\_\_ Do you agree to participate in this study based on the prerequisites stated in the letter? \_\_\_ The thesis is written in English, therefore all quotes that are used will be translated from Swedish to English. Of course, I will have a strong focus to keep the content of what is said. For documentation purposes, I will ask you to agree to the recording of this interview once I have started the recording. The interview will be recorded through audio and video, is that okay? \_\_\_ Before we start, do you have any questions?

#### *Opening:*

1. Tell me a little about yourself, who are you and what do you work with?

#### *Theme: Chatbot implementation*

2. How do you work with the implementation of your chatbot?
3. What reasons do you see as to why you are implementing a chatbot?
4. What is your approach to implementing a chatbot as a municipality/university?
5. Which challenges do you experience in implementing a chatbot? (Both personal perspective and as a municipality/university)
6. What benefits do you think can come from implementing a chatbot?

#### *Theme: Way of work*

7. Do you experience any changes in your work because of the chatbot? Which?
8. How do you view that your work can be affected by the implementation of a chatbot?
9. How do you approach the automation of tasks that a chatbot entails?
10. What consequences do you think could come from implementing a chatbot in the future?

#### *Theme: Communicating information*

11. How do you view your way to communicate information outward through a chatbot?
12. How has the implementation of the chatbot affected how you convey information internally?
13. What are your thoughts on automizing a communication channel?

*Hi, I am the new digital co-worker  
Kvarnåsen, J.*

*Other:*

14. What thoughts do you want to share to those who have implemented/will implement a chatbot?
15. Is there anything you would like to add?

Before we round off, I would like to ask you if you have any suggestions of people who could be relevant to contact for this study?

Thank you for your time and participation, this interview has been very interesting and a valuable contribution to this study!

*Hi, I am the new digital co-worker  
Kvarnåsen, J.*

## **Attachment B: Information letter.**

### *About the study:*

This study is about how employees in the public sector, specifically universities and municipalities, experience that the implementation of AI chatbots has affected their way of working. The aim of this study is to take part in the perspectives and experiences of employees who work with the implementation of chatbots. The study is conducted by Josefine Kvarnåsen as the examination project in the program *Masters in IT and Management* at University West in Trollhättan. The study is conducted in association with the IT department at University West and their work with implementing an AI chatbot.

### *The interview:*

The interview will be held on Zoom and is expected to take about one hour. As the interview will be held digitally, it will be audio and video recorded to be transcribed afterward. The material will only be accessed by me, along with the supervisor and examiner of this project. The recorded material will only be stored until the end of this study and will then be deleted. The material will be confidential and will not be shared with other parties. The parts of the interview that are quoted in the final thesis will be anonymized and no information will therefore be possible to connect to you or any other participants. It is voluntary to participate in the study, and if you wish to end your participation you only have to contact me. I will then not use the material from your interview in the study.

Before the start of the interview, you will be asked if you have taken part in the information in this letter, and if you agree to participate based on these prerequisites.

You are welcome to contact me if you have any questions, or if you wish to take part in the final thesis, and I will be happy to send it to you. Thank you for participating in this study!

[The researchers' contact information]



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