Potential for improving public services by exploring citizens’ communication to public organizations in Sweden

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Abstract

Little et al., (1971) define citizen feedback as information from citizens directed to societal institutions, particularly government, to improve their functioning. Citizen feedback can further be categorized into service feedback, which includes inquiries, requests, complaints, and involvement feedback, which includes opinions, suggestions, and volunteering. There is a great dissonance between the amount of service feedback available to government organizations and its use in development and improvement of public services and policies. There is literature available that suggests governments use of social media for collecting citizen feedback. But very little research has been done to study that government organizations analyze direct communication to collect citizen feedback and what ICT tools they use or would like to use. This becomes even more relevant in countries with high eGovernment maturity with more availability of service feedback through a combination of traditional and newer channels. Therefore, this study investigates the above-mentioned research problem by answering the following two related research questions:

1) How do Swedish public organizations gather and utilize the wealth of information about citizens' needs available in the direct communication from citizens to public organizations?  
   A) is the content of the direct communication between citizens and public organizations actionable?  
   B) And is the volume of the communication sufficient to make it actionable  
2) What kind of ICT tool support the public organizations would like to have in order to better utilize the aforementioned information?

For the study, semi-structured interviews were conducted with six public officers from Swedish public organizations. The respondents were individuals working within customer relations departments of public organizations in Sweden. The respondents were not only involved in the registration, collection, analysis, and resolution of customer inquiries but also in improvement of processes and services.

The interviews were conducted in Swedish, recorded and transcribed, and the transcripts were translated into English. The transcripts were then analyzed in the form of a thematic analysis following the principles of Braun & Clarke (2006). The analysis led to the discovery of five themes namely 1) Types of inquiries 2) Frequent inquiries 3) Contact channels 4) Utilization of direct communication 5) ICT tool support

The study highlights the various ways in which Swedish public organizations gather and utilize service feedback. In the gathering phase, multiple channels are offered to citizens. The use of traditional channels remain high for the problem area of information supply. In the utilization phase, various strategies are used depending on eGovernment maturity. Every public organization is required to maintain a “diarium” because of laws on record keeping for transparency purposes, it is a common tool for registering citizen inquiries, and also a source for annual performance and quality reporting. Additionally, LIME CRM system is used by some organizations, citizen opinions received through webforms is analysed, phone calls recorded and analysed. Lack of alignment is a challenge for some public organizations. There is little evidence to suggest that data from various sources is integrated into a centralized CRM system, leading to insight into citizen preferences, behavior or trends.

Keywords: citizen inquiries, e-Government, Sweden, CRM
Synopsis

Background
The evolution of eGovernment, spurred by a public demand for better access and transparency, is closely tied to the New Public Management (NPM) reforms of the late 1980s. NPM emphasized efficiency and customer-oriented government services. In recent years, however, a shift from “government to governance” has emerged, fostering co-production of public services through collaboration between government, citizens, and non-profit organizations. This shift highlights a transition from citizens as passive consumers to active partners in governance. Feedback from citizens, including structured inquiries and informal complaints, is invaluable for understanding their needs and preferences, leading to improvements in services and policies. The advent of the internet has enabled online consultations, social media engagement, and advanced technologies such as sentiment analysis and AI for feedback analysis, but traditional communication channels like phone and email are underutilized. This research explores the implications of these transformations and the potential of emerging technologies in enhancing citizen engagement and policymaking in the eGovernment landscape.

Problem
A wealth of literature underscores the potential of citizens' communications with government as valuable feedback for policymaking and service improvement, though research in bottom-up policymaking is lacking. Additionally, governments increasingly use social media for feedback collection, but the largely untapped resource of opinion mining in direct citizen-government communication remains underexplored. Leveraging this direct communication, typically via phone or email, holds promise for enhancing public services, yet research on how governments collect and utilize this feedback and the ICT tools at their disposal is limited. This represents a significant avenue for policy influence and service development, which could boost government service efficiency and effectiveness.

Research question
1. How do public organizations gather and utilize the wealth of information about citizens’ needs available in the direct communication from citizens to public organizations?
   a. Is the content of the direction communication between citizens and public organizations actionable?
   b. And is the volume of the communication sufficient to make it actionable?
2. What kind of ICT tool support do the public organizations would like to have in order to better utilize the aforementioned information? The sub questions are important for both the research questions as they motivate the relevance of direct communication as an important input to public service and policy development.

Method
The strategy used for this research will be the survey method. The data collection method for this study is semi-structured online interviews as a qualitative study mechanism. Thematic analysis is chosen as the data analysis method.

Result
Through thematic analysis, the five themes were identified: Types of inquiries, Frequent inquiries, Contact channels, Presence of system/structure/routine for utilization and ICT tool support

Discussion
The research paper’s key findings shed light on the value of citizen communication in shaping public service development in Sweden. It underscores the actionability of direct communication between citizens and public organizations, with concrete solutions provided for raised issues. The study also reveals that actionable inquiries constitute a substantial portion of total communication, supporting their role in public service and policy enhancement. Furthermore, it explores how public organizations gather and utilize citizen feedback, emphasizing the potential of ICT tools for better data utilization and reporting. The research introduces the concept of leveraging advanced technologies like AI-driven tools for 24/7 customer service and data analysis, suggesting opportunities for enhanced responsiveness. A comparison with Sneiders et al. (2019) underlines the importance of efficient archiving practices.
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**Abbreviations**

- CRM: Customer relationship management  
- NPM: New public management  
- OLAP: Online analytical processing  
- IVRS: Interactive voice response systems  
- SSOT: Single source of truth  

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1. Introduction

OECD defines eGovernment as “The use of ICTs, and particularly the Internet, as a tool to achieve better government” (Torres, Pina, & Acerete, 2005).

In recent decades, a growing demand of the public for improved access, transparency and flexibility of government services has led to an interest in reforming the public administration using information technology as a platform for communication and provision of public services. This phenomenon has been called eGovernment (Bernhard, 2013). The term eGovernment is defined in different ways and there is no universally accepted definition (Grönlund). Heeks (2006) defines e-government as “all use of information technology in the public sector” whereas DeBenedictis et al. (2002) defines eGovernment as the use of primarily Internet-based information technology to enhance the accountability and performance of government activities. Grant and Chau (2006:80) identify three core activities of e-government: (1) to develop and deliver high quality, seamless, and integrated public services; (2) to enable effective constituent relationship management; and (3) to support the economic and social development goals of citizens, businesses, and civil society at local, state, national, and international levels.

Within eGovernment, two major paradigms exist, namely the managerial approach and the participatory approach. And both approaches coexist and complement each other. The participatory approach aims to utilize the opportunities offered by the internet to improve the dialogue between representatives and the represented. Whereas, the managerial approach focuses on provision of integrated public services online, driven by concepts such as life events and one window while hiding complexity of administrative responsibilities (Veit & Huntgeburth, Introduction to digital government, 2014).

Wihlborg (2005) categorizes three types of relationships in eGovernment among different actors namely e-democracy (relationships between the represented and the representatives, i.e., citizens and elected politicians), e-services (the relationship between the public administration and citizens), and e-administration for the internal usage of information technology tools within governmental organizations to provide reports and support for decision making (Wihlborg, 2005).

Emergence of eGovernment can be seen as a result of the implementation of NPM (New Public Management) reforms implemented in the late 1980s (Bernhard, 2013). NPM is described “as
an umbrella term of management ideas from the business sector implemented in a public sector context” (Persson and Goldkuhl, 2010). The reform focused on improving government performance by subjecting it to market competition i.e. competition between producers of public services leading to efficient public services, cost effectiveness and customer orientation of government organizations. The post-NPM era is categorized by emergence of a new school of thought on the work of governing and a new role for citizens as partners rather than customers or consumers of public services (Thomas, 2013).

Citizen participation] is the redistribution of power that enables the have-not citizens, presently excluded from the political and economic processes, to be deliberately included in the future. It is the strategy by which the have-nots join in determining how information is shared, goals and policies are set, tax resources are allocated, programs are operated, and benefits like contracts and patronage are parceled out. In short, it is how they can induce significant social reform which enables them to share in the benefits of the affluent society. (Arnstein, 1969)

It has been argued in the literature that the regulation and implementation of policies have moved away from the government and into other spheres of the society. Government operations have become connected in complex ways not just with each other but with activities in surrounding society. The shift is recognized in the literature as "government to governance" (Bernhard, 2013). Montin (2007, as cited in Bernhard, 2013) believes that an explanation for this shift is that the state does not have enough resources or the expertise to fulfill their goals on their own. The government cannot serve as the sole provider of public services, instead the fulfillment of citizens' needs are pursued through formation of networks of private and non-profit organisations, members of the public and governments (Thomas, 2013). An example here is censorship of hate speech on Facebook (Eidelman, 2018). This according to Thomas (2013) has re-introduced the concept of "co-production" in which the public is viewed by the government as partners, who are actively involved with the government in tackling social problems rather than as passive consumers of public services (Linders, 2012) and public services are viewed as a joint product of the activities of both citizens and government officials (Brudney & England, 1983). For example, the effectiveness of regulations like speed limits depend on the cooperation of the regulated, or effectiveness of education services with the cooperation of parents in monitoring their child's progress.

The idea of Co-production has also become prominent in the government due to its shift towards service orientation. In the service centered view the focus shifts from "make and sell" to "sense and respond". It emphasizes on a continuous process perspective in which creation of value is considered in terms of self-reinforcing value cycles rather than linear value chains. Outcomes are treated not as ends but as something to learn from. Offering mass customization through collaboration with and learning from customers on a continuous basis (Vargo & Lusch, 2004). Gronroos (2000) states that "The value for customers is created throughout the relationship by the customer, partly in interactions between the customer and the service provider". The concept of transaction becomes subordinated to the concept of relationship. The goal Vargo & Lusch (2004) state should not be communication with the customer but developing on-going communication processes or dialogues. Thus, the interaction between the customer and service provider can be considered co-production and in the context of the public sector the citizen-government interaction becomes an essential part of the process of development of public services and policies.
Two kinds of communications between citizens and government organizations can be distinguished from each other namely those that are well structured and formal like registration of people, property and credentials or issuing related certificates. And communication that is unsolicited and ad hoc. Latter may involve requests for more information about services or government programs, inquiries about the status of their cases, complaints about a delay, and appeals against decisions they consider unfair. These unsolicited communications generated by the citizens addressed to the government can be used by government organizations to better understand citizens' needs and preferences and to improve the services and policies (Sneiders et al., 2018). Little et al., (1971) defines citizen feedback as information from citizens directed to societal institutions, particularly government, to improve their functioning. Citizen feedback can further be categorized into service feedback, which includes inquiries, requests, complaints, and involvement feedback, which includes opinions, suggestions, and volunteering. The paper argues that citizens' contributions to government policy-making do not necessarily have to be well-articulated opinions or suggestions provided in venues for deliberation. A personal complaint or an inquiry can also help bring about change in government policy.

Increasing number of people have access to internet now, and therefore government organizations have turned to online consultations for collecting input from citizens. Social media has become a central component of eGovernment in a very short period of time (Linders, 2012). Government organizations have employed advanced technologies for opinion mining, sentiment analysis and crowdsourcing or citizen sourcing in social media (Sneiders et al., 2018). But the employment of such technologies has not been seen for traditional platforms of communication like telephone, email etc. The use of AI to produce actionable insights from customer feedback is a new front (Haije, 2018), little is known on these developments in the public sector.

1.1 Problem

There is a significant amount of literature that suggests that citizen's communications with government organizations are embedded with feedback that can be used to make improvements in policymaking and public services (Sneiders, et al., 2019; Dunleavy, et al., 2005; Gauri, 2013; Linders, 2012; Nam, 2011). There is still a lack of published results of such bottom-up policy making (Sneiders, et al., 2019). Additionally, there is literature available that suggests governments use of social media for collecting citizen feedback (Ishida, et al., 2022; Nica, et al., 2014; Balla & Liao, 2013; Magro, 2012). Literature suggests that opinion mining in social media is not regarded as a successor of opinion mining in citizens' direct communication to public organizations. Opinion mining in the direct communication has never really existed. Direct communication can here be described as a the ad hoc citizen initiated communication directed towards public organizations through various channels like telephone or email. Although citizens' direct communication has the potential to be used as input to knowledge mining in order to improve public services (Sneiders et al., 2018). This suggests that channels that facilitate direct communication can act as instruments for influencing policies and public service development. There is a lack of research of how feedback is collected by governments and what kind of ICT tools they use or would potentially use (Sneiders et al., 2018). It is of general interest as it may improve the effectiveness and efficiency of government services.
1.2 Research Question

In order to address the research problem, this study looks to respond to the following two related research questions

3. How do public organizations gather and utilize the wealth of information about citizens' needs available in the direct communication from citizens to public organizations?
   a. Is the content of the direction communication between citizens and public organizations actionable?
   b. And is the volume of the communication sufficient to make it actionable?
4. What kind of ICT tool support the public organizations would like to have in order to better utilize the aforementioned information? The sub questions are important for both the research questions as they motivate the relevance of direct communication as an important input to public service and policy development.

1.3 Delimitations

Out of 26 organizations contacted 6 organizations agreed to participate. This makes the generalization of the study a limitation. Additionally, the language used for the interviews Swedish which the respondents were comfortable in answering in, and this also allowed for me to understand the verbatim used within this area, which helped in developing the questions for future interviews. But, due to this, very little was asked in the way of probing questions. And so, some areas where things could have been clarified with further questioning did not occur due to the limitation of the researcher. Also prior knowledge of terms like eGovernance among the interviewees is also a limitation.

2. Extended Background

Coproduction

Coproduction can be defined as “… the mix of activities that both public service agents and citizens contribute to the provision of public services. The former are involved as professionals, or ‘regular producers’, while ‘citizen production’ is based on voluntary efforts by individuals and groups to enhance the quality and/or quantity of the services they use” (Brandsen, Verschuere, & Pestoff, Co-production: The State of the Art in Research and the Future Agenda, 2012).

Service dominant logic introduced by Vargo and Lusch (2004) argues that “Service is the fundamental basis of exchange”, that it is service (process), not goods (thing), that the actors exchange to be better off. Whereas “a thing can simply be provided to a recipient, a process implies that the recipient will be involved, necessitating coproduction” (Thomas, 2013). The separation of producer and consumer is especially blurred in the consumption and production of public services. Citizens increase the amount or quality of public services they consume by directly contributing to their production. Public safety is improved when citizens install extra locks, add outdoor lighting, train in self-defense, join neighbors to patrol their neighborhoods, provide police with details of criminal incidents. Fire protection services are improved when citizens clear away flammable materials, install home fire alarms, inform fire-fighting...
departments when they witness or suspect a fire breakout. Education services are improved when parents monitor their children’s progress, when students pay attention in the classrooms (Kiser & Percy, 1980). Recycling services are improved when citizens assist in sorting the recyclables. Effectiveness of regulations like speed limits, stop signs or anti-littering laws depend on the cooperation of the regulated. Information campaigns like anti-smoking campaigns or campaigns to reduce intake of high calorie foods requires partnering with the public (Thomas, 2013). In such arrangements, the public is viewed by the government as partners, who are actively involved with the government in tackling social problems rather than as passive consumers of public services (Linders, 2012) and public services are viewed as a joint product of the activities of both citizens and government officials (Brudney & England, 1983).

Today citizen coproduction has become more relevant and viable with the availability of new technologies. The advent of internet has augmented the ability of governments to effectively coordinate citizen actions and the ability of citizens to self-organize, enabling coproduction on an unprecedented scale (Linders, 2012). Whether evaluation should be considered a part of the production of a service or not is a matter that is debated in the literature. Service feedback specially complaints and appeals are handled by public agencies through established redress systems, which are necessitated by the need to protect citizens civil rights, to protect the citizens from ill-treatment by the government agencies. Gauri (2013) defines redress procedures as ex post reviews of service delivery transactions with particular end users. Transactions here refer to both provision and omission of a service, so that if a service was denied to a citizen a complaint or an appeal can be submitted through redress procedures. These procedures he argues can be seen as a kind of fire alarm monitoring in which the agents are monitored by the public for the principal. The agents here being administrators and public managers. The incentive for the citizens to participate would be some form of compensation in response to their complaint or appeal. The idea of citizen monitoring as coproduction is among relatively new forms of citizen engagement in the public sector (Liu, 2019). And its implementations can be seen in software platforms such as SeeClickFix and FixMyStreet (Liu, 2019). Where a citizen filing a customer-like complaint about a pothole can expand into partnership and coproduction in which the citizen is asked for more details like location, size and hazard that it poses (Thomas, 2013). These needs to handle customer inquiries have come out of the customer orientation resulting from reforms influenced by NPM. 311 hotlines were established to deal with non-emergency issues, mostly handled by the same teams who took 911 emergency calls, giving 311 calls a second priority. These have since moved to online interfaces like Citizens connect bringing in participation from new constituencies (Thomas, 2013). The customer like complaints are now considered a more direct and an active part of the service production process.

Linders (2012) describe post NPM era as a re-emergence of citizen coproduction, whereas in the past citizen coproduction was constrained by the limited ability of the government to effectively co-ordinate citizen actions and the difficulty of ordinary citizens to self-organize, internet has made it more relevant and viable today. The author provides categories of citizen coproduction to understand its implementations today, and they are: 1) Citizen sourcing (Citizen to Government) 2) Government as a platform (Government to Citizen) 3) Do it Yourself Government (Citizen to Citizen). Furthermore, these categories are placed in a matrix with stages of service delivery i.e. design, day to day execution, monitoring of public services. In Citizen sourcing, the citizens transfer information to the government, helping improve its situational awareness. In the evaluation and monitoring stages citizen sourcing can take the form of citizen reporting. Implementations of this involve collaboration between community
members and law enforcement, non-emergency issue tracking systems tied to 311 government information services, collaboration between government first responders and affected citizens like CrisisCommons, citizens informing the government through SMS about smoke-belching vehicles, collaboration to uncover tax cheating vendors etc.

**CRM (Customer/Citizen relationship management)**

OECD defines eGovernment as “The use of ICTs, and particularly the Internet, as a tool to achieve better government” (Torres, Pina, & Acerete, 2005).

High trust among people in government corresponds with willingness to accept political outcomes, belief in the integrity of political, administrative and legal processes, while declining trust corresponds with rejection of government authority, and declining political participation. By adopting ICT, government can encourage citizen involvement in politics and modernise its public service delivery. It can increase society’s overall trust in government by increasing both process based and institutional based trust. It can further the view among people that it is more accessible, participatory, responsible, transparent, responsive, efficient, and effective than before (Veit & Huntgeburth, Introduction to digital government, 2014).

Within eGovernment, there are two major paradigms namely the managerial approach and the participatory approach. Both approaches coexist and complement each other. The participatory approach aims to utilize the opportunities offered by the internet to improve the dialogue between representatives and the represented so that citizens view the political processes as more participatory, responsible and transparent. On the other hand, the managerial approach is focused on provision of public services online, using concepts such as life events and one window to provide integrated services while hiding complexity of administrative responsibilities (Veit & Huntgeburth, Introduction to digital government, 2014).

![Fig 2. Layne and Lee’s Model of eGovernment (Layne & Lee, 2001)](image-url)
The customer like request or complaint is a type of citizen government interaction which constitutes the majority portion of the communication between citizens and the government compared to any other involvement (Thomas, 2013). Centralised call centres have been adopted nationally and locally in many countries to handle citizen inquiries regarding government services. Citizens in Sri Lanka for their information needs regarding government services are likely to call 1919 to contact a government information centre (Sneiders, Gunawardena, Ngogo, Darayathna, & Byungura, 2019). In the US a city wide 311 telephone line has been adopted by most cities (Thomas, 2013). In Sweden municipal contact centres are set up as one stop shops for citizens (Bernhard, Local e-Government in Sweden - Municipal contact Centre Implementation with Focus on Public Administrators and Citizens, 2014). Call centres are also paired with websites where citizens can get their questions answered in a self-service environment. Newer 311 systems include mobile apps for example citizen connect in Boston which allow citizens to choose from a pre-set list of problems and submit complaints and get information (Thomas, 2013).

These city-wide arrangements in addition to being a convenient central contact point for citizens also act as citizen feedback mechanisms, increasing the listening ability of public officials to understand the citizens’ needs (Yin, 1976). A 311 or other hotline phone number is used to designate a CRM or a customer relationship management system as part of a municipal call centre function. These information systems are generally used to answer citizen non-emergency contacts. CRM is one of the technologies adopted from the private sector as part of the NPM reform. It has helped private organizations in understanding and serving their customers better by offering them a consistent customer service through a wide range of channels. In the public sector it is increasingly being used in local governments to enable consistent, efficient and effective interactions with citizens (King & Cotterill, Transformational government? the role of information technology in delivering citizen centric local public services, 2007). This technology in context of public sector called citizen relationship management is said to be an e-government solution aimed at making the government more citizen centric (Schellong).

CRM as a process

CRM is an ongoing process that involves the development and leveraging of market intelligence for the purpose of building and maintaining a profit maximizing portfolio of customer relationships (Zablah, Bellenger, & Johnston, 2004).
There are different perspectives on CRM in literature. The definition above takes the perspective of CRM as a macro level process and posits its two major subprocesses namely knowledge management and interaction management. Knowledge is defined as “a justified belief that increases an entity’s capacity for effective action”. Knowledge management in that vein refers to an organizational process which deals with creation, storage, retrieval and application of knowledge. This subprocess can further be divided into microprocesses 1) data collection (recording details about a particular interaction) 2) intelligence generation (convert data into actionable intelligence) 3) intelligence dissemination. The second major subprocess posited by Zablah et al. (2004) is interaction management, here the interaction can be seen as any exchange of values between two active parties able to exert influence on one another. The exchange could be an exchange of core benefits i.e., goods/services for money, information exchange or social exchange. Here the intelligence acquired in the previous step is utilized to increase productivity of interactions between buyers and sellers. It is emphasized that the interactions between provider and consumer occur in the context of all preceding interactions, so all interactions need to be managed to build and develop a relationship. During this stage the CRM literature also suggests key dimensions of interaction quality namely interaction consistency, relevancy and appropriateness. For example, during the data collection details of an interaction may be recorded, and in the subsequent steps actionable insight is generated and disseminated. This intelligence can be utilized to maintain consistency of the interactions i.e. the interaction varies and builds on the preceding interactions regardless of how (phone or email) or with whom (contact employee or service representative) the interaction occurred (Zablah, Bellenger, & Johnston, 2004).

CRM is seen to hark back to the days before mass consumerism and marketing tactics where a vendor had personalized knowledge about the consumer and was able to build and strengthen relationships with consumers using this knowledge and forecasting future supply and demand. Janowitz and Delany in distinguishing between substantive knowledge (e.g. clients, face to face contacts) and functional knowledge (e.g. strategy, communication, management) of public employees argue that the functional knowledge of a public employee is inversely related to the administrative level of the public employee in the agency, in other words, first line supervisors and rank and file members have a personalized knowledge about their clients or citizens, the clerks who meet the public, those on the administrative firing line, have the clearest image of those to be served (Janowitz & Delany, 1957). It is suggested that a CRM system can finally
fill the gap in substantive knowledge of lower-level employees and functional knowledge in upper-level administrators, avoid isolation and give clear information (Schellong).

Fig 4. CRM maturity model (King, Citizens as customers: exploring the future of CRM in UK local government, 2007)

According to King (2007) most of the local governments have focused on using CRM to enable call centers, and some advanced authorities are planning to use it to understand their citizens better. But majority of the use of CRM have been on “fast telephone response” and there is no evidence to show that knowledge management or customer evaluation processes suggested by Zablah et al. (2004) for customer insight were carried out (King, Citizens as customers: exploring the future of CRM in UK local government, 2007). King further suggests a CRM strategy framework 1) information 2) transaction 3) insight and 4) coproduction. In the coproduction phase he suggests that the insight generated is provided to the citizen him or herself, this he explains is especially important for public services that aim to transform the citizen like education, health or social services (King, Citizens as customers: exploring the future of CRM in UK local government, 2007).

Communication channels

CRM is commonly discussed within the eGovernment literature in the context of channel choice (Reddick, 2010). It has been argued that citizens require multiple service channels to access government information and services. Reddick (2010) surveyed chief administrative officers of city governments in the US to collect information about citizen’s choice of contact channel and according to 55% of CAOs citizens’ most preferred channel of choice was phone and according to 38.3% citizens preferred a combination of channels like phone, website, email and over the counter whereas only 3% of CAOs thought the citizens preferred contact channel were websites or email. Citizens have different preferences, and their channel of choice may depend on habit (Pieterson, 2009), additionally newer electronic channels will take time to be adopted and generally used by the public. ODPM identified channel uptake by citizens as a major challenge in achieving 100% electronic delivery of public services. Phone is the most common channel of choice for citizens to contact the government, government websites are most often only used by citizens to get basic information (Reddick, 2010).
Singh and Sahu (2008) argue internet-based applications suffer from limitations like difficulty in searching and locating the right information, low access to personal computers in various segments of population, cost of maintenance of public information kiosks, low internet access in various segments of population. Some non-internet-based solutions proposed by the authors are mobile government, interactive voice response systems (IVRS), public information kiosks and call centers. In Sweden the digital divide affects 10% of the population which includes, people born outside of Europe, elderly and people in low-income households. (Hedman, 2020). The importance of common technologies in CRM adoption is emphasized by Reddick (2010). Dunleavy et al. (2005) states that alternative means should not be a substitute for the traditional. Internet based channel use remains a small minority compared to traditional channels which the citizens use to communicate their grievances or file complaints. Lack of alignment is a challenge discussed in the literature. This occurs when a citizen requests for an information using an internet-based channel and then uses traditional channels for subsequent contacts, and the context of interaction is lost, CRM allows to keep a single view on the customer and offer a consistent customer experience across channels (Schellong).

Interaction analytics

According to Shim et al. (2016) call analytics technologies have been adopted in the private sector specifically in call centers. This technology can analyze customer interaction data which provide insight into customer behavior, emotion and even market trends. It is expected to reduce customer complaints and improve customer service. Applications in the industry discussed in the paper include speech to text transcriptions, emotion detection, analyzing why the customer called, what the complaint was, other applications include performing voice command functions replacing button type automatic response systems, customer verification by matching the customers voice with a database of audio recordings or customer authentication with recitation of passphrase. Additionally, as the call centers have progressed towards contact centers the speech analytics according to the authors have also progressed towards interaction analytics now including other channels such as text and social media, including all unstructured data flowing into call centers and insights generated for managers (Shim, Koh, Fister, & Seo, 2016).

Summary

According to Vargo et al. (2004) service production is a continuous process where the customer is always involved in the production of value. The value creation can be seen as a self-reinforcing value cycle rather than a linear value chain. Where the outcome is not something to be maximized but rather to be learned from as the organization learns to serve their customers better and improve its performance. Services are produced in a continuous process interactively with the customer, always evolving and being designed and customized to meet the customers unique and changing needs. Therefore, mobilizing the customer into coproducing is key to creating value. In that same vein, citizen initiated unsolicited communications regarding public services directed towards government organizations can be considered a part of the government service production process and they are an essential source for sensing citizens' changing needs and responding to them by making improvements in public services. Sneiders et al., (2018) argues that communications of citizens to public organizations is embedded with citizen feedback and that it is actionable and useable in developing and improving public policies and services. Gauri (2013) argues that citizen initiated unsolicited communications especially complaints can supplement other top-down accountability systems through a crowd-sourced
accountability input. Little et al., (1971) argues that citizens' contributions to government policy-making do not necessarily have to be well-articulated opinions or suggestions provided in venues for deliberation. A personal complaint or an inquiry can also help bring about change in government policy. The customer like request or complaint is a citizen government interaction which constitutes the majority portion of the communication between citizens and the government compared to any other involvement (Thomas, 2013). Despite this there is a lack of research in citizen-government co-production of public policies and services through the use of this resource.

CRM is commonly discussed within the eGovernment literature in the context of channel choice (Reddick, 2010). Literature suggests that citizens prefer multiple service channels for access to government information and services. Furthermore, the most preferred channels remain traditional channels like phone, or a combination of phone, email, website and over the counter arrangements. It is suggested by Dunleavy et al. (2005) that alternative channels should not be considered substitutes for traditional ones. Additionally, digital divide affects approximately 10% of the population in Sweden (Hedman, 2020). Other non-internet-based solutions like Interactive voice response systems (IVRS) and mobile government among others, can utilize traditional and widely available channels to be used in more efficient and productive ways (Singh & Sahu, 2008).

According to Schellong (u.d) CRM can be divided into three parts, collaborative CRM, which helps deals with channel management i.e. aligning the different channels (for e.g. face to face at an outlet, call center, internet or mobile phones) so that the customer's interactions can be viewed in their context and a consistent service is provided. Operative CRM which helps deal with connecting the front office to the back-office processes. And Analytical CRM which deals with interpreting customer data through various analytical techniques such as data mining or OLAP (Online analytical processing). CRM plays a significant role if government organizations are to collect citizen feedback from citizens direct communications and use it for policy making and designing public services. But as King’s (2007) study shows, the focus of CRM in the public sector has been on managing the customer interactions for faster telephone response times rather than on generating citizen insight. CRM subprocess knowledge management that Zablah et al. (2004) discusses were not observed in city governments researched. Furthermore, as reported by King (2007) CRM national program studied twelve local authorities in UK and found them to be on different stages of CRM maturity but no evidence was found on the use of advanced business intelligence of stage 5 as in Fig 3. These findings imply that the interactions of citizens with government agencies have not been harnessed to their fullest potential leading to improved public services but rather they have mainly been used to improve the performance of contact points.

Finally, multiple communication channels between the citizens and the government produce a variety of data. Data is available to the government authorities in various forms including unstructured data like voice recordings, call center representative’s notes, emails etc. and all this can be analyzed using interaction analytics technologies available today. Yet there is very little research that explores these developments even in developed countries and in Sweden specifically.
3. Methodology

3.1 Chosen research strategy

The chosen method for performing this research is the survey. Survey means to look upon or oversee something. When something is surveyed it is viewed comprehensively. Survey research is defined as "the collection of information from a sample of individuals through their responses to questions". Surveys have three key characteristics: they bring with them the idea of empirical research, to solicit purposefully the required information from relevant people. It provides a picture of how things are at a specific point in time rather than development of things over a period. And that it provides a wide and inclusive coverage. In social sciences, surveys are frequently used for gathering basic data about large groups of people including their activities, beliefs and attitudes (Denscombe, 2021; Johannesson & Perjons, 2014).

Further advantages of selecting survey research are that is well suited for studies which have individual people as unit of analysis and in measuring unobservable data like their preferences, traits, attitudes, beliefs, behaviors and factual information (Bhattacherjee, 2012). However there are several disadvantages with survey including respondent bias resulting from inadequate knowledge or a biased opinion about the phenomenon of interest in informants, other biases that surveys suffer from are non-response bias, sampling bias, social desirability bias and recall bias (Bhattacherjee, 2012). As it is vital in our study to collect information about the 'current state of affairs' and 'bringing things up to date' (Denscombe, 2021), the survey approach is an impeccable fit and is therefore chosen.

Surveys are an efficient and economical way for collecting data in terms of costs and time (Denscombe, 2007). It supports various methods to recruit participants, collect data, and utilize various methods of instrumentation. It supports qualitative studies with the use of interviews or questionnaires with open-ended questions. It also supports the use of mixed methods i.e. using both questionnaires & interviews for e.g. the study may begin with questionnaires and use telephone interviews during follow up. Surveys also support various sampling strategies including exploratory sampling which will be used for this study. It assists in the entire research process ranging from, who to include in the study, when to initiate and follow up or how to reduce various errors (Ponto, 2015).

3.2 Alternative research strategy

An alternative method that could have been used for our research is the case study strategy. In a case study approach a particular instance or a small group of instances of a phenomenon are considered over a period with the aim of collecting in depth accounts of events, relationships, experiences, and processes occurring in that instance. The insights are then generalized for other similar cases (Denscombe, 2021). The advantages of using case studies are that they can be used for theory building or theory testing, they help capture contextual data that can be used to produce authentic and rich interpretations of the phenomenon (Bhattacherjee, 2012). The disadvantages with case studies are that the results depend on the skills of the researcher, to see the concepts and patterns in the case data. The results are sometimes criticized to be subjective and may also have problems in generalizing for other cases (Bhattacherjee, 2012). The reason for not choosing this method for our research is the limited time and experience. With more time and experience a case study would have been a great fit for this research, as it would
provide a comprehensive view into the workings of processes, and IT systems used from the gathering of information from citizen communication to public service/policy development.

3.3 Chosen Data collection method

The data collection technique used for the research is interview. The interviews for the study will be semi structured. The semi structured interviews differ from structured and non-structured interviews based on flexibility. The semi structured interviews retain a pre-determined set of topics to be discussed but leaves the order of discussing the topics to the occasion of the interview itself. The focus is on the interviewee to elaborate on the issues they care about, they are more flexible than questionnaires and have a high response rate (Denscombe, 2021). They also provide an opportunity for the interviewer to probe and ask follow-up questions to clarify any issues raised. Disadvantages with interviews are that they are considered time consuming and resource intensive (Bhattacherjee, 2012). Interviews additionally also suffer from the interviewer effect (Denscombe, 2021).

We choose to perform interviews to gather an in-depth understanding and a detailed insight of the public organization’s awareness and use of citizen feedback present in citizen contacts. And they will be semi-structured to allow the interviewees to develop on their thoughts and ideas and to allow the interviewers to emphasize on certain points of interest. An open-ended question guide will be used for the study (Please see table 1 for interview questions). The data will be collected by in-depth interviews with the study participants. The interview guide is developed through the researcher’s pre-understanding on the topic and guided by the study purpose. Main topics that will be covered in the interviews will be i) channels used for citizen contacts ii) extent of data collection on citizen contacts and iii) ICT tools in use or in need of. The interviews will be conducted in Sweden from September to October 2022. The interviews will be carried out both in English and Swedish as per convenience. Interviews will be carried out face-to-face/online/telephone depending on the respondents convenience. The time duration of interviews will be approximately one hour. The interviews will be audiotaped with the consent of the respondents and notes will be used to capture additional information (Please see Appendix A for interview protocol).

3.4 Alternative data collection method

Alternative data collection methods for our research could have been questionnaires and other kinds of interviews. The questionnaires method uses a set of questions, they can be open or closed questions, which are presented to all participants in the study for consistency. The information so sought needs to be straightforward and concise resulting in standardized data from identical questions that can be used for comparisons (Denscombe, 2021). The advantage with questionnaires is that they can be self-administered and data can be collected from a large sample (Bhattacherjee, 2012). On the other hand, they suffer from low response rates and researchers own ideas greatly influences the answers the informants give because of the structure imposed by the questionnaire itself (Denscombe, 2021). Although, the reason questionnaires were not chosen as the data collection method for this study is because this is a qualitative study. The questionnaires are more common in quantitative studies. Questionnaires will also not provide the participants flexibility in reflecting on the questions. Structured interviews on the other hand are like questionnaires but administered face to face with a
respondent and were therefore not considered suitable for this study. Unstructured interviews are time consuming and require special skills from the interviewer. Discussions are non-directive and therefore may move off course (Denscombe, 2021). For the purpose of answering the research questions of this study it is important that the interviewees have a pre-determined set of topics that they express their views on, so that the results can be compared with each other.

3.5 Chosen data analysis method

The two kinds of research are quantitative and qualitative research, differing in whether the data collected is numeric or non-numeric (Bhattacherjee, 2012). Since the study aims to collect data in the form of text resulting from semi-structured interviews, this is a qualitative study. The data analysis technique selected for this study is thematic analysis, one of the most common qualitative data analysis approaches. Thematic analysis follows the following steps: (1) data preparation (2) transcription (3) familiarization with the data (4) initial coding of the data (5) development of the codes (6) identifying themes (7) drawing conclusions from the analysis. Thematic analysis helps in simplifying and reducing a large amount of data set through coding and identifying broader themes to provide the researcher with the insights needed to answer the research question (Denscombe, 2021).

Audiotaped interviews will be transcribed and coded in the same language interviews were carried out, to stay near to the interviews while analysing the data. The collected data was analysed using thematic analyses approach (Denscombe, 2021). The interview transcription and researchers own filed notes will be analysed manually by re-reading the text multiple times to be more familiar with the data. The codes will be extracted from the text in their original language line by line and sorted to groups by putting open codes with similar ideas together. Afterwards codes will be translated to English by the author. Finally, the codes will be organised into themes, categories and subcategories with higher level of abstraction.

3.6 Alternative data analysis methods

Alternative data analysis method for this study is grounded theory. This method aims at identifying, developing and relating concepts. Concepts represent crucial aspects of categories and their relationships. The concepts are used for generation of theories. Theories explain why things happen as they do (Denscombe, 2021). This method allows for the use of all data collection techniques like interviews, observation and documents. Nonetheless, it is time-consuming and coding can be difficult. Additionally, no theories are going to be developed in this study. Therefore, the method is not appropriate for this study.

3.7 Criteria for selecting respondents

The sampling for this study will be done through snowball purposive sampling. This is a type of non-probability sampling which involves researcher’s discretion in the selection of the sample, the sample is not aimed to be a representative sample i.e. an accurate cross section of the research population but rather an exploratory sample aimed to provide the researcher an opportunity to probe unexplored topics and generate new insights and information. Snowball sampling will be used to create the exploratory sample. This type of technique relies on generating insights through the selection of a small number of respondents chosen for their relevance and knowledge. Furthermore, in this type of sampling the initial respondents are
asked to nominate others. This is suitable for studies where there is no sampling frame (Denscombe, 2021). This will allow one expert in a public organization to refer to another based on their own knowledge and experience. The first few respondents will be contacted directly, and they will be selected based on their suitability for providing relevant information to answer our research questions.

3.8 Ethical considerations

As formulated by Denscombe (2007) and Bhattacherjee (2012), in accordance with research ethics the interviews will be agreed to beforehand, the subjects will be made aware that participation in the study is voluntary and that they have the freedom and right to withdraw at any time. Secret recording discussions or use of casual conversations will not be performed for the interviews as a base for collecting the research data. The participants will be made aware of the purpose of the study and that the data would be used for research purposes.

Furthermore, the interviews will be recorded electronically with the consent from the interviewees. Confidentiality is another issue that is very common with this type of research. Therefore, the interviewees and their respective municipalities will be guaranteed confidentiality regarding privacy issues.

Additionally, no personal information will be collected at all that could identify the participants and the participants will also be apprised of the benefits that such research would bring to them. The interviewees will be made aware and assured that no harm would befall them in case of participating or not participating in this study. Lastly, they will be assured that the data collected from the interviews is not tampered with in any way and is fully presented as stated by the interviewees. No potential participant will be included or excluded because of unfair reasons. Participants will be provided adequate information about the research and researcher including contact details, about what commitment is required from their side and that the research is voluntary.

A written consent will be also obtained as provided in the appendix B. The information will not be in any way dishonestly collected, the participants will be provided information and their questions will be answered regarding the research. No other researcher’s work will be used in this paper without acknowledgement. The purpose of this research is based on scientific literature and has scientific importance and has importance for the research subjects.

4. Research Process

4.1 Interview Questions

<table>
<thead>
<tr>
<th>Questions</th>
<th>Motivations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. What are your current and previous duties in this organization?</td>
<td>Understand what channels citizens use to contact the organization.</td>
</tr>
<tr>
<td>2. Which channels can citizens (customers) use to contact your organization? For example, e-mail, Facebook, Twitter, paper letters, telephone calls, service offices or</td>
<td></td>
</tr>
</tbody>
</table>


personal meetings booked with officials. Enter all the channels you use. | And if there is a front office that takes citizen contacts.

3. How many requests/matters/per month or year do you receive from citizens (customers), both private or business? Enter separately (if possible). | To understand what information is collected from citizen contacts.

4. Can you give examples of frequent, recurring requests/cases/issues from citizens and partners? "Dense" means that the things recognize the problem. If this question seems too sensitive, just state the type of requests that are common. | To understand what information is collected from citizen contacts.

5. How many are frequent, recurring requests/cases from citizens (private) and partners (businesses) (all frequent requests together)? Please indicate the number or percentage of the total flow of requests that are frequent (eg 25%, 30%) (Y) | To understand what information is collected from citizen contacts.

6. What happens to the requests/matters after they are received? Do you analyze direct communications from citizens, as discussed above, to identify citizen needs, problems? If you analyze, to what extent (none, little, reasonable amount, quite a lot) are these identified needs, problems, questions used to develop or improve your organization's public services, policies, internal processes? | To find out if and how direct communication is analyzed.

7. If you analyze, do you use any type of IT support/tools? In that case which ones? Or any type of tool that you would like? | To find out what ICT tools are used in the process, or their need.

8. What alternative sources of information, besides direct communication from citizens, do you use to identify citizen needs, problems, issues (eg, government directives, hot topics in the media, opinions of public officials, etc.)? | To find out other sources of information that are used in public organizations to understand citizens’ needs.

9. To what extent (none, little, reasonable amount, quite a lot) do these alternative sources of information provide input for developing or improving your organization's public services, policies, internal processes? | To find out other sources of information that are used in public organizations to understand citizens’ needs.

Table 1 Interview questions and their motivations
4.2 Respondents

The data collection was done through interviews. A total of 26 public organizations were contacted via email and telephone. And a total of 6 agreed to participate. Of these 6 public organizations 2 were administrations under a municipality, the remaining were national public organizations.

As explained in section 3.7, the selection of respondents was through non-probability sampling to produce an exploratory sample rather than a representative cross section of the population. This was used because the respondents were selected based on their expertise. The respondents were individuals working within customer relations departments of public organizations in Sweden and working as managers of day-to-day operations of their units. The respondents were not only involved in the registration, collection, analysis, and resolution of customer inquiries but also in improvement of processes and services.

**Respondent 1**

Respondent 1 works at a national organization in Sweden which deals with assisting people getting into the labor market. The respondent has worked for 20 years in this organization, of these the last 10 have been in the customer relations department. Here the respondent in a team of 14 receive and resolve customer/ citizen complaints.

**Respondent 2**

Respondent 2 works at an administration under a large municipality in the west of Sweden. This administration is responsible for general and strategic planning of the city. Also detailed planning about what special areas need to be developed and what they would contain. The organization also is responsible for building permits. They also handle map information and surveying. The respondent currently works as a manager at the organization’s customer department and has previously worked as manager in administrative capacities.

**Respondent 3**

Respondent 3 works as a registrar in an administration under a large municipality in the west of Sweden. The administration is responsible for supporting families and individuals in leading a safe and independent lives. The organization works with security issues, crisis support and public health among other things. The respondent in the capacity of a registrar deals with incoming and outgoing information. The respondent has also worked in other capacities in the municipality for more than six years.

**Respondent 4**

Respondent 4 works at a national organization in Sweden which administers and pays out public pensions. The respondent handles telephone calls and emails from citizens and works in administrative capacities where citizen inquiries/ complaints/ questions/ points of view are received and registered.

**Respondent 5**

Respondent 5 works at a national organization in Sweden which works with the ownership of real estate, it makes geodata available to the society and is also responsible for digitalization.
of community building process. The respondent works in the capacity of operations coordinator and handles scheduling, statistics, analysis and follow up. The respondent also works with a telephony platform in the organization.

Respondent 6

Respondent 6 works at a national organization in Sweden which works with financing of the public sector. The respondent currently works as an operations controller in the customer service department. The respondent has held management positions within tax information both as unit and section manager.

4.3 Pilot interview

The pilot interview was carried out with respondent 1 (See section 4.2). Based on this interview the questions were adjusted for the later interviews. The interview was conducted both in English and Swedish. More specifically, the questions were asked in English and the respondent was free to answer both in Swedish and English. All interviews following the pilot interview were conducted only in Swedish. The terms used by the respondent helped in changing the questions to make them more relatable for the later respondents. Some questions were combined where more appropriate. The respondents also in some questions requested examples which were added. The new question list is presented in Appendix C.

4.4 Data collection process

All respondents who agreed to participate were sent a copy of the questions in advance on email including a brief introduction about the research and its aims. And a time was booked one/two weeks in advance. During the interviews a script was followed where ethical issues were discussed, and consent was acquired prior to recording the interviews. All interviews were one-to-one. This made it easier to match respondent’s availability. It also helped in separating views of one respondent from another which also helped in transcription process. All interviews were taken on telephone calls instead of face to face, online or off. This was mainly for convenience for respondents to participate, it was easier to convince experts to take a short phone call than it was to request for a zoom or personal meeting. Another reason for this was that it was easier to reach relevant people directly from their organization’s service telephone lines. Although interviewees were also reached through emails, using either their available email addresses or message forms on the websites. Because of no direct visual contact, some information was lost but it reduced the interviewer effect (Denscombe, 2021).

The total questions were eleven, and after the pilot interview were reduced to 9. The number of questions were kept low to allow more participation from the respondents. And questions were adjusted with the feedback from the interviews. The terms used were also adjusted over time depending on how things were referred to on a day-to-day basis. Sending the questions in advance helped the respondents to have an idea about the effort that was required and decide if they wished to participate and possibly prepare for the answers. The questions were prepared to collect information on channels the citizens use or are available for them to use, how much they use depending on their inquiries, what their frequent inquiries are and what part of the total inquiries are frequent, if and how they are analyzed and if any IT support tools are used in the process. The respondents gave very detailed answers on all the questions. All interviews were recorded on the computer. The recordings were made so that the answers could be analyzed later.
4.5 Data analysis process

The data collected includes audio recordings, transcriptions and notes taken during interviews. Summary of interviews are presented in Appendix D. The recordings were transcribed manually. The coding was carried out on Microsoft Word, due to time, experience, and access of researcher with more advanced software tools like NVivo (NVivo, u.d.). The transcriptions were coded in a single order, adding codes with each transcription. At the end the codes were collected and analyzed to find potential themes separately. Initially old issues were re-used from table 1 and new themes were added as they appeared. The themes were generated to a large extent, deductively but other themes found in data were also considered. Finally, a draft analysis report was produced describing themes with their supporting evidence.

4.6 Ethical deliberations

Interviewees were requested for consent prior to recording telephone calls, they were aware of the voluntary nature of their participation, and freedom to withdraw or skip questions or request deletion of audio recordings. The respondents were informed of the duration the audio recordings will be kept for use. The purpose of the study was explained to the respondents. Additionally, confidentiality of the data provided was also explained, the respondents are cited anonymously in the paper. The data collected is not tampered with in anyway and is presented only as stated by the interviewees (Denscombe, 2021; Bhattacherjee, 2012).

5. Results

This chapter presents the results acquired from the interviews conducted in six public organizations. The information collected is based on interviews and documents from these organizations (Please see Appendix E for data extracts and codes).

5.1 Thematic analysis

In this section we will present the analysis of the data collected from the interviews using the described thematic analysis of Braun and Clarke (2006). There are in total five themes that the analysis has resulted in. The first two themes 1) Types of inquiries and 2) Frequent inquiries are matched to Q3-5 in Table 1. These themes motivate the use of direct communication as an input for public service/policy development. Theme 3) Contact channels is matched to Q2 in Table 1. This addresses the first part of the research question as to how the public organizations gather information. Theme 4) Presence of system/structure/routine for utilization is matched to Q6 & Q8-9. This addresses the second part of the first research question as to how public organizations utilize the information they have gathered. Theme 5) ICT tool support is matched to question Q7. This addresses the second research question what ICT tools the public organizations use in analysis of information gather from direct communication and which tools they would like to have.

5.1.1 Types of inquiries
The first theme is “Type of inquiries” this theme is related to both the research questions. It relates to the first research question as, for the direct communication to be “utilized” its content needs to be actionable. It relates to the second research question, as to what ICT tools are used and what can be used in utilization of direct communication.

Figure 5 Inquiries are analyzed and problematized into information supply, bad service, bad user interface and data update.

<table>
<thead>
<tr>
<th>Responses</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regular inquiries regarding VAT, tax declaration and late fee, what must paid, how can it be paid, when can it be paid? (Respondent 5)</td>
<td>Information Supply</td>
</tr>
<tr>
<td>Citizens want to know what they amount they will receive as pension after the turn of the year. (Respondent 4)</td>
<td></td>
</tr>
<tr>
<td>Citizen wants to know how long it will take for the agency to make their decision? (Respondent 3)</td>
<td></td>
</tr>
<tr>
<td>We have a compilation of views from January to September. What is broken down into, around 40% of all comments this year are about web and technology issues, but it is about 15% private pension. (Respondent 2)</td>
<td>Bad user interface</td>
</tr>
<tr>
<td>and the customers didn’t really understand what was on the website, which means that they usually contact us instead and we record that so we can see if we can work on it and update the texts... (Respondent 2)</td>
<td></td>
</tr>
<tr>
<td>… sometimes it can clear up misunderstandings, sometimes it can be a case where we need to have a dialogue with the employment agency and the employment agency remotely about how the problems should be</td>
<td>Bad service</td>
</tr>
</tbody>
</table>
resolved. Many who call us have the experience of being mishandled, but if it is perhaps not mishandled, then of course you have to be able to explain to them what it really looks like. (Respondent 1)

| Most common are questions about changes of ownership, how to apply for deed, how to become an owner and other common questions that use many questions are either ordering documents for properties or who owns a property (Respondent 2) | Data update |

| Of course I can't go into details, I can't say what it's about, but in general I can say what I've seen, it's mainly about one's own case, that's probably what I think we get the most from you have opinions about your own case how one's own case has acted and one might have views about one's own case that one has with us, that is what is most recurring. (Respondent 3) | Conflict mgt |

| so for example as I said we receive a lot of complaints about and views regarding our website and then we register the views from the customers and then we pass them on to those who are responsible for the web (Respondent 4) | Complaints |

Table 2 Problem domains from citizen inquiries

**Examples of inquiries:** Regular inquiries regarding VAT, tax declaration and late fee, what must paid, how can it be paid, when can it be paid? Do I have to pay VAT for these products or services? New business owners wanting to know how and when the tax must be paid? Employers want to know what pension contracts they must have for their employees. Citizens want to know what they amount they will receive as pension after the turn of the year. Citizens want to know how change in EU law regarding guaranteed pension will affect them. Citizens want to confirm if we have received their application. Citizens want to know what they are permitted to build on their property. Citizens want to make changes to their property and want to know if they can and if it requires a permit. Citizens want to know if an ongoing construction in the city has the permit for it. Citizens request for public documents regarding construction/plan projects. Citizens want to know if they need a building permit for installing solar panels on the roof. How do I apply for a title deed How do I become an owner of a property? Citizen wants to know how long it will take for the agency to make their decision? Citizen wants to know why is it taking so long for the agency to make the decision? Citizen does not consider the decision made by the agency as just and wants them to reconsider. Citizen considers the decision made by the agency as unfair and wants them to reconsider. Citizen found the contact person at the agency unfriendly.

The list above shows that a large part of inquiries received are related to a request for information. The information requested maybe about personal data, status of the interaction, eligibility for a service, clarification regarding a service, where to seek help or about e-services. These can be problematized as “information supply”. Majority of these inquiries are received via traditional channels e.g. telephone, visit to service centers or emails.

... This is because the agency is large, so there are many contact routes to the employment agency. We have a one-hour phone queue. If you are registered with us, it is also via phone and chat...
These channels are expensive and time consuming as the above response shows. The tax agency in Sweden for example offers extensive information about its services on their website. There is possibility for email responses using web forms, chat which allows for more real time communication and chat bot which can help in navigating and finding relevant information on the website. It is possible to log in to a personalized page using an e-identification to view personalized information like status of an application. E-identifications have wide adoption in Sweden. According to recent statistics over 8 million people used Bank ID in 2021 (BankID in numbers, u.d.)

Despite these efforts, traditional channels remain most used. The situation is the same for most government organizations. This maybe an early phase in adoption process, often times a public official would guide a citizen through the e-service on the phone or at a service center. Citizens also call to confirm if they have understood the information they read on the website correctly. This is due to the fact that the information present online is more general. The chat bot helps partly as it can guide the user to a page with relevant information or a Google search which can find keywords on relevant pages of the agency. But it does not replace the personalized response that a user can get through a public official. A better solution for this is a large language model such as Chat GPT. These offer possibility for more automated personalized responses. Limitations include, using text-based input, at times providing inaccurate, biased and nonsensical responses, in addition these certain privacy considerations will have to be made when dealing with personal data. In addition to this m-government solutions also provide a way to tackle problems like digital divide and provide services like status of an interaction over SMS.

"We receive complaints and deal with them depending on the nature of the issue, sometimes it can be pure information, sometimes it can clear up misunderstandings, sometimes it can be a case where we need to have a dialogue with the employment agency and the employment agency remotely about how the problems should be resolved. Many who call us have the experience of being mishandled, but if it is perhaps not mishandled, then of course you have to be able to explain to them what it really looks like".

Complaints can be a result of dissatisfaction with a decision taken by an authority, neglect in handling of a case (delays), bad experience of using a service (unfriendly) or service not delivering an expected outcome etc. These can be problematized as “bad service”. These inquiries are recorded in a registry “diarium”. It has two main purposes, namely, transparency and performance measurement. Documents are later anonymized and made available for public viewing. This is a legal obligation based on publicity and confidentiality principles (offentlighet och sekretess lagen).

Do you mean me as an individual or do you mean group? Okay, then it's my group that has 14 people. And we get about 6,000 cases a year. It is the case of a complaint and it cannot be compared with the employment agency's case.
I don't know if we have any statistics on that. We have a compilation of views from January to September. What is broken down into, around 40% of all comments this year are about web and technology issues, but it is about 15% private pension. It's just what we have based on what they've commented on.
I can start telling you how we do when it comes in. It can also come in to another person. I can answer based on my role, what I work with. We have a lot of employees so you can have direct contact with residents, comments can come directly to other employees that I don't see, but it goes to the administration mailbox where I monitor and I see, then I put it in the diary.
"and the customers didn't really understand what was on the website, which means that they usually contact us instead and we record that so we can see if we can work on it and update them the texts..."

Some as the above response shows deal with feedback on e-services like content on website for example. Inquiries like these can be problematized as “bad user interface”. Feedback is more actively sought now in the context of e-services. One public official also stated that regular digital meetings are held to collect such feedback. Although as one response shows feedback from citizens’ direct communication is considered on a yearly basis. Improvements in this regard could be the use BI software tools, to provide information in a timely manner to public officials in charge. This could in turn also enforce a singular database of handling citizen inquiry data according to the principle of “single source of truth”. Single source of truth (SSOT) is a philosophy for collecting data from across the enterprise and aggregating it into a central repository (Roddewig, 2023). This will also provide a way to handle data based on citizens rather than cases in terms of “CiRM” or citizen relationship management.

"Most common are questions about changes of ownership, how to apply for deed, how to become an owner and other common questions that use many questions are either ordering documents for properties or who owns a property."

And Data update for change of ownership as mentioned in the above response. There are e-services that allow handling of requests such as in the response. This can be due digital divide, as adoption of e-government services have been shown to increase citizen satisfaction in Sweden.

“…the majority are private individuals, pension trackers or pensioners. But it sometimes happens that you are contacted by employers if they have questions about, for example, what kind of contracts they should have for their employees in occupational pensions."

Case managers are directly contacted by citizens who have active cases there, and this is the case with most other public agencies interviewed. The case managers deal with both personal inquiries but also general inquiries. Most of the inquiries are received from private persons rather than from other organizations. Some inquiries mentioned by the respondents are related to services that they offer for example request for a surveying service, or requesting for public documents and these are not the type of inquiries that are addressed in this paper. Based on above observations, we conclude that the content of direct communication of citizens with public organizations is actionable.

5.1.2 Frequent inquiries

This theme is related to both the research questions. Based on the interviews we analyze the percentage of frequent inquiries which would substantiate the use of direct communication as an input for developing public services and policies.
Our questions are quite, they are not frequent questions but often new questions that come in. It’s rare that it’s like the same questions over and over again. (Respondent 1)

How to apply for deed of title to property and so on, also some questions about land surveying services, the 5 most common account for 40%. Most common is 10%.” (Respondent 6)

Approximately 40% of all comments this year are about web and technology issues, then there is about 15% private pensions (Respondent 4)

As I said, it doesn't have an exact number here either, but roughly if I have to estimate, maybe it's 25% (Respondent 3)

These questions are frequent throughout the year, but mostly during March to May (Respondent 5)

On being asked questions regarding this all except one respondent were able to provide number of inquiries, number of inquiries per channel and share of frequent inquiries.

“Our questions are quite, they are not frequent questions but often new questions that come in. It's rare that it's like the same questions over and over again.”

“We usually do measurements a few times a year to find out which questions to the customer center are most common and then how things are at both about and looking for factories. How to apply for deed of title to property and so on, also some questions about land surveying services, the 5 most common account for 40%. Most common is 10%.”
“approximately 40% of all comments this year are about web and technology issues, then there is about 15% private pensions. It's just what we have based on what they've left comments on.”

“These questions are frequent throughout the year, but mostly during March to May, the declaration questions and a lot of private people who call. We also get questions if someone wants to start a business, what do I do when I have to pay my tax, when do I have to pay, how do I have to pay, but also when it comes to VAT, but VAT questions, it's the same throughout the year, do I have to pay VAT on certain goods or services.”

“As I said, it doesn't have an exact number here either, but roughly if I have to estimate, maybe it's 25%.”

4 of the respondents were able to provide data on frequent inquiries, one did not give a percentage of frequent inquiries but mentioned that inquiries that they receive are mostly frequent, varying only depending on time of the year. And one was not able to provide an exact number.

![Graph](image)

Fig 7. X axis respondents with respondent numbers respectively, y axis percentage of frequent inquiries in total communication flow

**We conclude that the volume of the communication and the share of the frequent inquiries in the communication flow substantiate the use of the issues in the above section as a source to develop and improve public services.**

**5.1.3 Contact channels**
This theme is related to the first research question where it answers how the public organizations interviewed “gather” information from citizens.

![Diagram](image)

**Figure 8** Contact channels used by citizens

<table>
<thead>
<tr>
<th><strong>Responses</strong></th>
<th><strong>Results</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>This is because the agency is large, so there are many contact routes to the employment agency. We have a one-hour phone queue. If you are registered with us, it is also via phone and chat (Respondent 1)</td>
<td>Telephone and Chat.</td>
</tr>
<tr>
<td>The usual is e-mail and telephone, but there is also the possibility to send us letters... (Respondent 4)</td>
<td>Email and Letters</td>
</tr>
<tr>
<td>and we also have Facebook, you can write... (Respondent 3)</td>
<td>Facebook</td>
</tr>
<tr>
<td>...can, even fax works (Respondent 5)</td>
<td>Fax</td>
</tr>
<tr>
<td>Email, letter, phone, Service offices... (Respondent 1)</td>
<td>Service offices</td>
</tr>
<tr>
<td>If you call us at the customer relations unit, we are available by phone 9-12 on weekdays and via web form on the website and via e-mail. (Respondent 1)</td>
<td>Web forms</td>
</tr>
<tr>
<td>We can get opinions, for example, if we have had digital information meetings with pensioners and self-employed people during the pandemic. (Respondent 4)</td>
<td>Feedback after digital conferences</td>
</tr>
</tbody>
</table>
Surveys and interviews are also used when we address certain customer groups. (Respondent 2)

We all use the channel you mentioned. Personal meetings, regular letters, e-mail, telephone (Respondent 2)

Table 4 Contact channels used by citizens

"This is because the agency is large, so there are many contact routes to the employment agency. We have a one-hour phone queue. If you are registered with us, it is also via phone and chat."

"The usual is e-mail and telephone, but there is also the possibility to send us letters."

"If we take an average employee at a customer center, they handle around..."

Based on responses and our observation we conclude that phone and email are the most common used contact channel by citizens. Smartphones provide an easy and cost effective way to communicate with public organizations.

"I would like to say that it is possible to contact us in any way you want, if you want to write to us by email, that is fine, and if you want to write us a regular letter, a paper letter, that is also possible, we have a meeting booked, so of course we can try sure that we can book a meeting and we also have Facebook, you can write to us via Facebook as well and you can also reach us by phone."

Most of the interviewees have responded in a similar way as the above respondent. All government agencies interviewed in addition email and telephone, offer contact channels including Chat, webforms, Facebook, Instagram, Paper letters and Booked meetings. In addition to this, some of the traditional contact channels that are not used that often by citizens include paper letters, fax is still used more than paper letters.

"We also have the option of submitting questions via Facebook, but it is closing soon in just a few weeks. So facebook is gone soon nothing via twitter. You can contact us via paper letter, but there are extremely few who do what you can, even fax works."

"It is possible to contact the employment agency on Facebook, but it is not a contact route in its case."

"Email, letter, phone, Service offices, (Facebook and Twitter not for personal matters)"

Facebook according to most of the respondents like the response from two above, do not consider it a useful contact channel with the citizens. One emphasized that it is not a contact channel that citizens use to contact their government agency if they have active cases there, but it still is available for them to use. Another mentioned that the contact channel will be removed in a few months.
"We have environmental monitoring in our administration, so we receive environmental monitoring at regular intervals. We get them to send it to us so we see what ... in the media, for example, so that we can follow up. because that's where we see what problems or questions our residents have, you can see via environmental monitoring every week ... I could say that you take in what comes via environmental monitoring, you see that an issue is very important, this is written a lot, if it is an important issue for our residents, then of course you work on it. So you take what comes to you."

One respondent mentioned that they have an environmental monitoring system where they receive information weekly about what concerns citizens are discussing on different forms of media. In addition to the customer centers for national government agencies in Sweden "Statens Servicecenter" has been established recently which has opened service centers where citizens can visit and access public services from different national agencies.

5.1.4 Presence of system/structure/routines to utilize citizen communication

This theme relates to the first research question how the public organizations “utilize” the information that they have collected from citizens.

![Figure 9 Codes related to utilization citizens direct communication by Swedish public organizations](image-url)
The interviewees mentioned many ways in which they collect and analyze communication with citizens and use it as a foundation for changes that need to be made. A respondent said that they use a registry where each incoming information in the form of an email, form or call is registered and is assigned a person responsible. Although inquiries received to individual case managers do not end up in this system. These registered inquiries once handled become publicly accessible after being edited according to GDPR.
"...and store these views after we have edited them so that they are in accordance with GDPR so that it does not have any contact information."

Another mentioned that we collect information about citizens inquiries from all individual managers who’ve been in contact with the citizens and then we put together and move the information upwards for making necessary changes in a bottom-up improvement manner. A respondent mentioned that we have a culture and routine of noting down views that citizens share in their telephone calls.

Yes, the usual questions, for example someone wants to double-check if we have received a pension application, we may not follow it in the same way, but we take all opinions and criticisms and praises via both phone and email and Facebook and all contact channels where we register the views and send them to the respective person responsible for each area, so for example as I said we receive a lot of complaints about and views regarding our website and then we register the views from the customers and then we pass them on to those who are responsible for the web and all of those opinions are with them as a basis for each time they have to make updates or changes on the web, and those that are most common become the highest priority opinions and take into consideration for improvements.

Especially with the introduction digital services, one respondent said, nowadays we are more vigilant towards citizen feedback to address issues that come up in services that are in development like web services etc. Availability of services and access to government officials have increased due to the introduction of multiple channels based on citizens expectations. This implies a progress in implementation of CRM.

5.1.5 ICT support and need for improvement.

This theme is related to second research question.

![Figure 10 ICT tools used for analyzing citizens direct communication](image-url)
<table>
<thead>
<tr>
<th>Responses</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Then we also have a system called brilliant, which is a tool for customer feedback where we ask after the end of the call how the experience was. (Respondent 2)</td>
<td>Brilliant</td>
</tr>
<tr>
<td>Yes, we have a customer system called Lime CRM system. We categorize questions in different ways that make… (Respondent 2)</td>
<td>Lime CRM systems</td>
</tr>
<tr>
<td>It is Matomo that is used for web analysis… (Respondent 6)</td>
<td>Matomo</td>
</tr>
<tr>
<td>…I take care of information that comes in and is sent out and then I take care (that it is registered in the diary) so that our general documents are in order. (Respondent 3)</td>
<td>Diary/ Registry</td>
</tr>
<tr>
<td>...we don't have many tools apart from Excel… (Respondent 6)</td>
<td>Excel</td>
</tr>
<tr>
<td>…with categorization of cases in a better and smoother way to have better control of this in the future. (Respondent 5)</td>
<td>Categorization software</td>
</tr>
<tr>
<td>If you want to think about what you could have, you could have a tool directly in the diary, it might have made it easier to have something where you register the documents, so as soon as you register the documents, you can also follow up so that the tool goes into the content and sees what it is about and produce a report so the quality/annual report that we have could be simplified with such a tool perhaps.” (Respondent 3)</td>
<td>Categorization software. And frequent reports.</td>
</tr>
</tbody>
</table>

Table 6 ICT tools used and need for

“In Then we also have a system called brilliant, which is a tool for customer feedback where we ask after the end of the call how the experience was. During the survey, there is an opportunity to submit suggestions for improvement.”

Here the respondent, mentions the use of Brilliant software. This is a local Swedish company which specializes in software based on “service profit chain” model. The model links employee satisfaction with customer loyalty and profitability. This as mentioned by the respondent is
used to request citizens for their feedback after their phone conversation with the case manager
or a customer center representative.

“Yes, we have a customer system called Lime CRM system. We categorize
questions in different ways that make me collect (not sure) ... create ... as a basis
for change and see what happens. On the phone, we categorize the questions in
different areas so that van can follow the conversation flow.”

The respondent above mentions LIME CRM system which is also a local Swedish company
based off of Lund. This system as the name suggests is a CRM system which deals which
allows government agencies to centralize citizen information across channels and assist the
case manager or the customer center representative to provide the right service to the citizen.

”It is Matomo that is used for web analysis, otherwise it is, as I said, recording of
interviews...”

” ... and on the website it would be good to see where to go and what information
we can make clearer. Would also like to have some type of specific tool that gives
customers a way to ... different parameters, it is often very shared.”

Matomo is an open-source web analytics software. This is used by some of the agencies
interviewed. The digital services have as mentioned by one of the respondents increased the
agency’s focus towards collecting feedback from citizens and adjusting the services, for
example content on the website. Another respondent mentioned that it would be good to have
software where they could assess what citizens visited the website for and where they lost track.
So, they could make improvements on the website. Otherwise, the citizens would call as
mentioned by one of the respondents if they don’t understand something, and that is used to
make changes to the content of the website so that its more clear.

“When it comes to analysis of the types of questions, we don't have many tools
apart from Excel, tools don't count, but a lot of manual handling at the moment.”

Some of the respondents have mentioned that they do not use any IT tools to assist in their
interaction with the citizens and this depends on their department, the complaint departments
in agency’s may receive inquiries that are more personal, specific and non-frequent.

“I work as a registrar in the administration, so I take care of incoming and
outgoing public documents. I take care of information that comes in and is sent
out and then I take care (that it is registered in the diary) so that our general
documents are in order.”

The Swedish agencies have a well-established system of “registries” or “diarie” where
information received from the citizen, through email or letter or phone calls is registered in the
registry. This information is edited for personal information based on GDPR and is then
available publicly as well.
Webropol (for digital surveys) was mentioned by one respondent, this is a survey and reporting tool which uses OLAP for providing insights.

“If you want to think about what you could have, you could have a tool directly in the diary, it might have made it easier to have something where you register the documents, so as soon as you register the documents, you can also follow up so that the tool goes into the content and sees what it is about and produce a report so the quality/annual report that we have could be simplified with such a tool perhaps.”

The diary as mentioned above is used for periodic reporting where citizen inquiries are analyzed and areas of improvement are identified. The respondent mentioned above that they would like to have tools where they could have more frequent reports and insights into citizen’s needs.

“...with categorization of cases in a better and smoother way to have better control of this in the future.”

Two interviewees mentioned the need for better categorization software and a third interviewee mentioned the need for citizens to be able to enter more parameters.

6 Discussion

Conclusions

This study takes its inspiration from Sneiders et al. (2019) paper which was conducted in Sri Lanka and Rwanda and evaluates the collection and use of citizen voices in public service development in Sweden.

1a) is the content of the direct communication between citizens and public organizations actionable?

Inquiries are analyzed and problematized into information supply, bad service, bad user interface and data update. For each solutions are provided in the results section (Reference to Table 2). Thus concluding, that content of direct communication between government organizations and citizens is actionable.

1b) And is the volume of the communication sufficient to make it actionable?

The actionable inquiries also make up a large percentage of the total flow of inquiries to government organizations, this substantiates their use for public service & policy development (Reference to Table 3).

1)How do public organizations gather and utilize the wealth of information about citizens’ needs available in the direct communication from citizens to public organizations?
In the gather phase, public organizations provide multiple channels for citizens to voice their views. They include, Telephone, chat, email, letters, fax, service offices, webforms, surveys, interviews and booked meetings. Traditional contact channels like telephone and email are most used. Letters and fax are used less often. Smartphones provide a cost effective and convenient way for the citizens to get in touch with their government officials (Singh & Sahu, 2008). Facebook and Instagram are not used by citizens regarding their active cases. All inquiries are assigned case numbers and responsible persons when it is registered in the diary. There is great focus in eliciting citizen feedback on digital services that are in development. Statens Service center provides a one window for citizens for national public organizations. We did not observe mention of use of data from citizen inquiries through this one window operation (Reference to table 4).

In the utilization phase, all organizations mentioned they have a well-established routine and culture of noting down citizen views, and they are forwarded to respective departments for consideration. Here all organizations were able to provide statistics based on views left by citizens using web forms but not for telephone. There is great potential in combination of data from various channels which was not observed. Public organizations use a registry where each incoming information in the form of an email, form or call is registered and is assigned a person responsible (Reference to Table 5). Although inquiries received to individual case managers do not end up in this system. These registered inquiries once handled become publicly accessible after being edited according to GDPR. The registry as mentioned above is used for periodic reporting (annually) where citizen inquiries are analyzed and areas of improvement are identified. Respondents stated that they would like to have more frequent reporting (Reference to Table 6).

2) What kind of ICT tool support the public organizations would like to have in order to better utilize the aforementioned information?

The second research question explores ICT tools used by organizations, primarily focusing on a registry for email, form, and call management. Registered inquiries, after GDPR compliance editing, become publicly accessible for annual reporting and improvement analysis. Respondents express a desire for more frequent reporting and better categorization software. Traditional contact channels like telephone prevail, with limited mention of dedicated ICT tools for call data analysis. Notably, there is untapped potential in combining data from various channels. Popular ICT tools include Brilliant, Matomo, and Webropol, primarily used for service satisfaction surveys and web usage analysis. Citizen feedback on digital services under development is a priority, but the use of data from citizen inquiries through the State Service Center's one-window operation is absent, despite a strong awareness of the importance of citizen feedback and established routines within organizations to record citizen views during telephone calls.

Results in the light of previous studies

This research explores the direct communication generated by citizens, addressed to public organizations, and how this communication can be used to improve public policies and services. Direct communication between public organizations and citizens in Sweden is analyzed in varying degrees in each organization that were interviewed. For example:

No, these are not questions that can be analyzed with software.
We listen to the customers who contact us and try to understand what it is really about and give answers based on that.

The above example shows reliance on gut feeling and experience, and less on data in one organization. Whereas in the following:

...the citizens or customers as we call them. We receive just under 3 million calls throughout 2021. just over 150,000 emails that we answered. then via the chat in 2021 we had a team of just over 34,000 and we had just over 7,000 that we answered posts via facebook. Then we have the switchboard...

...We have a department that works with analysis parts but also in the customer service department. We also collect customer insight via recording conversations in various areas, what customers say and what questions they have...

...It is Matomo that is used for web analysis, otherwise it is, as I said, recording of interviews. A number of calls are recorded and our business developers listen to the call. There are interviews of certain customer groups...

The above are responses from an organization that has high degree of digitalization. Traditional contact channels like service center or telephone are still preferred by citizens. This is in line with research which suggests that traditional channels remain used more often than electronic ones (Ebbers, Jansen, Pieterson, & Wijingaert, 2016) Singh and Sahu (2008) suggest various strategies for using telephones for providing e-government services. This will ease the transition to internet-based services while the digital divide contracts. Various other technologies like voice ID are being tested which could also help in countering digital divide which affects approximately 1 million people in Sweden (TietoEvry, 2023).

With the use of advanced BI software and data warehousing, the data would need to be put together from the aspect of citizens at the center of it. The knowledge management process based on Zablah et al. (2004) will have to be unified, to provide interaction consistency and greater insights for improvements in public services. King (2007) also suggests that in e-government, choice of access channel has been the main focus, such as call centers, face-to-face interactions, or websites. However, the services themselves remain stuck in separate silos. In the private sector, customer relationship management (CRM) systems analyze customer data to gain insights and predict future needs. This approach could be applied to e-government for better service delivery. Sneiders et al. (2019) also suggests that there is a conflict between the amount of data generated by citizens and hesitancy in public organizations to take action based on this data.

According to Layne and Lee’s development model (Layne & Lee, 2001), some services have reached vertical and horizontal integration for example the tax agency has the responsibility for issuing “personbevis” which also contains information of addresses. An address change in this regard is only required to be done at the tax agency, which is updated to local municipality where you live and any other organization public or private that you come in contact with. There is extensive information on the agency’s services online, both as a website and as a mobile application, there is full online case handling as well. Access to the agency is also available through a unified service center such as “Statens service center” which also offers services from 4 other national organizations.

ICT tool support currently employed includes Brilliant, LIME CRM, Matomo, Webropol and the official registry. Tools wished for by public agencies include a need for better categorization software timely reports for customer inquiries. A 24/7 customer service,
generating reports and providing insights and advice based on data analysis, is also a potential application area for Large Language Models like Chat GPT, but their use will have to be evaluated on the basis of its effect on main principles of public administrations such as transparency, accountability, equality and impartiality (ART, 2023).

Comparison with Sneiders et al. (2019)

In comparing the results of this research with the findings from Sneiders et al. (2019), several key points of alignment and differentiation emerge. Firstly, both studies emphasize the importance of direct communication between citizens and public organizations as a valuable resource for improving public services. Sneiders et al. (2019) demonstrate the actionable nature of this communication by presenting solutions to various issues raised by citizens, a notion that resonates with findings of this study, where concrete solutions are provided to inquiries related to information supply, bad service, bad user interface, and data updates.

Secondly, although this research in Sweden reveals a diverse range of digital communication channels used by citizens, including email, web forms, and social media. In all three countries as indicated by Sneiders et al. (2019), face-to-face interactions and traditional channels like telephone calls remain prevalent. In addition to the preference of citizens, digital divide also affects around 1 million individuals in Sweden (TiestoEvry, 2023). Singh and Sahu (2008) propose a range of approaches for utilizing telephones in the delivery of e-government services. These strategies aim to facilitate the shift towards internet-based services and contribute to narrowing the digital divide. Additionally, there are ongoing trials of alternative technologies such as voice recognition (Voice ID) (TiestoEvry, 2023), which could further mitigate the digital divide.

Thirdly, Sneiders et al. (2019) highlight the significance of archiving methods for effective knowledge mining, a point reinforced by this research. The comparison reveals that while Rwanda predominantly relies on electronic archiving for text communication, Sri Lanka leans more towards paper-based archiving. In Sweden, texts and whatsapp are not used as a communication channel between citizens and government organizations. Archiving for text communication is done online chat. Archiving is also carried out through the ICT system called “diarium”, views obtained through webforms is a source of statistics for public organizations specially related to digital services, additionally, Surveys and interviews that are carried out provide a source of valuable information. Furthermore, in highly digitalized public organizations in Sweden call records are also archived and analyzed. Both studies recognize the challenge of insufficiently documenting the aggregated knowledge derived from citizen communication, underlining the need for improved archiving practices and the potential for better categorization software.

Both studies examine the volume and structure of citizen communication. Sneiders et al. (2019) present data on the volume of inquiries and the share of frequent inquiries in the communication flow, demonstrating the significance of issues in their study. This research delves deeper into the channels used for citizen communication, providing insights into the preferred modes of contact, the frequency of their use, and the ICT tools employed. Additionally, this study highlights the desire for more frequent reporting by public organizations, reflecting a potential area for enhancing responsiveness.

This research in Sweden introduces the concept of leveraging advanced technologies like Chat GPT for 24/7 customer service and data analysis. This application of AI-driven tools aligns
with Sweden's developed status and its readiness to embrace cutting-edge solutions. In contrast, Sneiders et al. (2019) does not explore the potential of such technologies in their study. This difference reflects how developmental disparities can impact a country's readiness to adopt and integrate advanced technologies in public service development. In conclusion, this research aligns with Sneiders et al.'s (2019) emphasis on the value of citizen communication in improving public services and recognizes the importance of archiving methods. However, it distinguishes itself by offering a more detailed exploration of communication channels and ICT tools while identifying opportunities for enhanced reporting. Together, these insights contribute to an understanding of the role of citizen communication in public service development.

**Limitations of this study**

Out of 26 organizations contacted 6 organizations agreed to participate. Additionally, the language used for the interviews Swedish which the respondents were comfortable in answering in, and this also allowed for us to understand the verbatim used within this area, which helped in developing the questions for future interviews. But, due to this, very little was asked in the way of probing questions. And so, some areas where things could have been clarified with further questioning did not occur due to the limitation of the researcher.

**Societal impact of this study**

According to Grönlund (n.d) type 4 definition 4 “The use of ICTs, and particularly the Internet, as a tool to achieve better government” has widest scope and relates technology to better government directly. Better government necessarily involves citizens voices and their perceptions. This study takes its inspiration from Sneiders et al. (2019) paper which was conducted in Sri Lanka and Rwanda and evaluates the collection and use of citizen voices in public service development in Sweden. Type 4 definition of eGovernment according to Grönlund (n.d) are also more suitable for future directions of eGovernment. He emphasizes the limitations of eGovernment models in use today that limit themselves to online availability and full case handling. The study can be used by government employees working in digitalization of public organizations, government officials working with ICT tools, consultancy companies working with government organizations or looking for a market niche. The study provides insight into knowledge management of public organizations in Sweden. Through various examples discussed it becomes clear that more data is available to the organizations yet what they are able to learn from it, use it, make relevant data available to right people varies greatly. The study also provides insights into citizen contact points in Sweden, citizens’ preferences, places where efficiency can be improved with suggestions provided in Section 5.

**Future Research**

Future research can investigate the opportunities and challenges of implementing a Large Language Model as a single government virtual assistant in Sweden. Research would be very useful from both supply side and demand side perspective. To understand how citizens perceive its usefulness and its risks. And how public officials perceive its potential efficiency gains, practical problems like organization and assignment of accountability or challenges for adherence to values of the government. Dealing with sensitive data, for example currently employed chatbots are limited to general Q/A, determining its scope will be important.
Combination of data from various sources will in the future provide great insight to individual needs to the government, considering this an area of interest can be to do a literature study to see what new systems of transparency and accountability can be set up to watch over the data driven practices of the government. “Explainability” is also an important aspect, because transparency does not directly lead to accountability, other things must be set up to enable citizens (Redden, 2018). Broomfield & Reutter (2021) highlight that citizens are rarely included in the policy formation around reforms like the data driven public administration reform. This will also require increasing data competency in the public to initiate public discussion and accountability.

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Appendix A

Interview Protocol

Dated:
Interviewer:
Interviewee:

Firstly, we would like to welcome you to our research study.

The interview is planned to last no longer than one hour. During this time, we have several questions that we would like to cover. If time begins to run short, it may be necessary to interrupt you in order to push ahead and complete this line of questioning. To facilitate note taking, and audio tape of our conversation today will be made. The audio tapes will only be available for the researchers and will eventually be destroyed after they are transcribed. Additionally, all information will be held confidential, your participation is voluntary, and you may stop at any time you feel uncomfortable, we do not intend to inflict any harm. Thank you for agreeing to participate. Please sign the consent form.

We would like to provide you with more information about this.

This research study is part of a thesis for Msc. eGovernance program at Stockholm university. This study is an extension of a previous study carried out by faculty members at my university, which was carried out in developing and middle-income countries i.e. Rwanda and Sri Lanka to assess if direct communication from citizens to public organizations contains information about citizens' needs which could lead to improvement in public services. The aim of this study is to take that forward by carrying out a similar study in a developed country with high maturity of eGovernance such as Sweden. The research questions we would like to answer through this study are:

1) How do public organizations gather and utilize the wealth of information about citizens' needs available in the direct communication from citizens to public organizations?
2) What kind of ICT tool support the public organizations would like to have in order to better utilize the aforementioned information.

You have been selected to speak with us today because you have been identified as someone who has a great deal of knowledge and experience in this area. The main topics that will be covered in the interview are i) channels used for citizen contacts ii) extent of data collection on citizen contacts and iii) ICT tools in use or in need of. The interviews are being conducted in Sweden during September & October 2022. Both English and Swedish can be used during the interview as per convenience.

1. What are your current and previous duties at this organization?
2. How much experience do you have with fulfilling these duties?
3. Can citizens contact your organization? If yes, what channels can the citizens use? For example, email, Facebook, Twitter, paper letters, telephone calls, face-to-face meetings at the reception or personal meetings booked with officials. Please list all the channels that you use.
4. How many inquiries/cases/issues per month or year (whichever is easier for you to count) do you get from the citizens and partners (partners are not “general public”, these are other organizations)? Please indicate the citizens and partners separately.

5. Can you give examples of frequent, reoccurring inquiries/cases/issues from citizens and partners? “Frequent” means the stuff recognizes the issue. If this question seems too sensitive, just indicate what type of inquiries are frequent.

6. How many are frequent, reoccurring inquiries/cases/issues from citizens and partners (all frequent inquiries together)? Please indicate the number or percentage of the total flow of inquiries (for example, 25%, 30%, etc.).

7. What happens to the inquiries/cases/issues after they have been received?

8. Do you analyze direct communication from citizens, which was discussed above, in order to identify citizens’ needs, problems, issues?

9. If you do analyze, to which extent (none, little, reasonable amount, quite a lot) these identified needs, problems, issues are used as input to develop or improve your organization’s public services, policies, internal processes?

10. If you do analyze, what kind of IT support/tools do you use to do the analysis?

11. Any wishes, what kind of tools you would like to have?

12. What alternative sources of information, apart from direct communication from citizens, do you use in order to identify citizens’ needs, problems, issues (e.g., government’s directives, hot topics in media, opinions of public servants, etc.)?

13. To which extent (none, little, reasonable amount, quite a lot) these alternative sources of information provide the input to develop or improve your organization’s public services, policies, internal processes?

Appendix B

Consent Form

1. I............................................. voluntarily agree to participate in this research study.

2. I understand that even if I agree to participate now, I can withdraw at any time or refuse to answer any question without any consequences of any kind.

3. I understand that I can withdraw permission to use data from my interview within two weeks after the interview, in which case the material will be deleted.

4. I have had the purpose and nature of the study explained to me in writing and I have had the opportunity to ask questions about the study.

5. I understand that participation involves answering questions related to citizen-government communication and development of policies & public services.

6. I understand that I will not benefit directly from participating in this research.

7. I agree to my interview being audio-recorded.

8. I understand that all information I provide for this study will be treated confidentially.

9. I understand that in any report on the results of this research my identity will remain anonymous. This will be done by changing my name and disguising any details of my interview which may reveal my identity or the identity of people I speak about.

10. I understand that disguised extracts from my interview may be quoted in dissertation.

11. I understand that if I inform the researcher that myself or someone else is at risk of harm they may have to report this to the relevant authorities - they will discuss this with me first but may be required to report with or without my permission.

12. I understand that signed consent forms and original audio recordings will be retained in [specify location, security arrangements and who has access to data] until [specific
relevant period – for students this will be until the exam board confirms the results of their dissertation.

13. I understand that a transcript of my interview in which all identifying information has been removed will be retained for six months.

14. I understand that under freedom of information legalisation I am entitled to access the information I have provided at any time while it is in storage as specified above.

15. I understand that I am free to contact any of the people involved in the research to seek further clarification and information.

Names, degrees, affiliations and contact details of researchers (and academic supervisors when relevant).

-----------------------------------------------------------------------------------
Signature of research participant  Date
-----------------------------------------------------------------------------------

Appendix C

Revised Questions

1. Vilka är dina nuvarande och tidigare arbetsuppgifter i denna organisation?


5. Hur många är frekventa, återkommande förfrågningar/ärenden från medborgare (privat) och partners (företag) (alla frekventa förfrågningar tillsammans)? Vänligen ange antalet eller procentandelen av det totala flödet av förfrågningar som är frekventa (t.ex. 25 %, 30 %)

6. Vad händer med förfrågningarna/ärendena efter att de kommit in? Analyserar du direkt kommunikation från medborgare, vilket diskuterades ovan, för att identifiera medborgarnas behov, problem? Om du analyserar, i vilken utsträckning (ingen, liten, rimlig mängd, ganska mycket) använs dessa identifierade behov, problem, frågor för att utveckla eller förbättra din organisations offentliga tjänster, policyer, interna processer?

7. Om du analyserar, använder ni någon typ av IT-stöd/verktyg? I det fallet vilka? Eller någon typ av verktyg som du skulle vilja ha?

8. Vilka alternativa informationskällor, förutom direkt kommunikation från medborgarna, använder du för att identifiera medborgarnas behov, problem, problem (t.ex. regeringens direktiv, heta ämnen i media, åsikter från offentliga tjänstemän, etc. )?
9. I vilken utsträckning (ingen, liten, rimlig mängd, ganska mycket) ger dessa alternativa informationskällor input för att utveckla eller förbättra din organisations offentliga tjänster, policyer, interna processer?

Appendix D

Summaries of interviews

**Interview with respondent 1**

Respondent 1 works at a national organization in Sweden which deals with assisting people getting into the labor market. The respondent has worked for 20 years in this organization, of these the last 10 have been in the customer relations department. The customer relations department has a team of 14 people, and they handle around 6,000 customer complaints every year. The organization itself is a national organization of great importance and hence is very big, there are many ways to contact the organization including email, Facebook, Twitter, paper letters, telephone calls, face-to-face meetings or personal meetings booked with officials. The most common is telephone. The respondent mentioned that the department has an hour’s waiting time almost everyday. If the customers are registered with the organization then they can also in addition to using the telephone contact the organization through chat. There is possibility for customers to use facebook to contact but this the respondent says is not really a way through which complaints regarding cases are handled. The most common ways are using the telephone number, email and also online forms.

The respondent emphasized that the contacts from citizens/ customers should not be compared with the contacts that citizens make to this organization for their cases, these contacts are complaints that sometimes deal with need for clear information, misunderstanding, can require the department to work together with other departments within the organization to see how the issue can be resolved. Many of the complaints deal with people who feel that their case have been mishandled, and mostly the cases require the team to explain to the customers that the case has not been mishandled and how the process and situation actually is. When questioned about frequency of the nature of contacts from customers the respondent mentioned that the questions are mostly new and it is seldom that the same question/complaint is received again and again from one or different customers.

On the question of whether the contacts were analyzed the respondent said that about 30-40% were analyzed, although now IT support tool was used in the process. And that it would not be possible for the contacts to be analyzed with a software. The team listens to the customer’s complaint, puts things together to understand what the complaint really is about and tries to help solve the customer as best as possible.

**Interview with respondent 2**

Respondent 2 works at an administration under a large municipality in the west of Sweden. This administration is responsible for general and strategic planning of the city. Also detailed planning about what special areas need to be developed and what they would contain. The organization also is responsible for building permits. They also handle map information and surveying. The respondent currently works as a manager at the organization’s customer department and has previously worked as manager in administrative capacities.
Customers use email, paper letters, telephone calls, face-to-face meetings or personal meetings booked with officials. The department does not work with facebook and instagram. The contacts can be directed to individual case handlers regarding on-going cases or could be general questions which end up with the customer relations department. The department at the organization handled 17,000 questions last year, so the contacts were approx 1,500 per month. Most of questions that come to the customer service in the administration deal with building permits. Can the customer get permission to build, or change something on their property, what the plans look like. If its something in the city, the questions could be whether they have a building permit or not.

There are many other questions that are received regarding public documents that the administration stores related to different construction projects or plan projects. Recently the respondent mentioned that there have been questions from the customers regarding solar panels and whether they can install them to save energy. The questions were about information on the website, it was difficult to understand for the customers so they ended up calling the department, these contacts were recorded and used to make changes to the website later on. The department collects feedback from individuals that are in direct contact with the customers and send that information forward for use. The communication is usually stored for 6 months before deleting it.

On being asked about whether any IT support tools are used in the department the respondent mentioned Lime CRM system. The system is used to categorize questions in different ways. Which later is used as basis for improvements. The questions received from telephone calls are also categorized in different areas in order to follow up and handle the call flow. In addition to this there is another IT system called Brilliant. This is used to request customers for feedback about their experience after their correspondence with the organization. There is also possibility to leave improvement remarks by customers if needed. The respondent mentioned that they would like to have a system that can tell them where the customer lost track while trying to get information from their website. In addition to this the respondent said they would like to have ways to push more categorization or parameters towards the customer so that the inquiries when received were more organized. In addition to the information received from the customers the department also regularly carries out group interviews to identify needs that can be used for improvements.

**Interview with respondent 3**

Respondent 3 works as a registrar in an administration under a large municipality in the west of Sweden. The administration is responsible for supporting families and individuals in leading a safe and independent lives. The organization works with security issues, crisis support and public health among other things. The respondent in the capacity of a registrar deals with incoming and outgoing information. The respondent has also worked in other capacities in the municipality for more than six years.

The organisation deals with sensitive information of citizens and therefore refused to provide information about examples of frequent inquiries. The inquiries are related to citizens own cases and how they perceive the handling of their cases. Citizens use contact channels like email, telephone, facebook and also face to face meetings booked with case managers. According to the respondent 25% of the inquiries are recurring.
The case managers receive citizen contacts directly, and these communications are individually handled. The registrar only registers citizens inquiries that she receives or those that arrive at their official email address. Those that reach individual case managers are not centralized but are handled individually. There is no specific analysis tool, cases that are registered in the “diarium” are taken up in quality and annual reports. In addition to the communication the organisation also has a environment monitoring or “omvärldsbevakning” which analyses what is being discussed extensively in the media so that it can be taken into account.

**Interview with respondent 4**

Respondent 4 works at a national organization in Sweden which administers and pays out public pensions. The respondent handles telephone calls and emails from citizens and works in administrative capacities where citizen inquiries/ complaints/ questions/ points of view are received and registered.

The organization receives approx. 10,000 to 20,000 telephone calls every week according to their weekly statistics. They are contacted most commonly using email and telephone. It is possible to for citizens to contact using facebook, twitter, letters, or leave feedback using forms on their website. Majority of the contacts are from private citizens either saving for pension or pension receivers. But employers also contact the organisation with inquiries regarding pension contracts. In the recent months there have been many contacts regarding ”garantipension” which has come about due to a change in EU law and has been extensively discussed in the media. Around the turn of the year they are contacted by citizens inquiring about eventual increase of their pensions. According to their statistics on feedback left by citizens using feedback forms on their website 40% are about website and other technology related. and 15% are about private pensions.

The organisation does analyse the communication they have with the citizens. Depending on the nature of the contact, the opinions, criticisms and praises received through email, telephone and facebook are taken into consideration and sent to responsible managers specially questions regarding digital services. The organisation uses an internal RPA (Robot process automation) tool to categorise and identify needs via epost, facebook and telephone notes. These are then edited based on GDPR rules for example any contact information is removed. In addition to the citizen contacts the organisation also arranges digital conferences with pensioners and businesses. Here they collect feedback and comments after the meetings for e.g. via email and these are sent to responsible managers. The respondent added that they have a well established culture of using citizen views specially those received via email and facebook as they are in written form and therefore easier to use. All managers follow a well established routine to note citizen views. Not all citizens may share their views but they may have opinions, praises or grievances and these are noted.

**Interview with respondent 5**

Respondent 5 works at a national organization in Sweden which works with the ownership of real estate, it makes geodata available to the society and is also responsible for digitalization of community building process. The respondent works in the capacity of operations coordinator and handles scheduling, statistics, analysis and follow up. The respondent also works with a telephony platform in the organization.
Customers contact the organization using telephone, email, visiting a contact center or by fax. It is possible for the customers to send letters but there are very few who actually use. Facebook is used to some extent but is planned to be removed in a few months. And twitter is not available as a contact channel. On average the organization gets 300-400 telephone calls and 250-350 mails every month. The most frequent questions asked by the customers are how to apply for a deed or registration of ownership of a property, order public documents or information about ownership of documents. The five most frequent questions recevied by the organization occupy 40% of the total inquiries received. The most frequent stand at 10%. The inquiries are analyzed to a large extent. The data is combined from all case managers and then used to make changes where needed. This said the respondent helps in preventing inquiries which can be prevented.

Currently the focus is to reduce inquiries regarding their website. If the information available on the website is causing a large number of customers to contact us it implies that the information on the website had not been correct from the start. The IT support in analysis is Microsoft Excel. No other software was mentioned by the respondent. On the other hand the respondent mentioned that they would wish to have support in categorizing inquiries that they receive so that it could make the process smoother. Other sources of information used by the organization are customer satisfaction surveys that are taken a few times a year. If there is something that is being talked about on the media that could be used to prevent or reduce future contacts it is used.

**Interview with respondent 6**

Respondent 6 works at a national organization in Sweden which works with financing of the public sector. The respondent currently works as an operations controller in the customer service department. The respondent has held management positions within tax information both as unit and section manager.

The organization provides multiple channels for citizens to contact them including telephone, email, chat and facebook. In 2021 the organization answered to almost 3 Million calls, 150,000 emails, 34,000 chat messages and 7,000 posts on facebook. There is also a telephone exchange where citizens can get in touch with their case handlers and there around 160,000 calls were answered in 2021. The subject of these contacts vary depending on what time of the year it is. During the months of March to May the organization receives a large volume of contacts regarding tax declarations. Questions that are frequent throughout the year include questions regarding national registration certificates, questions about address, personal ID numbers, marriage licenses, VAT and late submission fees. They also receive questions regarding starting a company etc. Questions related to tax declarations are most frequent during March and May when private citizens contact the organization.

The organization has a separate analysis department but there is also an analysis team within the customer service department where the respondent works. They regularly go through contacts to see if anything stands out, the quantity of contacts, if citizens have misunderstood some information, this is used to improve the posts, emails and website content. Certain customer groups are surveyed and interviewed for e.g. entrepreneurs to understand how the information that the organization is putting out is perceived, if the customer groups understand the process of submitting certain forms etc. Customer insight is also derived from call recordings, what questions customers ask.
Appendix E

Thematic analysis

Interview with respondent 1

The data collected has been thoroughly read and data extracts have been gathered. In Table 2, we present the data extracts from the interview and a number of codes that are generated from the data.

| This is because the agency is large, so there are many contact routes to the employment agency. We have a one-hour phone queue. If you are registered with us, it is also via phone and chat. It is possible to contact the employment agency on Facebook, but it is not a contact route in its case. If you call us at the customer relations unit, we are available by phone 9-12 on weekdays and via web form on the website and via e-mail. | • Multi-channel access
• Long telephone queues.
• Phone used most often
• Registered customer. Customers with active cases.
• Telephone.
• Chat.
• Facebook & Instagram available
• Facebook not a contact channel for personal inquiries
• Facebook not considered a useful contact channel by government officers
• Web forms
• Citizen views shared using web forms
• Email

| Menar du jag som individ eller menar du grupp? Okej, då är det min grupp som har 14 personer. Och vi får ungefär 6,000 ärende om året. Det är klågemåls ärende och det går inte att jämföra med arbetsförmedlingens ärende. | • Complaint cases.
• Bad service
• Conflict mgt
• Data on number of inquiries received not available channel-wise

| Our questions are quite, they are not frequent questions but there are often new questions that come in. It's rare that it's like the same questions over and over again. | • Low share of frequent inquiries

| We receive complaints and deal with them depending on the nature of the issue, sometimes it can be pure information, sometimes it can clear up misunderstandings, sometimes it can be a case where we need to have a dialogue with the employment agency and the employment agency remotely about how the problems should be resolved. Many who call us have the experience of being mishandled, but if it is perhaps not mishandled, then of course you have to be able to explain to them what it really looks like. | • Information supply
• Conflict mgt

| If we have any software that analyzes? No, these are not questions that can be analyzed with software. We listen to the customers who contact us and try to understand what it is really about and give answers based on that. | • ICT support
• Inquiries are not suited for analysis with software
• Manual analysis
• No ICT support in analysis of inquiries
• depend on insight of individual managers
The data collected has been thoroughly read and data extracts have been gathered. In Table 3, we present the data extracts from the interview and a number of codes that are generated from the data.

<table>
<thead>
<tr>
<th>Channel</th>
<th>Codes</th>
</tr>
</thead>
</table>
| Personal meetings, regular letters, e-mail, telephone. We have channels like facebook and instagram but it is not a channel that we work with. | Booked meetings with officials.  
Paper letters.  
Facebook  
Instagram  
Facebook not considered a useful contact channel by government officers. |
| There are a lot of customer questions for the entire administration, there are questions both for individual employees who shop, who work with an ongoing project, but there may also be general questions that end up with them. For the customer service function and advice, we handled around 17,000 questions last year, so it's in there somewhere. 1,500 questions a month. | Case managers can be contacted directly by customers.  
Case managers can be contacted by customers for case related questions or general questions. |
| Many of the questions that come to customer service in the administration are about building permits and it can be what you are allowed to build on your property or you want to change something, what applies to what the plans say, for example. ... is there anything in town ... do they have a building permit, there are a lot of questions about ... that you want to take part in public documents that are various projects, construction projects or planning projects. | Information supply  
Request for public records |
| ... general ... after six months. ... capture the need that exists. Recently, we have received many questions about solar panels to save energy, building solar panels on roofs, and the customers did not really understand what was written on the website, which makes them contact us instead, and we record that so that we can see if we can work on it and update them the texts... and use them the feedback that we get at the advisory unit and my employees who are in direct contact with customers all the time they get information about... what are we trying to pass on... | General customer inquiries are archived for 6 months.  
Bad user interface  
Update information on website.  
Feedback received by case managers directly from customers is forwarded. |
| Yes, we have a customer system called Lime CRM system. We categorize questions in different ways that make me collect (not sure) ... create ... as a basis for change and see what happens. On the phone, we categorize the questions in different areas so that van can follow the conversation flow. Then we also have a system called brilliant, which is a tool for customer feedback where we ask after the end of the call how the experience was. During the survey, there is an opportunity to submit suggestions for improvement.  
We have a contract problem... and on the website it would be good to see where to go and what information we can make clearer. Would also like to have some type of specific tool that gives customers a way to ... different parameters, it is often very shared.  
group interviews map the need. | Customer system called LIME CRM system.  
Customer inquiries on telephone calls are categorized to help with the call flow.  
Brilliant system is used to collect feedback from customers after their calls.  
Tool that can allow us to see what difficulties customers had while using the website.  
Tool that can allow customers to select parameters before sending us inquiries.  
Surveys and interviews used when input is needed from specific groups.  
Contract problem |
The data collected has been thoroughly read and data extracts have been gathered. In Table 4, we present the data extracts from the interview and a number of codes that are generated from the data.

| Yes, exactly what I can answer is how it looks in our diary. I can't answer based on everything that comes in, I can only answer based on how it's registered in our diary and it's a bit difficult to say exactly because we don't share based on residents and partners' partners, but then we post it the same way so we don't share so maybe I can't give an exact answer to that because we don't share it. We post everything in the same way, but we have a routine that we follow in how we label and post. | • Not all customer contacts are registered in the diary.  
• Routine followed in registering documents in the diary of public documents.  
• Most customer inquiries deal with customer’s own cases, grievances, opinions etc.  
• Bad service  
• Conflict mgt  
• Complaint cases.  
• Registered customer. Customers with active cases. Information supply  
• Service update.  

| Of course I can't go into details, I can't say what it's about, but in general I can say what I've seen, it's mainly about one's own case, that's probably what I think we get the most from you have opinions about your own case how one's own case has acted and one might have views about one's own case that one has with us, that is what is most recurring. |  

| As I said, it doesn't have an exact number here either, but roughly if I have to estimate, maybe it's 25%. | • Low share of frequent inquiries  

| I can start telling you how we do when it comes in. It can come in to another person as well. I can only answer based on my role, what I work with. We have a lot of employees so you can have direct contact with residents, opinions can come directly to other employees that I don't see, but if it comes to the administrative mailbox where I monitor and I see, I put it in the diary. The diary is the first to come in, that's what we start with and then it is put as a case and then we put a person in charge on the case. Then it is usually a manager who gets to look at that question and give feedback to the person who has come in with questions or comments. Then it is answered by the manager. As a registrar, I do not do analysis, analyzes are done in the businesses where the managers are and I cannot answer that due to my role. But analyzes are done and there are quality reports and there are annual reports where you take up what has come in and you go through what has come in and use it in the quality report the annual report and develop from there requests are used that have come in and are followed up via quality reports and annual reports. But I don't make it personally, but it is produced every year. | • Case managers can be contacted directly by customers.  
• Customer inquiries that arrive at the administration’s contact address rather than case managers are registered in the diary.  
• Not all customer contacts are registered in the diary.  
• Inquiries once registered in the diary are assigned responsible person.  
• Routine followed in registering documents in the diary of public documents.  
• Customer inquiries registered in the diary are followed up via Quality and Annual reports  

| As far as I know, we don't have a special tool to analyze we don't have an IT tool specifically to analyze and follow what comes in, what we have are registered cases in the diary | • No ICT support specifically for analysis of inquiries.  

| Not all customer contacts are registered in the diary.  
Routine followed in registering documents in the diary of public documents.
If you want to think about what you could have, you could have a tool directly in the diary, it might have made it easier to have something where you register the documents, so as soon as you register the documents, you can also follow up so that the tool goes into the content and sees what it is about and produce a report so the quality/annual report that we have could be simplified with such a tool perhaps.

We have environmental monitoring in our administration, so we receive environmental monitoring at regular intervals. We get them to send it to us so we see what … in the media, for example, so that we can follow up, because that's where we see what problems or questions our residents have, you can see via environmental monitoring every week.

<table>
<thead>
<tr>
<th>Interview with respondent 4</th>
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<tbody>
<tr>
<td>The data collected has been thoroughly read and data extracts have been gathered. In Table -, we present the data extracts from the interview and a number of codes that are generated from the data.</td>
</tr>
</tbody>
</table>

| The usual is e-mail and telephone, but there is also the possibility to send us letters, you can write to us via Facebook and on Twitter, there are tools on forms on our website where you can leave opinions regarding the web and information there. | Email and telephone are common contact channels
Citizen views shared using web forms
Web forms
Paper letters |
| I don’t know if we have any statistics on that. We have a compilation of views from January to September. What is divided into, approximately 40% of all comments this year are about web and technology issues, then there is about 15% private pensions. It's just what we have based on what they've left comments on. | Data available on frequent inquiries based off of opinions/views/feedback left by citizens.
Majority of the active feedback collection is done with website/digital services as focus. |
| Yes, the usual questions, for example someone wants to double-check if we have received a pension application, we may not follow it in the same way, but we take all opinions and criticisms and praises via both phone and email and Facebook and all contact channels where we register the views and send them to the respective person responsible for each area, so for example as I said we receive a lot of complaints about and views regarding our website and then we register the views from the customers and then we pass them on to those who are responsible for the web and all of those opinions are with them as a basis for each time they have to make updates or changes on the web, and those that are most common become the highest priority opinions and take into consideration for improvements. | Awareness of utilizing citizen communication in improvement of public services.
Presence of structure/system to utilize citizen communication. |
| Yes, the usual questions, for example someone wants to double-check if we have received a pension application, we may not follow it in the same way, but we take all opinions and criticisms and praises via both phone and email and Facebook and all contact channels where we | RPO for identifying customer needs from written forms of feedback for example email, facebook or telephone call notes.
Customer feedback is edited based on GDPR rules. |
register the views and send them to the respective person responsible for each area, so for example as I said we receive a lot of complaints about and views regarding our website and then we register the views from the customers and then we pass them on to those who are responsible for the web and all of those opinions are with them as a basis for each time they have to make updates or changes on the web, and those that are most common become the highest priority opinions and take into consideration for improvements.

| • IT system is used to store and answer to customer feedback. |

We can get opinions, for example, if we have had digital information meetings with pensioners and self-employed people during the pandemic. Then the views can come in after the information meetings to us. But it is often that they email in if, for example, certain things were good, they should have taken this, so we also pass that on to those who are responsible for the information meetings.

| • Customer feedback is collected after digital conferences (under covid pandemic). |

We can get opinions, for example, if we have had digital information meetings with pensioners and self-employed people during the pandemic. Then the views can come in after the information meetings to us. But it is often that they email in if, for example, certain things were good, they should have taken this, so we also pass that on to those who are responsible for the information meetings.

| • IT system is used to store and answer to customer feedback. |
| • Well established culture of noting down customer views. |
| • Well established routine for case managers to note down customer views. |

Interview with respondent 5

The data collected has been thoroughly read and data extracts have been gathered. In Table -, we present the data extracts from the interview and a number of codes that are generated from the data.

<table>
<thead>
<tr>
<th>My current tasks as operations coordinator are scheduling, statistics, analysis, follow-up and also involved a lot in the technical work around each telephony platform. And I previously worked as an administrator at...</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Telephony platform</td>
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</table>

<table>
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<tr>
<th>...We also have the option of submitting questions via Facebook, but it is closing soon in just a few weeks. So facebook is gone soon nothing via twitter … You can contact us via paper letter, but there are extremely few who do what you can, even fax works. So phone, fax, email and so far a few weeks to Facebook as well.</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Fax is also an active contact channel.</td>
</tr>
<tr>
<td>• Facebook &amp; Instagram available</td>
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<tr>
<td>• Facebook not considered a useful contact channel by government officers</td>
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</table>

<table>
<thead>
<tr>
<th>If we take an average employee at a customer center, they handle around 300-400 calls per month, around 250-350 emails per month.</th>
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<tbody>
<tr>
<td>• Data on number of inquiries received available for calls and emails</td>
</tr>
<tr>
<td>• Customer center.</td>
</tr>
</tbody>
</table>

<table>
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<tr>
<th>Quite a lot these days, but it's not individual case managers, they all move on but we collect data for everyone so we work upwards make changes to prevent issues that can be prevented so they don't have to be asked than get better information on the website change text in letters sent out. If a lot of people call and ask us about what</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Manual analysis</td>
</tr>
<tr>
<td>• Learning from citizens</td>
</tr>
<tr>
<td>• Working upwards.</td>
</tr>
<tr>
<td>• Making changes to prevent issues.</td>
</tr>
<tr>
<td>• Update information on website.</td>
</tr>
<tr>
<td>• Update text in posted letters.</td>
</tr>
<tr>
<td>• Proactive.</td>
</tr>
</tbody>
</table>
something means, it has not been written clearly from the beginning.

- Organizational capital resources.
- Human capital resource.
- Awareness of utilizing citizen communication in improvement of public services.
- Presence of structure/system to utilize citizen communication.

When it comes to analysis of the types of questions, we don't have many tools apart from Excel, tools don't count, but a lot of manual handling at the moment. It is working on getting some kind of customer service system with categorization of cases in a better and smoother way to have better control of this in the future. There is a lot of manual work involved with this right now. And no good IT support.

- Manual analysis
- Excel.
- Customer service System for categorization of cases.

### Interview with respondent 6

The data collected has been thoroughly read and data extracts have been gathered. In Table -, we present the data extracts from the interview and a number of codes that are generated from the data.

You analyze some quantity, how much comes in, we look to see if there is anything that stands out because we try to find out if this is a mailing or is it something in our letters, is it something on the website that creates demand. In part, we can do this by having a point of view channel where citizens can leave their views, so we can see some input or questions coming up. It could be that someone has not understood what we have written and or what we want to achieve, then we try to clarify both mailings and the web, among other things. Surveys and interviews are also used when we address certain customer groups. It can be new entrepreneurs, e.g. there ask questions (the tax authority who ask questions) about how to perceive information and where to submit forms, we do the analyses. We have a department that works with analysis parts but also in the customer service department. We also collect customer insight via recording conversations in various areas, what customers say and what questions they have.

- Awareness of utilizing citizen communication in improvement of public services.
- Majority of the active feedback collection is done with website/ digital services as focus.
- Web forms
- Bad user interface.
- Surveys and interviews used when input is needed from specific groups.
- Analysis is also carried out on recorded telephone calls.

It is Matomo that is used for web analysis, otherwise it is, as I said, recording of interviews. A number of calls are recorded and our business developers listen to the call. There are interviews of certain customer groups.

- Matomo is used for analysis of website.
- Surveys and interviews used when input is needed from specific groups.
- Analysis is also carried out on recorded telephone calls.
Appendix F
Reflection Document

How does your study correspond to the goals of the thesis course? Why? Focus on the goals that were achieved especially well and those that were not well achieved.

In my journey through this eGovernment thesis, I gave due consideration to ethical considerations and acknowledged them in the thesis. This process enabled me to develop and hone my abilities in conducting literature searches, assessing the relevance of sources, analyzing data, and summarizing critical findings. The focal point of my research was the application of the co-creation concept within the public sector, and I ensured that the study integrated pertinent societal dimensions. However, it's worth noting that the thesis preparation consumed more time than initially anticipated, primarily due to the extensive workload involved. Overall, I firmly believe that I have effectively met the thesis goals and delivered a comprehensive study.

How did the planning of your study work? What could you have done better?

The planning of my eGovernment study was executed in a structured manner. I began by clearly outlining my research objectives and defining the scope of the study. This initial planning phase was crucial as it provided a roadmap for the entire research process. I conducted a thorough review of existing literature, which helped me identify the gaps in knowledge and refine my research questions. Furthermore, I designed a robust research methodology, ensuring that data collection and analysis methods aligned with the study's objectives.

However, looking back, there are a few aspects I could have improved in my planning process. Firstly, I could have allocated more time for data collection, as it turned out to be a more time-consuming task than anticipated. Additionally, I might have engaged in more frequent discussions with my academic advisors to receive timely feedback and guidance, which would have streamlined the research process. Overall, while the planning was well-structured, better time management and more frequent communication with mentors could have enhanced the efficiency of the study.

How does the thesis work relate to your education? Which courses and areas have been most relevant for your thesis work?

My thesis work is closely aligned with my education, with specific courses playing pivotal roles in its development. Notably, "Open e-governance and e-democracy" laid the theoretical groundwork for understanding eGovernment and democratic principles in the digital age. "Citizen Centric Service Design" emphasized the importance of user-focused eGovernment services, a vital aspect of my research on the co-creation concept within the public sector. Furthermore, "IT Architecture Open and Big Data Management" provided the technical expertise required for handling and analyzing substantial data, essential to my research methodology. These courses collectively shaped the direction and outcomes of my research, underlining the integral role of education in my thesis work.

How valuable is the thesis for your future work and/or studies?

The thesis holds immense value for my future endeavors in both work and further studies. It has equipped me with a deep understanding of eGovernment, citizen-centric service design,
and data management, which are highly relevant to the evolving landscape of public administration and technology. The skills I developed, such as conducting research, data analysis, and critical thinking, are transferable and will undoubtedly benefit my future work. Moreover, the thesis has ignited a passion for research and a desire to explore this field further. Overall, it's clear that the thesis has significantly contributed to my professional and educational growth, making it a valuable asset for my future.

How satisfied are you with your thesis work and its results? Why?

I am highly satisfied with my thesis work and its results. The research process was challenging yet rewarding, and I believe the findings contribute meaningfully to the field of eGovernment. The study's outcomes align with my initial objectives and demonstrate a deep understanding of the subject matter, leaving me with a strong sense of accomplishment and pride in the work I've produced.