Universidade do Minho
Escola de Engenharia

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Mindful Attentional Engagement based on Social Media Monitoring Integrated and Heterogenous Data for Smart Governments: A new Innovation Framework?

Junho de 2024

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Dr. Kontanze Alex

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Assinatura: 

STATEMENT OF INTEGRITY

I hereby declare having conducted this academic work with integrity. I confirm that I have not used plagiarism or any form of undue use of information or falsification of results along the process leading to its elaboration.

I further declare that I have fully acknowledged the Code of Ethical Conduct of the University of Minho.

University of Minho 01/12/2022

Full Name: Ashraf Munib Ahmed Qutaishat

Signature: 

Dedication

To both my children Faris and Firas,

for being the source of my motivation and determination.

Acknowledgment

In the name of God, all praise be to God, for giving me the strength, patience, and determination to complete this doctoral thesis.

I am grateful to many people who stood by and supported me throughout this intellectual and scientific journey. I would like to express my gratitude to my supervisors, Professor Isabel Ramos and Konstanze Alex-Brown, PhD, whose patience, attention, and guidance made this work possible. It has been a great privilege to learn from their experiences and work with them, as their valuable feedback and discussions have greatly elevated my intellectual capabilities and advanced my professional development.

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Thank you all, and I wish you all the best. May God be with you!

Abstract

Smart government presents an opportunity to (a) address challenges in government service delivery, (b) increase citizen collaboration and foster innovation, and (c) advance citizens' and communities' well-being. Governments' growing use of social media technologies continuously increases the gap between what governments know and what they do with it. We define smart government as a government that senses and reacts to its environment using integrated ICTs, including social media technologies, to support Management By Objectives (MBO) and enable a more transparent and inclusive citizen collaboration to set Specific, Measurable, Achievable, Realistic, and Time-based (SMART) goals and objectives aimed at addressing the citizens' needs and issues, promoting innovation in the public sector, and improving communications with citizens and communities.

This thesis investigates the role of communicative practices supported by social media monitoring tools in promoting the mindful attentional engagement required to enable attention-based innovation between smart governments and citizens. The study gathered data from semi-structured interviews as well as online qualitative and quantitative questionnaires. The results indicate that social media can serve as an additional method of communication between governments and citizens. The results also show significant support for smart governments' use of social media monitoring tools to gather and analyse relevant data to improve government services and attend to the issues of citizens. Further, the findings show that social media technologies can promote mindful attentional engagement and foster innovation based on attendance to the issues of citizens and continuous collaboration between smart governments and citizens.

This thesis offers valuable recommendations for practitioners, as no studies focus on the role of communicative practices supported by social media monitoring tools in promoting mindful attentional engagement between smart governments and citizens. Our framework demonstrates that smart governments can attain awareness about the voiced issues of citizens and create the necessary knowledge to address them by employing active and passive social media monitoring and utilising the multi-way communication channels supported by social media monitoring tools.

Keywords: Mindful Attentional Engagement; Attention-Based Innovation; Smart Government; Social Media Monitoring; Knowledge Management.

Resumo

O governo inteligente apresenta-se como uma oportunidade para o fazer: (a) responder aos desafios na prestação de serviços governamentais; (b) aumentar a colaboração dos cidadãos e promover a inovação, e (c) promover o bem-estar dos cidadãos e das comunidades. A crescente utilização das tecnologias de comunicação social pelos governos está continuamente a aumentar o espaço entre o que os governos sabem e o que fazem com esse conhecimento. Definimos governo inteligente como um governo que sente e reage ao seu ambiente utilizando TIC integradas, incluindo tecnologias de comunicação social, para suportar a Gestão por Objectivos (MBO) e permitir uma mais transparente e inclusiva colaboração dos cidadãos para estabelecer os objectivos específicos, mensuráveis, realizáveis, realistas e baseados no tempo (SMART) destinados a abordar as necessidades e problemas dos cidadãos, promover a inovação no sector público, e melhorar as comunicações com os cidadãos e as comunidades.

Esta investigação relata como a função das práticas comunicativas suportadas por sistemas de monitorização dos medias sociais na promoção do envolvimento atencional necessário para permitir a inovação baseada na atenção entre governos inteligentes e cidadãos. Utilizando dados de entrevistas semiestruturadas e questionários qualitativos e quantitativos em online, os nossos resultados mostram que existe suporte para a utilização das medias sociais como um método de comunicação adicional entre governos e cidadãos, e suporte significativo para a utilização por parte dos governos inteligentes das sistemas de monitorização dos medias sociais para recolher e analisar dados relevantes para melhorar os serviços governamentais e atender às problemáticas dos cidadãos. Além disso, os resultados mostram que as tecnologias das medias sociais podem promover o envolvimento atencional e fomentar a inovação baseada no atendimento às problemáticas dos cidadãos e na colaboração contínua entre governos inteligentes e cidadãos.

Esta investigação oferece recomendações importantes para profissionais e oficiais governamentais inteligentes, uma vez que nenhum estudo se focaliza na função das práticas comunicativas suportadas por sistemas de monitorização dos media sociais na promoção de um envolvimento atencional entre governos inteligentes e cidadãos. O nosso framework demonstra que os governos inteligentes podem obter a consciencialização sobre as problemáticas expressas pelos cidadãos e criar o conhecimento necessário para resolver as problemáticas expressas, com a utilização de monitorização activa e

passiva dos medias sociais e a utilização dos canais de comunicação multidireccionais suportados por sistemas de monitorização dos medias sociais.

Palavras-chave: Envolvimento Atencional; Inovação Baseada na Atenção; Governo Inteligente; Monitorização dos Media Sociais; Gestão do Conhecimento.

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–CHAPTER 1–

Chapter 1 - Introduction

Summary

This chapter is divided into five sections. The first section provides a brief introduction to the theme of this thesis. The second section outlines the study problem and research question and sets the context of this thesis. The third section presents the researcher's personal motivation behind choosing the theme of this thesis. The fourth section lays out the objectives and goals of this thesis and the research activities. The final section presents the structure of this thesis.

1.1. Introduction

The fundamental idea of engagement, public co-creation, and collaboration over social media platforms can be interpreted as utilising the available free online common workspaces by governments and citizens to interact and communicate more easily (Ocasio et al., 2018; Geiger & Von Lucke, 2012; Sæbø, 2011; Sæbø et al., 2009; Macintosh & Whyte, 2006). However, many scholars, such as Loukis et al. (2017), Kankanhalli et al. (2017), Mergel (2017, 2012b), Criado et al. (2013), Gil-Garcia (2012), and Meijer et al., (2012b) among others, have exhibited concerns about the limited knowledge, strategic agendas, security, and privacy when social media technologies are used by governments. Furthermore, the majority of literature focuses on the implementation and technical aspects of the utilisation of social media technologies by governments (Cotterill & King, 2007; Dwivedi et al., 2017, 2015; Kaigo & Okura, 2016; Mossberger et al., 2013) with no studies emphasising the role of communicative practices and social media monitoring tools in promoting a mindful attentional engagement towards the citizens' needs.

The work in this thesis is related to smart governments, open innovation, social media technologies, and knowledge management. More specifically, it concerns mindful attentional engagement based on social media monitoring integrated heterogeneous data for smart governments.

Governments have always had many challenges and obstacles in connecting and communicating with their citizens, and this phenomenon is more prevalent with younger generations than older generations. Due to the user-friendliness and familiarity characteristics, the younger generations prefer to debate any subjects of interest to them over social media platforms (Alarabiat, 2018; Dini et al., 2016;

Charalabidis et al., 2014; Calenda & Meijer, 2009). As a result, many academics see social media platforms as an emergent method of communication between governments and their citizens (Sadeghi et al., 2012; Landsbergen, 2010).

The lack of access to inclusive public opinion and citizen participation in decision-making, combined with an evident lack of engagement and collaboration between governments and citizens via social media platforms, have significantly contributed to the exhaustion of valuable government and public resources (Berntzen & Johannessen, 2016; Dini & Saebo, 2016; Charalabidis & Loukis, 2014, 2011; Wahid & Sæbø, 2015; Khan et al., 2014; Larsson, 2013; Lacigova et al., 2012; Mergel, 2012a; Sæbø et al., 2011). However, the unique properties of social media technologies and the benefits that arise from their use by governments can play a substantial role in promoting and fostering inclusive citizen participation in government decision-making and policy formulation processes (Alarabiat et al., 2016; Dini & Saebo, 2016; Bertot et al., 2010b; Sæbø et al., 2009).

Nonetheless, the utilisation of social media technologies, including social media monitoring tools, can increase the gap between what governments know and what they do with it (Qutaishat & Ramos, 2021). Therefore, governments should use adequate knowledge management tools, methods, and models to access the valuable data that can facilitate the advancement of public services and service delivery or lead to the creation of new services and applications (Qutaishat & Ramos, 2021; Abdalla et al., 2020; Mc Evoy et al., 2019; Butler et al., 2004). Consequently, employing social media technologies as an additional method to improve the communications between governments and citizens can lead the decision-makers in governments to formulate a better understanding of their citizens' and communities' needs and issues (Qutaishat & Alex, 2018; Bonsón et al., 2015; Khan et al., 2014; Charalabidis et al., 2012; Tambouris et al., 2013; Panagiotopoulos et al., 2011; Charalabidis & Loukis, 2011).

1.2. The Problem

Traditionally, the lack of government access to public opinion and citizen collaboration and participation in government decisions has significantly contributed to exhausting valuable government and public resources (Severo et al., 2016). This led to an increase in citizen dissatisfaction towards government performance and a failure to communicate adequately, as both governments' and citizens' perceptions

of what needs to be accomplished to drive society forward and advance the well-being of the public continued to drift apart (Janssen et al., 2017; James & Van Ryzin, 2017; Schneider et al., 2010).

The exponential progress in technology has paved the way for many influential tools that have the potential to improve communications between governments and citizens, such as e-government, cloud computing, open data, and linked open data (Dwivedi et al., 2017, 2015; Rana et al., 2016, 2017; Shareef et al., 2016). Despite the huge impact of such innovative and influential technologies on the private sector (Kankanhalli et al., 2017), their impact on governments and the public sector remained minimal due to high operational costs, complex legislations, and the lack of adequate infrastructure and implementation (Singh et al., 2019; Aladwani & Dwivedi, 2018; Dwivedi et al., 2017, 2015; Kankanhalli et al., 2017; Rana et al., 2016, 2017; Shareef et al., 2016; Campbell et al., 2014; Bekkers et al., 2013a; Fensel et al., personal communication, 2012; Pieterson & Johnson, 2011).

Social media platforms are reliable and popular tools that are more frequently used as a communication method between different entities (Aladwani & Dwivedi, 2018; Campbell et al., 2014; Bekkers et al., 2013a; Fensel et al., personal communication, 2012). They have various advantageous attributes, such as the provision of open and observable spaces for interactions and multi-channel real-time communication between different entities. As a result, social media technologies can be a solution that enables governments to overcome the limitations of traditional e-government tools (Pieterson & Johnson, 2011) and improve communications between governments and the public. However, the increasing number of users of social media platforms signifies the existence of a tremendous amount of user generated content that presents immense challenges for traditional e-government tools to adapt to and process (Aladwani & Dwivedi, 2018). These challenges can be classified into four main categories:

- Social media innovations and government change.
- Social media, open government, and big data - Smart government.
- Measuring social media effects in government.
- Citizens' engagement, participation, and co-production in smart government.

As there are currently no studies focusing on the mindful attention engagement as a result of employing effective communication practices supported by social media monitoring tools that can draw the

attention of smart governments to citizens' needs and issues, this thesis seeks to bridge this gap by attempting to answer the following research question:

“How can the use of communicative practices supported by social media monitoring tools by smart governments promote mindful attentional engagement towards the citizens’ needs?”

1.3. Personal Motivation

The interest in the theme of this thesis was initiated based on two personal experiences. The first experience was in 2016, during the initiation of the process of applying for the Schengen Visa to enter the Portuguese territory to start the doctoral degree program. Figure (1) shows the first personal experience and use of Facebook Messenger to communicate with the Portuguese Embassy in Egypt to request information about: (a) the documents needed, (b) how the process will be carried out, and (c) the time expected to complete the process. The figure also illustrates the fast response from the Portuguese embassy, which was approximately one hour compared to the official means of communication, which were (1) phone calls and (b) emails.

The first message in figure (1) states: "Dear Sir/Madam, My name is Ashraf Qutaishat. I've applied to a PhD program in Information Systems and Technologies in the University of Minho, Portugal. I'm sending this email to you because I've been trying to contact Mr [Name of the individual removed] the honorary Consul in Jordan to ask about the student visa requirements and documents but no one was answering. I have a couple questions about the visa. 1- What are the Visa requirements and documents? 2- do I have to come to Egypt to apply in person or Can I just send them to you through Aramex and collect them later? 3- how long does it take to obtain the visa from the date of applying? Thank you for your time and efforts. Hope to hear from you soon. Best regards, Ashraf.".

The second message in figure (1) states: "Dear Mr. Ashraf. Our Embassy changed premises that´s why the delay in answering. your e-mail was forwarded to the visa department and they will answer as soon as possible. sorry for any inconvenience caused.".

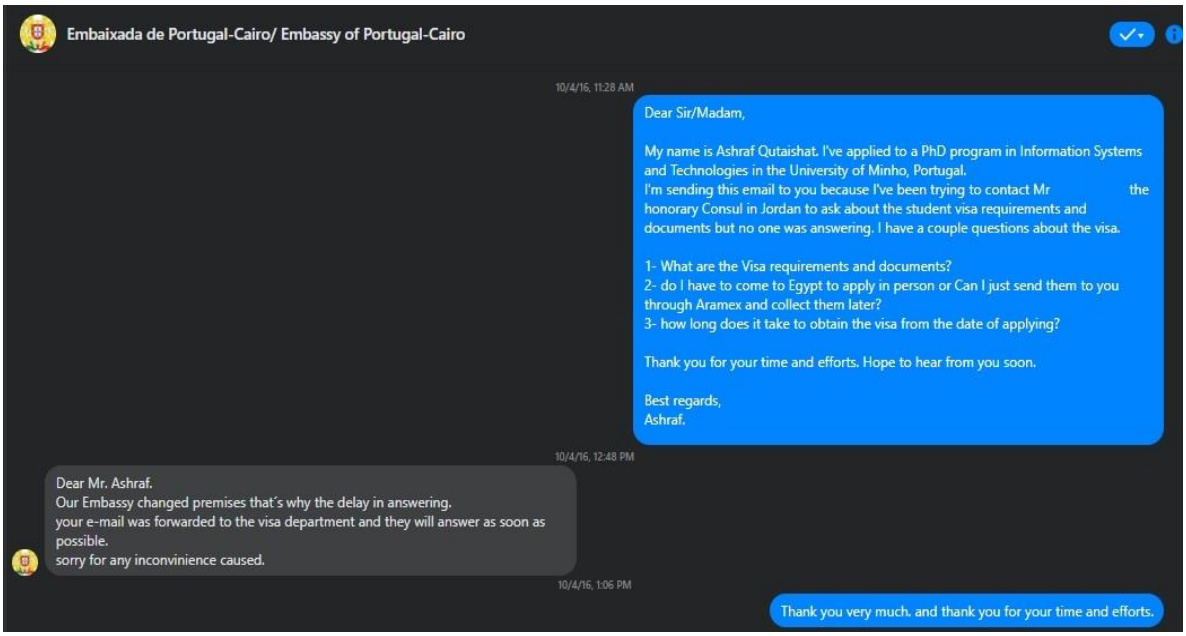

Figure 1 - Example (1) requesting information from a government department using a social media platform.

The second experience was in 2017, after entering Portugal during the initiation of the process of applying for a Family Reunification Visa for my wife. Figure (2) shows the second experience and the use of Facebook Messenger to communicate with the Serviço de Estrangeiros e Fronteiras department (SEF) to inquire about: (a) the location for submitting the application, (b) the type of appointments needed, and (c) general information related to that application. The figure also illustrates the fast response from SEF, which was approximately two hours compared to the official means of communication, which were: (1) phone calls and (b) emails.

The first message in figure (2) states: "Hi, My name is Ashraf Qutaishat. I'm a holder of Portuguese residency card and want to issue a family reunion visa for my wife. How can I do this? where do I have to go to apply? Do I have to take an appointment online and if so what type of appointment should I take? Thank you for your time and efforts. Hope to hear from you soon. Best regards, Ashraf.".

The second message in figure (2) states: "Hello, SEF has a pre-booking system whereby your appointment for any customer service bureau can be booked either by telephone or on-line. You can schedule your appointment by telephone, on working days from 09:00 a.m. to 05:30 p.m., via the number 808 202 653 (fixed network) or 808 962 690 (mobile network). The On-line scheduling (available for Renewing Residence Permit/Residence card and for extending the period of permanence

-applicable to holders of transit visa, short stay visa, or temporary stay vista)system) is available at SEF's Official Website at http://www.sef.pt/portal/v10/PT/aspx/marcacao/index.aspx. Thank you."

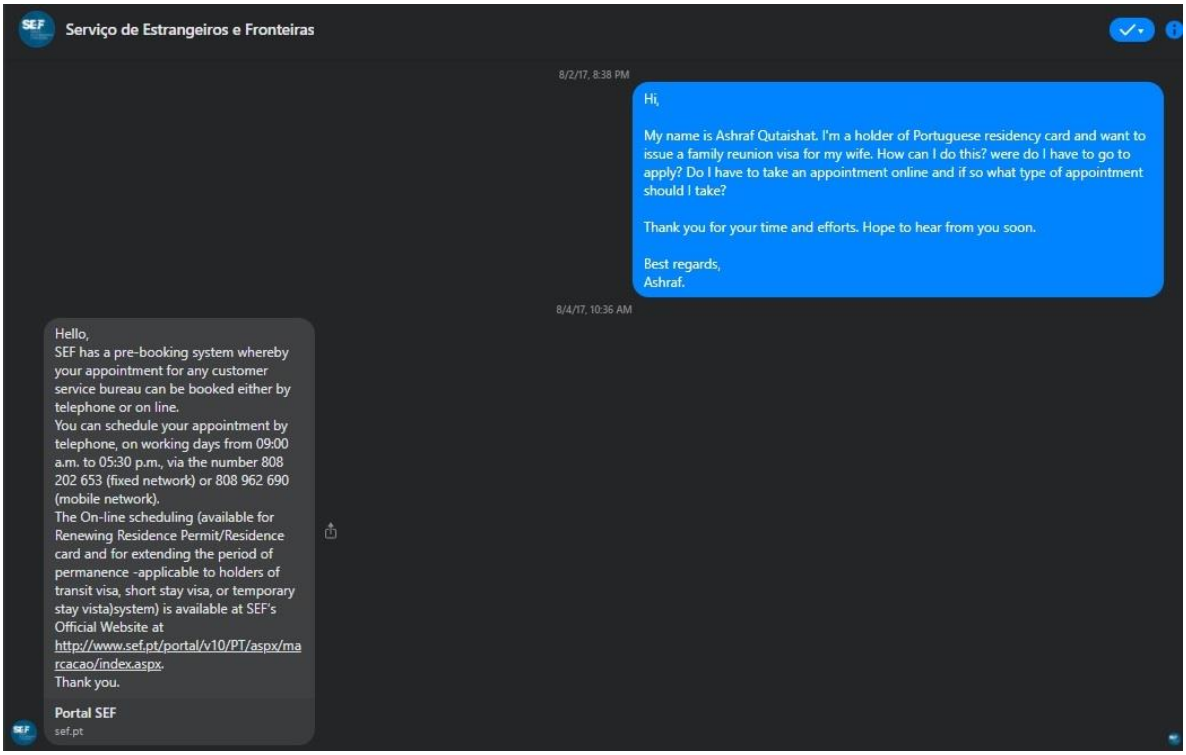

Figure 2 - Example (2) requesting information from a government department using a social media platform.

1.4. Thesis Objectives and Goals

The main objective of this thesis is to investigate the role of communicative practices supported by social media monitoring tools in promoting mindful attentional engagement required to enable attention-based innovation between smart governments and citizens. Further, this thesis aims to develop a framework that describes the mindful attentional engagement between smart governments and citizens. To achieve this objective, this thesis has five goals and four phases.

First, provide a definition of smart government that aligns with the existing definitions in the information systems field. Then, expand this definition by considering the smartness of government as a concept derived from both information systems and strategic management perspectives. We define smart government as a government that senses and reacts to its environment using integrated ICTs, including social media technologies, to support Management By Objectives (MBO) and enable a more transparent and inclusive citizen collaboration to set Specific, Measurable, Achievable, Realistic, and

Time-based (SMART) goals and objectives aimed at addressing the citizens' needs and issues, promoting innovation in the public sector, and improving communications with citizens and communities.

Second, considering government openness is an important dimension for enabling collaboration between citizens and their governments (Harrison & Sayogo, 2014; Charalabidis et al., 2012; Geiger & Von Lucke, 2012; Mergel, 2012c). This thesis will examine the different approaches in which government innovation can be realised.

Third, based on the growing utilisation of social media technologies by governments (Singh et al., 2019; Geiger & Von Lucke, 2012), this thesis will examine the unique properties of social media platforms. Social media refers to any website or online-based application that is built upon the foundations of Web 2.0 and is being used by a large number of entities to enable the development of social and professional networks, multimedia sharing, and user-generated content creation (Kaplan & Haenlein, 2010; Dictionary.com, n.d. a). Further, the thesis will explore and analyse the unique properties of social media monitoring, which refers to the active, constant, and systematic identification and analysis of what is being stated and expressed about something on the Internet (Lutkevich & Hildreth, 2013; Fensel et al., personal communication, 2012). Furthermore, this thesis will examine how social media platforms and social media monitoring tools can facilitate a new type of innovation.

Fourth, define mindful attention and mindful attentional engagement based on prior research and the foundations of the organisational attention theory (Ocasio et al., 2018; Rerup, 2009; Hoffman & Ocasio, 2001; Ocasio, 1997). We define mindful attention as the quality of focusing one's mind on the present; information; objectives, and one's thoughts without pre-judging them to form a complete awareness regarding a specific issue at any given time (Dictionary.com, n.d. e, n.d. f; merriam-webster.com, n.d. a, n.d. b). Further, we define mindful attentional engagement as an action; a process, or a set of processes and actions that leverage(s) the focus of one's mind to form a complete awareness regarding a specific issue at any given time.

Fifth, combine the theoretical foundations of organisational attention and our definitions with social media platforms and social media monitoring capabilities to develop an attention-based innovation

framework that describes the mindful attentional engagement between smart governments and citizens.

1.4.1. Research Activities

Our research is divided into four phases. All phases relate to each other and work towards expanding the literature review, deepening our understanding of the selected phenomenon, and answering our research question.

Figure (3) presents how we organised the research to be concluded in four years (1461 days), which started on the 1st of March 2017 and should have been completed by the 1st of March 2021. However, although we purposely designed the timeline to ensure sufficient flexibility to face any irregularity that may occur due to the nature of our research, in "Chapter 5, section 5.3" we discuss the COVID-19 pandemic disruption and its impact on the timeline of our study.

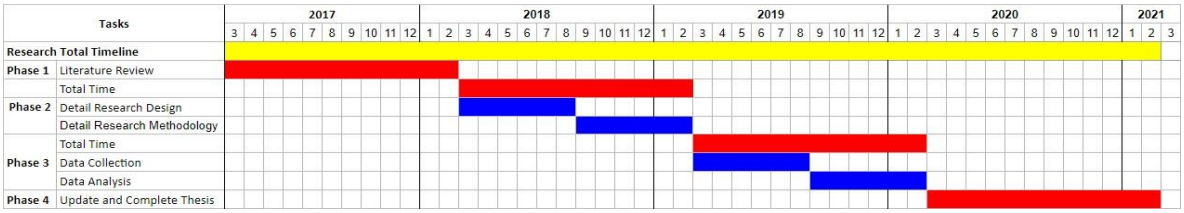

Figure 3 – Planned research timeline.

Phase 1: The literature review.

We have determined that the first phase must be completed within twelve months, from the 1st of March 2017 until the 1st of March 2018. During this period, we gathered documents, papers, and data related to our area of interest in e-government, open innovation, and social media technology. At the end of that period, we produced a literature review focused on the following research gap: the role of communication practices supported by social media monitoring tools in promoting mindful attentional engagement for smart governments towards the citizens' needs. Furthermore, we developed an attention-based innovation framework that enables the development of guidelines and techniques to address this issue.

We published our literature review and framework in the Conferência da Associação Portuguesa de Sistemas de Informação (CAPSI2018) conference titled "Hybrid Innovation for Smart Government: A Literature Review". Moreover, published an extended abstract from our literature in the KM2021

conference, a publication of the International Institute for Applied Knowledge Management titled "Knowledge Management Tools, Methods, and Models in the Context of SMART Governments: A Literature Review".

Phase 2: Defining and detailing the research design and methodology.

The second phase is also estimated to be concluded within 12 months starting from the 1st of March 2018 to the 1st of March 2019. During this phase, we detailed the research design describing how we formulated the research question and its main aspects as illustrated in "Chapter 4, section 4.1".

Since our research is concerned with the development of a framework aimed at holistically describing a phenomenon occurring in the social world. We decided to design a qualitative method in the form of semi-structured interviews using the grounded theory approach. There are three types of interviews: (a) structured interviews, (b) semi-structured, and (c) unstructured (Payne and Payne, 2004).

Semi-structured interviews allow the researcher to address multiple areas in-depth with open-ended questions aimed at accessing the participants' perspectives and experiences while maintaining some degree of consistency (University of Leicester, 2009). On the one hand, this type of interview has no time limit and requires little guidance from the interviewer (Ramos, personal communication, January 05, 2018). On the other hand, it provides the researcher with sufficient flexibility to describe the topics under examination (Ramos, personal communication, January 05, 2018). Further, this type of interview allows the researcher to provide participants with more information about their interesting perspectives and maintain their motivation during the discussion (Ramos, personal communication, January 05, 2018).

Due to these benefits of semi-structured interviews, we intended to implement in our study semi-structured interviews with citizens and local government officials in Portugal and western European countries that use social media monitoring. Furthermore, due to linguistic barriers, we have also planned to provide the interviewees with a translated version of the questions that we were going to ask them to ensure they have a clear comprehension regarding what we are researching and striving to achieve.

Furthermore, to communicate our work with the scientific community, we are planning to publish our research design and methodology at a conference or well-reputed journals such as: the Government

Information Quarterly, Technological Forecasting and Social Change, Public Relations Review, and Research Policy journals.

Phase 3: Implementing the research methodology.

The third phase is divided into two stages: data collection and data analysis. Each stage is estimated to last six months starting from the 1st of March 2019 to the 1st of March 2020. The first 6 months of this phase are directed to collect data by implementing our selected qualitative method; followed by another six months to analyse and validate our data to revise and improve our framework.

First, we drafted the questions we intended to ask in our interviews based on the aspects we wanted to measure in our framework. Then, we conducted pilot interviews to gather important feedback to improve the drafted questions by testing whether our selected interviewees would have difficulties understanding the drafted questions (Nemoto & Beglar, 2014; Wilson, 2023). This process resulted in significantly improving our questions, while some questions required to be divided into multiple questions, other questions required a change in the way we asked them.

This phase, as expected, has significantly improved our framework as a result of the valuable perspectives the participants have provided and the findings from the analysed data. We are also planning to publish our findings and share our contributions with our peers and the scientific community.

Phase 4: Finalising, updating, and completing the research.

The final phase was dedicated to finalising and concluding this doctoral thesis. We estimated this phase to be completed within 12 months, from the 1st of March 2020 until the 1st of March 2021. However, due to delays in phase (3), the start of this phase had to be postponed until September 2020. During this period, we updated and reorganised our literature review due to the long-time span of the doctoral program.

This phase produced a long, well-grounded, and rigorous doctoral thesis regarding our phenomenon of interest, which will be submitted for publication in well-reputed journals such as: the Government Information Quarterly, Technological Forecasting and Social Change, Public Relations Review, and Research Policy journals.

1.5. Thesis Structure

This thesis is divided into seven chapters, including this foregoing introduction. The second chapter focuses on the literature review and thoroughly discusses the concept of smart government in the information systems field. Further, the chapter thoroughly examines innovation and social media technologies in the context of smart governments.

The third chapter discusses knowledge management research trends in the context of smart governments. Furthermore, this chapter presents the attention-based framework and its aspects. The fourth chapter focuses on the research question and its aspects, as well as the chosen research design and methodology.

The fifth chapter presents and discusses the data gathering and analysis processes. The sixth chapter presents the results of the data analysis. The final chapter discusses the findings and presents the thesis contribution, study limitations, future research, and recommendations for practitioners.

–CHAPTER 2–

Chapter 2 - Literature Review

Summary

This chapter aims to investigate the state-of-the-art research on mindful attentional engagement based on social media monitoring integrated heterogeneous data for smart governments. While research on smart governments, open innovation, social media technologies, and knowledge management is contemporary in the digital government context, most of the literature focuses on the implementation and technical aspects of these concepts and technologies rather than the role of communicative practices supported by social media monitoring tools in promoting mindful attentional engagement between smart governments and their citizens. Therefore, this chapter commences with a brief introduction in the first section. Therefore, this chapter commences with a brief introduction in the first section, followed by an examination of the concept of smart government and its definition in the information systems field in the second section. The third and fourth sections thoroughly analyse open innovation and social media technologies in the context of smart governments. Finally, the chapter concludes with a summary of the key points discussed.

2.1. Introduction

The new age of smart cities, smart governments, and smart societies is changing the way we live and how we engage with one another. As technology advances, citizens increasingly expect efficient services from their governments that can cope with the dynamic environment surrounding their communities (Qutaishat & Alex, 2018; Meijer et al., 2012a). Further, citizens continue to demand that their governments transform communication to be more open and citizen-centred using social media technologies (Qutaishat & Alex, 2018; Meijer et al., 2012a).

In the past, governments responded to demands for improved services by automating processes and integrating ICTs into their e-government systems (Abu-Shanab, 2013; Gil-Garcia, 2012; Shadbolt et al., 2012; Walser & Schaffroth, 2011). However, due to the low-value efforts of governments, lack of communication with citizens, and limited citizen participation and collaboration, many governments have turned to the private sector for guidance (Loukis et al., 2017; Criado et al., 2013; Fensel et al., personal communication, 2012). Particularly, governments have looked to the successful utilisation of social technologies by the private sector to learn from their experience and integrate social media

technologies with their e-government systems due to the valuable benefits held by social media technologies (Loukis et al., 2017; Criado et al., 2013; Fensel et al., personal communication, 2012).

Today, many governments collect and provide huge amounts of data, which can create confusion for the decision-makers and either promote or hinder their decisions and the quality of their attention (Qutaishat & Ramos, 2021; Qutaishat & Alex, 2018; Bertot et al., 2012b). Emerging ICTs and e-government systems have focused on improving government practices, performance, services, communications with citizens, and managing big data, which established the settings for the emergence of smart government (Abu-Shanab, 2013; Gil-Garcia, 2012).

2.2. Defining Smart Government

Our research topics of interest ranged from:

- Alignment between the Internet of Things (IoT) and the Internet of Everything (IoE) with the smart government.
- Methods of processing and measuring information in multi-way communication channels between smart government and citizens.
- Challenges in smart government data security and privacy issues.
- Strategy formulation and methods to prioritise goals, objectives, and gathered information on the upper levels of the smart government.
- Methods of communicating smart government strategies, visions, missions, and goals from the upper levels to the citizens and operational levels using social media technologies.

After analysing the literature, we have decided to focus this thesis on investigating the role of communicative practices supported by social media monitoring tools. Furthermore, we wanted to investigate how the use of social media monitoring tools by smart governments can draw the attention of the decision-makers towards the issues and needs of their citizens and align the perspectives of decision-makers and the general public (Qutaishat & Alex, 2018; Panagiotopoulos et al., 2014; Bertot et al., 2012b).

Our interest in smart government and the communicative practices supported by social media monitoring stems from the fact that governments are expanding the utilisation of social media technologies to disseminate information, improve performance, and foster openness with their

governed societies (Charalabidis & Loukis, 2014; Sæbø, 2011; Sæbø et al., 2009). Hence, citizens' needs and issues, the prosperity of societies, and mindful attention become the environment that surrounds the communications between smart governments and citizens through social media technologies. Therefore, integrating social media communication capabilities with smart government systems is crucial to enhance government performance, improve the flow of information, and improve the analysis of the gathered information to assess current government services, applications, and processes by detecting and resolving inefficacies.

In this regard, we present a framework in "Chapter 3, section 3.3" that describes how social media monitoring tools support communication practices in facilitating a mindful attentional engagement between smart governments and citizens. This is achieved by taking advantage of the multi-way communication channels to foster a wider and more transparent collaboration, participation, and innovation processes between smart governments and citizens. However, it is important to establish a clear definition of what constitutes a smart government.

Smart government has been described in the Information System (IS) field as an evolution of the e-government concept. In this new perspective, the government senses and reacts to its environment through the intelligent use of various emerging technologies and innovation strategies. It seeks to improve services, information integration, inter-agency collaboration, advance the well-being of its citizens, and address the public sector challenges (Pereira et al., 2018; Shamsi et al., 2018; Gil-Garcia et al., 2016, 2014; Gil-Garcia, 2012; Criado et al., 2013; Washburn et al., 2009). Table (1) illustrates how smart government has been described and defined in the Information Systems field.

Table 1 - Smart government definitions in the Information Systems field.

Smart Government Definitions in the Information Systems Field	
Authors	**Definition**
Shamsi et al., (2018)	"It is the application of innovative business models and technology to address challenges that public-sector organizations face in service delivery".
Recupero et al., (2016)	"A government that implement smart governance initiatives where an open dialogue between citizens and city officials is enabled through an ICT platform".

Gil-Garcia et al., (2016)	"A government that sense and react to the environment based on data relevant to their decision making".
Gil-Garcia et al., (2014)	Term "used to characterize activities that creatively invest in emergent technologies coupled with innovative strategies to achieve more agile and resilient government structures and governance infrastructures".
Gil-Garcia et al., (2014)	"A smart government, or the organizations and networks within a political jurisdiction (e.g., a city, a town, a nation), would use emerging and nanotechnologies and various innovation strategies to gain a good understanding of their communities and constituencies (being percipient), they would use that ability to accurately assess situations or people (being astute), show sharp powers of judgment (being shrewd), and then make decisions and respond quickly or effectively (being quick)".
Scholl and Scholl, (2014)	"A government that can be characterised by openness and transparency of its decision-making and actions, open information sharing, stakeholder participation and collaboration, leveraging its operations and services via intelligent and integrated technology use, as well as its role of facilitator of innovation, sustainability, competitiveness, and livability".
Mellouli et al., (2014)	"Government"..." movement to open data with open licenses and in easier to re-use formats" and "technology ubiquity"..."contributing to the production of impressive amounts of data that have the potential to help"..."better understand complex social problems as well as to improve government relationships with citizens, private organizations, NGOs and other governments".
Nam and Pardo, (2014)	"A city government" that "comprises" of "public service management and local government administration" in which the government "is a central actor that plays a pivotal role to lead and coordinate smart city initiatives"; "thus making city management and city services two main dimensions of a smart government".
Awoleye et al., (2014)	"The implementation of a set of business processes and underlying information technology capabilities that enable information to flow seamlessly across government agencies"

Awoleye et al., (2014)	"An advanced government" that "presents opportunities that people can avail themselves of, including: services, participation and communication anytime, anywhere and with any device through convergence and integration of smart IT and government services" where the advanced government "provides a platform" that enables itself to "proactively pushes relevant, unique data to citizens based on their profiles" which can aid the advanced government in providing "real time information to her citizens. As changes occur to a citizen's circumstance, government processes are triggered to provide the appropriate service(s)."
Howard, (2013)	"A government that Smart government applies information, communication and operational technologies to all operational areas across multiple domains, process areas and jurisdictions to generate sustainable public value".
Howard, (2013)	"Extends earlier concepts of e-government, joined-up government, and open government to take full advantage of the information and technologies needed to improve government services in ways that are quick, measurable, affordable and sustainable" and "Seeks to leverage the Nexus of Forces — that is, the combined and synergistic impacts of social, mobile, big data and cloud technologies. During the past five years, these forces have worked together to offer new ways to permanently improve how governments serve and interact with the needs and expectations of the public" and "Enables collaboration among government entities, non-profit organizations, private-sector companies and the public. Smart government uses this collaboration to help integrate and improve previously distinct processes, systems and policy domains".
Gil-Garcia, (2012)	"Governments that use sophisticated information technologies" such as "Sensors, virtualizations, geographic information technologies, social media applications, and other elements could function like a brain to manage" their own governmental "resources and capabilities" as well as managing "the participation of social actors, the physical infrastructure, and the machines and equipment using that infrastructure"..."to interconnect and integrate information, processes, institutions, and physical infrastructure to better serve citizens and communities".

Nam and Pardo, (2011)	"A mechanism to create managerial and organizational capabilities for effective use of technological tools and conditions"

It is important to clarify our aims and definitions to remove any ambiguity in our research. For instance, smart city, smart government, and smart governance are related but different terms, and sometimes it can be difficult to distinguish between them due to their interconnection. Our work is concerned with the smart government; however, there is no comprehensive definition in the literature and among scholars that encompasses the term smart government.

For example, smart governance, according to Pereira et al., (2018) refers to "the intelligent use of ICT to improve decision-making through better collaboration among different stakeholders including government and citizens". Scholl and Scholl (2014) define smart governance as "redesigning the formal democratic governance while maintaining the historical developed democratic principles and a free market economy in which smart government has to cope with complexity, uncertainty, build competencies, and achieve resilience". And according to Willke (2007), smart governance refers to "an abbreviation for the ensemble of principles, factors, and capacities that constitute a form of governance able to cope with the conditions and exigencies of the knowledge society".

We view the smartness of governments as more than information integration or intelligent use of various emerging technologies. We view it as a concept derived from two fields: (a) the information systems field, and (b) the strategic management field. Therefore, we define SMART government as a government that senses and reacts to its environment using integrated ICTs, including social media technologies to support Management By Objectives (MBO) and enable a more transparent and inclusive citizen collaboration to set Specific, Measurable, Achievable, Realistic, and Time-based (SMART) goals and objectives aimed at addressing the citizens needs and issues, promoting innovation in the public sector, and improving government communications with their citizens and communities.

Investigating the role of communicative practices supported by social media monitoring is a complex process. However, we perceive this investigation as more than just a way of handling citizen-generated data and sharing government visions. We view it as a framework that provides smart governments with guidelines to develop models and techniques that enable a mindful attentional engagement with their

citizens to identify, prioritise, resolve, fulfil, and meet the needs and aspirations of their communities and citizens by promoting collective and transparent collaboration, participation, and innovation.

2.3. Smart Governments and Open Innovation

Traditionally, government innovations were interpretations of imposed policies and legislations resulting in either new services or improvements to existing services based on data generated by official government agencies (Loukis et al., 2017; Kankanhalli et al., 2017; Severo et al., 2016). Furthermore, these interpretations were regularly regarded as low-value efforts due to flaws in the statistics generated by the official government agencies and governments' constant focus on automating systems and reducing expenditures (Kankanhalli et al., 2017; Pfeffermann, 2015).

However, the continuous demand from the public for their governments to be more innovative, transparent, and responsive in their services, coupled with a change in the mindset of government officials towards providing and delivering smart services, has directed government innovations to start being driven by the needs and expectations of two main actors: smart governments themselves and the public (Singh et al., 2019; Mohammed et al., 2016; Criado et al., 2013; Meijer et al., 2012a; Mergel, 2012b; Fuglsang, 2010; Walser & Schaffroth, 2011).

Government innovation can be realised in three different approaches:

- Open innovation as a top governmental initiative.
- Open innovation as a formula for problem-solution.
- Continuous incremental improvements on current government services, products, and applications.

In the first approach, smart government prioritises open innovation as an issue of interest (Alarabiat, 2018; Ocasio et al., 2018; Loukis et al., 2017; Fuglsang, 2010; Macintosh & Whyte, 2006; Hartley, 2005). This top-down approach consists of utilising passive social media monitoring tools to create awareness among the decision-makers in smart governments about the needs and issues expressed by the public (Ocasio et al., 2018; Loukis et al., 2017; Fuglsang, 2010; Hartley, 2005). According to Loukis et al. (2017), passive social media monitoring is defined as monitoring issues of interest over the Internet without interacting with other entities to avoid influencing the subjects under monitoring. Once these needs and issues have been identified, closed innovation methods can be implemented to

find solutions and resolve the expressed needs and issues while abiding by the various constraining policies and legislations (Qutaishat & Alex, 2018; Almirall & Casadesus-Masanell, 2010; Loukis et al., 2017; Kankanhalli et al., 2017).

In the second approach, smart governments utilise active social media monitoring methods to find solutions for issues that are predefined by experts in the governmental environment (Ocasio et al., 2018; Loukis et al., 2017; Fuglsang, 2010; Hartley, 2005). According to Loukis et al. (2017), active social media monitoring refers to actively interacting with other entities regarding the issues of interest being monitored over public social media spaces.

In the third approach, smart governments implement a new type of innovation. Here, smart governments would employ both active and passive social media monitoring methods. Passive social media monitoring is used to formulate an awareness regarding what services and applications need to be improved and where the deficiencies are located (Ocasio et al., 2018; Loukis et al., 2017; Fuglsang, 2010; Hartley, 2005). Then, active social media monitoring is utilised to collaborate with the public and find the best solutions for the identified deficiencies in the services and applications (Ocasio et al., 2018; Loukis et al., 2017; Fuglsang, 2010; Hartley, 2005).

The difference between the second and third approaches lies in the way smart governments utilise social media technologies. In the second approach, these technologies are used to address issues that experts have already identified. On the other hand, in the third approach, social media technologies are used not only to create awareness about citizens' voiced needs and issues but also to create knowledge on how to tackle and address those needs and issues (Qutaishat & Alex, 2018; Fuglsang, 2010; Hartley, 2005). Furthermore, the third approach enables smart governments to improve communications with citizens by utilising the multi-way communication channels supported by social media technologies and introducing continuous and incremental improvements on their services, products, and applications (Qutaishat & Alex, 2018; Fuglsang, 2010; Hartley, 2005).

These approaches of government innovations have swayed many scholars such as Singh et al. (2019), Shamsi et al. (2018), Recupero et al. (2016), Gil-Garcia et al. (2014), Gil-Garcia (2012), and Howard (2013) among others, to envision the smart government and its smart services and applications as an opportunity to:

- Address the challenges in current government services and applications delivery.
- Increase citizens participation and collaboration.
- Improve and increase inter- and intra-governmental collaboration and communication.
- Promote innovation in the government and public sector.
- Realise the public mission and advance the well-being of communities and the public.

However, such conceptualizations can be adequately achieved by commencing proactive initiatives, implementing strategic agendas, and utilising powerful communication techniques to draw the public attention towards these initiatives, thus enabling the public to collaborate and participate in such initiatives (Ocasio et al., 2018).

For instance, many countries around the world are currently taking advantage of emerging ICTs to implement smart government initiatives, create intelligent infrastructures, and make well-informed decisions by collecting data from the whole society (Washburn et al., 2009; Giffinger et al., 2007).

For example, The United Arab Emirates stated in (2013) their smart government vision by granting citizens free access to government services at anytime from anywhere (Shamsi et al., 2018).

In South Korea, the government initiated a smart government initiative in (2011) intended to increase citizens' collaboration and participation by granting them free access to services through ICTs and improving information communication (Chung, 2015).

Santander city council in Spain has initiated a project with funds from the European Union to implement numerous sensors in the city aiming to improve public services, environment, and well-being of citizens by collecting data from these sensors and improve public infrastructure and management (Gil-Garcia et al., 2014).

Smart governments may use open innovation, described as the use of inward and outward knowledge streams to stimulate innovation (Chesbrough, 2006a), to foster resilience and openness towards their citizens. However, governments must also prioritise efficiency in managing public resources (Mcnutt, 2014; Bertot et al., 2012a; 2010a). While open innovation methods have the potential to achieve these goals, they might not always deliver the required objectives and goals as they require governments to accurately understand the needs of their citizens and communities (Loukis et al., 2017; Kankanhalli et al., 2017). Furthermore, it is crucial for open innovation methods to be tailored to the fundamental

characteristics and dynamics of smart governments before being implemented (Qutaishat & Alex, 2018; Gil-Garcia et al., 2016).

Furthermore, due to continuous advancements in technology and the emergence of new government challenges, it can be challenging for smart governments to anticipate the needs and issues of the public and governed communities. These challenges are compounded by the lack of strategic agendas and regulations to guide smart governments, making it difficult for them to rely solely on current open innovation methods (Loukis et al., 2017; Kankanhalli et al., 2017; Ham et al., 2015; Bekkers et al., 2013a; Christos et al., 2015; Mergel & Desouza, 2013).

Government openness is an important component of a smart government, enabling collaboration between citizens and their government. The collaboration empowers citizens to address their needs and increases their confidence in their government (Harrison & Sayogo, 2014; Charalabidis et al., 2012; Geiger & Von Lucke, 2012; Mergel, 2012c). Furthermore, the collaboration promotes transparency, strengthens democracy, and improves the well-being of communities (Harrison & Sayogo, 2014; Charalabidis et al., 2012; Geiger & Von Lucke, 2012; Mergel, 2012c).

For instance, Obianuju et al. (2022) studied the correlation between different smart government characteristics and the characteristics of smart governance. The authors conducted a survey of (130) postgraduate students and found that smart government can be viewed as a basis for developing governance using advanced information systems and technologies to make smart decisions during unpredictable and changeable events.

Hujran et al. (2021) have examined the literature on e-government to develop a maturity model for smart governments. The authors have used the model to assess (41) government website in the United Arab Emirates. The authors found that the smart government initiatives in the United Arab Emirates are highly advanced and incorporate the use of innovative technologies in many domains.

Ruijer et al. (2017) studied the democratic processes and interactions within open data platforms and developed an activity model for open data use by utilising Engeström's (2001) activity theory model. The activity theory model uses two activity systems as its minimal unit of analysis, each consisting of seven interconnected elements: (Subject, Object, Tools and resources, Community, Rules, Roles “division of labour”, and outcome).

The aim of the activity theory model is to examine the phenomenon of expansive learning within an organisation. The model is represented by a two-dimensional matrix consisting of four questions: (a) Who are the subjects of learning? (b) Why do they learn? (c) What do they learn? and (d) How do they learn? Furthermore, the model is coupled with five principles: (1) The activity system as a unit of analysis, (2) multiple points of view of activity, (3) the historical authenticity of activity, (4) contradictions as a motivation of change in activity, and (5) potential expansive transformations in activity.

In the United States, during the Obama administration, an open government portal was initiated to give citizens free access to government data and contribute to policy-formulation to improve services and applications (Lee et al., 2012).

In Singapore, the government has created an open data portal to increase citizens' participation in policy-making and collaboration with various government departments as well as promote transparency (Yang & Kankanhalli, 2013).

The government of the Netherlands launched the "De Publieke Zaak" project to enable various government departments to innovate by analysing the inward streams of insights from citizens (Kankanhalli et al., 2017).

In Greece, one of the significant initiatives in the country's history to promote government transparency, increase citizen collaboration and participation in government decisions and policies is "Διαύγεια" which translates to "Clarity" (Stamati et al., 2015).

Valuable insights from citizens can create awareness among smart government officials and direct their attention to social and public issues and needs (Mergel, 2013b; Ferro & Molinari, 2010). By directing the attention of smart government officials to the voiced needs and issues of their citizens and communities, constructive dialogues can be opened, leading smart government officials to actively listen and engage with their citizens and resolve these issues (Qutaishat & Alex, 2018; Macintosh & Whyte, 2006). Therefore, many governments have begun providing citizens with free access to data to promote innovation, improve communication, and provide better and smarter services and applications (Kankanhalli et al., 2017; Mergel & Desouza, 2013).

However, despite the efforts displayed by governments to implement smart government initiatives, these efforts continue to be regarded by citizens as low-value due to the constant focus on processing raw data, automating systems, and reducing expenditures (Alarabiat, 2018; Kankanhalli et al., 2017).

For instance, Loukis et al. (2017) have studied the use of social media monitoring for open innovation in the public sector. They have evaluated a novel approach to monitoring social media platforms, developed as part of the NOMAD project "Policy Formulation and Validation through Non-moderated Crowdsourcing" and partially funded by the European Commission's research initiative, "ICT for Governance and Policy Modeling". The researchers created a multi-perspective framework incorporating three evaluation aspects (political, crowdsourcing, and diffusion of innovation theory) to assess the effectiveness of social media monitoring tools in government for promoting and supporting open innovation.

Mergel (2017) has explored how practitioners and researchers in public administrations are using data measurement tools to gain a deep understanding of the data collected from social media platforms.

Kankanhalli et al. (2016) have studied open innovation and the emerging issues from using open innovation methods in the public sector. They have also highlighted the difference between using open innovation in the private sector and the public sector.

Criado et al. (2013) have investigated the role of social media in streaming government information and making information available to the public. The researchers also explored the use of information technology to develop innovative services and its effect on the relationship between governments and citizens. Further, the authors highlighted the growing significance of information technology and policies in promoting democratic practices. Through their research, they identified three dimensions of social media implementation in governments that contribute to a better understanding of its usage. The first dimension is tools, which "refers to the social media instruments and applications that public administrations explicitly use". The second dimension is goals, which refers to "the existence of some goals or ends derived from the use of social media" and " the importance of the social, policy, and managerial objectives that are expected to directly or indirectly arise from the use of social media in public agencies". The third dimension is topics, which refers to "the existence of different aspects of social media in government for knowledge building".

Janssen et al. (2012) studied the benefits and adoption barriers to government use of open data. They have conducted interviews to determine the benefits and barriers to governments' adoption of open data. The authors have found a disparity between the benefits and barriers, a conceptually simplistic view, and misunderstandings associated with open data utilisation and implementation. Therefore, governments must formulate strategic agendas that emphasise the use of technological advancements, particularly social media monitoring, to collaborate and communicate with citizens and facilitate innovation, overcome the challenges associated with smart government implementation, and change the perceived governmental efforts from low-value to high-value.

2.4. Smart Government and Social Media Technologies

The term social media refers to any website or online-based application that is built upon the foundations of Web 2.0 and is used by a large number of entities to develop social and professional networks, share multimedia, and create user-generated content (Kaplan & Haenlein, 2010; Dictionary.com, n.d. a). Therefore, social media technologies have the potential to facilitate a new type of innovation due to their unique properties (Zeng & Gerritsen, 2014; Panahi et al., 2012):

Information technology dependent: social media technologies are online platforms and websites that have transformed the role of entities from passive receivers of information to active co-creators (Ocasio et al., 2018; Geiger & Von Lucke, 2012). This is achieved due to the availability of free online common and public workspaces, as noted by Ocasio et al. (2018) and Geiger and Von Lucke (2012).

According to Criado et al. (2013), social technologies provide an open and observable space for interactions between governments and their citizens. However, the traditional structures of governments often have multiple hierarchical levels and complex bureaucratic procedures, which can create challenges for governments in effectively utilising social media technologies to engage with citizens. Therefore, institutional changes are necessary to address these challenges, as argued by Criado et al. (2013), Meijer et al. (2012b), Mergel (2012b), and Walser and Schaffroth (2011).

Real-time end-to-end communication channels: social media technologies offer multi-way communication channels that allow entities to connect and stay connected, regardless of geographical distance (Alarabiat, 2018; Qutaishat & Alex, 2018; Calenda & Meijer, 2009). These multi-way

communication channels have the potential to transform how governments utilise social media as a tool for interaction (Charalabidis et al., 2014, 2012; Tambouris et al., 2013).

For instance, the use of multi-way communication channels on social media platforms can facilitate interactions between governments and various actors in the public sector, as well as promote citizen participation in government decision-making and policy formulation processes (Charalabidis et al., 2014; Mergel, 2012b). Furthermore, it creates an opportunity for wider and more meaningful collaboration between governments and citizens, rather than using social media technologies as a means of information dissemination from governments to citizens (Criado et al., 2013).

Creation of virtual communities based on the support of the real-time multi-way end-to-end communication channels: this property allows entities with common interests to interact with each other and discuss relevant topics (Geiger & Von Lucke, 2012; Landsbergen, 2010). As a result, these virtual communities facilitate the exchange of explicit and implicit knowledge without any costs (Geiger & Von Lucke, 2012; Fuglsang, 2010; Butler et al., 2004), ultimately leading to the establishment of knowledge societies.

The growing utilisation of social media by governments to improve their relationship with the public, enhance performance by providing higher quality services in a more transparent method, and shift the political culture from data provision to information communication has led many governments to integrate social media technologies with their e-government systems (Singh et al., 2019; Geiger & Von Lucke, 2012). However, such integration can result in a significant amount of data being generated, which can either support or hinder decision-making processes (Qutaishat & Ramos, 2021).

Scholars such as Loukis et al. (2017), Kankanhalli et al. (2017), Mergel (2017, 2012b), Criado et al. (2013), Gil-Garcia (2012), and Meijer et al. (2012b) have expressed concerns about the limited knowledge, strategic agendas, security, and privacy when governments use social media technologies. Furthermore, other scholars have highlighted the challenges of implementing and analysing data collected through social media technologies (Loukis et al., 2017; Mergel, 2017; Olmedilla et al., 2016; Severo et al., 2016; Jain et al., 2010).

Social media technologies can support smart governments in determining strategic agendas and creating complete knowledge. However, this can be achieved if social media technologies are used

adequately and effectively by harnessing the wealth of free information provided by citizens (Ocasio et al., 2018; Loukis et al., 2017; Criado et al., 2013; Geiger & Von Lucke, 2012). In addition to utilising social media platforms, it is crucial to employ social media monitoring tools and analytics that rely on advanced artificial intelligence (AI) algorithms. These AI algorithms would be used to capture, analyse, and process the explicit public citizen-generated content known as the "wisdom of the crowds" (Geiger & Von Lucke, 2012; Surowiecki, 2004).

By analysing and processing explicit citizen-generated content, the AI algorithms can determine which linked and open government datasets should be connected and draw the attention of decision-makers in smart governments to important and pressing matters in their societies (Loukis et al., 2017; Geiger & Von Lucke, 2012; Janssen et al., 2012). This process creates awareness regarding public needs and demands, showcasing the potential of social media monitoring tools within the smart government context.

To accomplish this, smart governments should learn from successful strategies and best practices from the private sector in using social media monitoring and emerging ICTs. This will aid smart governments in overcoming challenges when actively interacting with their citizens through such technologies (Loukis et al., 2017; Schmachtenberg et al., 2014; Geiger & Von Lucke, 2012; Bizer et al., 2009; Chesbrough, 2006a). Further, smart governments can leverage the one-to-many connectivity aspect of social media (Alarabiat, 2018; Qutaishat & Alex, 2018) to implement a new innovation process that involves inclusive collaboration with citizens through social media monitoring tools. This approach can lead smart governments to efficiently achieve the goals of their communities, empower citizens, promote collaboration and participation, increase accountability and transparency, and improve services (Shadbolt et al., 2012; Bizer et al., 2009; Ayers & Völkel, 2008).

The new type of innovation combines certain characteristics of closed innovation, which refers to recognising, managing, and employing knowledge from internal sources to have complete control over introducing modifications to established things or introducing something new (Almirall & Casadesus-Masanell, 2010; Leonard, 1995; Dictionary.com, n.d. b, n.d. c), with certain characteristics of open innovation, as defined in subsection (2.3). Table (2) summarises the differences between the characteristics of closed innovation and open innovation as adopted from Chesbrough (2006b).

Table 2 - Comparing the attributes of closed and open innovation.

Attributes of Closed Innovation and Open Innovation	
Closed Innovation	**Open Innovation**
The most experienced individuals in our field exist inside the organisation	Not all the experienced individuals exist inside the organisation
The organisation must have complete control over the research and development. The opportunities must be discovered and developed internally.	Outsourcing research and development can generate significant benefits for the organisation. Internal research and development are necessary to claim some of the benefits. The opportunities can be discovered, developed, accessed, and modified by the public.
The first organisation to introduce innovation to the market will receive significant benefits	The organisation that has a better business model will receive significant benefits
The organisation that generates better ideas in the field internally will receive significant benefits.	The organisation that best utilises internal and external ideas will receive significant benefits.
The organisation has complete control of its intellectual properties (IP). The intellectual properties are not discoverable and accessible by the public.	The organisation can benefit from the public use of its own intellectual properties and the organisation should buy other intellectual properties whenever they advance the organisation's business model.

Employing social media technologies generates a tremendous amount of data that adds value to citizens. For instance, Geiger and Von Lucke (2012) investigated making government data available to the public without any cost or restrictions on its usage. However, making government data available is insufficient to add value to citizens; the data must also be processed, measured, and connected to create meaningful information that can then be used to generate new knowledge, services, policies, processes, and applications (Wehn & Evers, 2015; Larsson & Kalsnes, 2014; Larsson, 2013). Further, smart governments can use social media monitoring tools to access and capture the collective knowledge of citizens (Surowiecki, 2004). This process can facilitate citizen participation and

collaboration, leading to improvements in government services and applications, reduced operational costs, and the advancement of society and the well-being of citizens (Shiau et al., 2018, 2017; Mossberger et al., 2013; Geiger & Von Lucke, 2012; Tanveer, 2010).

In our study, we experimented with a social media monitoring tool called "Mention". Mention is a real-time social media monitoring tool established in (2012) to assist private organisations in increasing brand awareness, improving reputation, and building valuable relationships on social media platforms. We have chosen Mention due to budget, ease of use, documentation, availability of online support, and technical aspects, which include:

- Providing users with the ability to join conversations on Twitter, Instagram, public blogs, and public Facebook posts. This feature allows entities using Mention to respond and interact with their customers' conversations or posts directly from the Mention dashboard without the need to open separate social media platforms.
- A cross-platform tool that supports collaborative teamwork by allowing users to share threads and assign tasks to each other, enabling them to react more efficiently. This creates dynamic teams within organisations, allowing them to create posts and conversations using different operating systems (IOS, Android, and Windows) and respond to conversations faster.
- The capability to produce customized reports with interactive visualized analytics and data. This feature can aid decision-makers in making sense of the available information (Mergel, 2017; Charalabidis et al., 2014; 2012).
- Thread classification and filtering based on sentiment score (positive, neutral, or negative) combined with the influencer score (0 - 100). This feature shows important voices based on the influencer's number of followers, the rate of posting and sharing, and the language used.

Figure (14) (see appendix (1)) illustrates the home page of "Mention" and its features. The home page is divided into two main areas: (a) the navigation bar area, and (b) the work area. The navigation bar area contains five tabs that will direct the user to different pages with different content when clicked on. These pages are:

The feed page: This page is the default page (see appendix (1)) that will appear to the user immediately after the login process. The page is divided into three areas: (1) the monitored topics and task pane

area; (2) the threads area, and (3) the threads full view area. Moreover, this page enables the user to create new topics (see appendix (2)) to be monitored as well as control and adjust the settings of the monitored topics.

The publish page: This page was under development at the time of writing this thesis. Once the development is completed, the page will support users' social communication by enabling them to plan, schedule, and preview the content before sharing it on all their linked social media accounts.

The influencers page: This page (see appendix (3)) contains lists of influencers and their related information, such as the location of the influencer, the influencer's individual score, the number of interactions for a specific monitored subject, their topics of interest, and the number of their audience and followers. Furthermore, this page enables users to create their own influencer lists based on a specified time period and the social media platform they interact on.

The report page: This page (see appendix (4)) illustrates how the user can create and store customised reports with customised visual data. Furthermore, a sample of the customised reports with customised visual data that we have created is illustrated in (appendix (5)).

The insight centre page: On this page (see appendix (6)), the user is provided with convenient visual data and a range of filters to sort the retrieved data from social media platforms as the user requires.

There has been a growing research interest in social media technologies within the public sector context, particularly social media monitoring. Social media monitoring refers to the active, constant, and systematic identification and analysis of what is being stated and expressed about something on the Internet (Lutkevich & Hildreth, 2013; Fensel et al., personal communication, 2012). However, the majority of publications have focused on the implementation and limitations of these technologies.

For instance, Cao and Kang (2022) have explored how interaction between governments and citizens can be improved using IoT and social media. Using Giddens's theory of structuration and dynamic capability theory, the authors developed a model for acknowledging the citizens role in policy-making and public service delivery.

Wu et al. (2021) have used Resource Dependence Theory and Network Externality Theory to develop a conceptual model of switch behaviours and examine the factors leading the users to access and use government service websites through computers rather than smart government mobile applications.

Campbell et al. (2014) have used data from the Internet and interviews to study the use of social media tools for delivering services in non-profit entities and government departments in south-central New York. They have found a modest use of social media tools with the primary focus on raising community awareness and marketing the organisations' activities. They also noted a lack of long-term vision and strategic agendas for prioritising social media tools.

Mossberger et al. (2013) studied the use of social media technologies in the 75 largest cities of the United States between 2009 and 2011. The authors found that while the use of social networks like Facebook and Twitter has significantly increased, the most commonly used strategy is the push strategy. Push strategy is defined as the direction in which the information is moving between at least two entities (Brocato, 2010).

Oliveira and Welch (2013) utilised data from a national survey to investigate what social media tools are being used to accomplish specific goals and tasks in the governmental workplace. Further, the researchers investigated what were the aspects that influence the implementation of social media tools.

The adoption of social media monitoring by governments can increase citizen participation and collaboration, improve communication with citizens, and promote socially sustainable innovation (Ocasio et al., 2018; Zeng & Gerritsen, 2014; Mossberger et al., 2013; Geiger & Von Lucke, 2012; Panahi et al., 2012). However, it also raises concerns about the lack of appropriate methods, strategic agendas, and knowledge needed to effectively utilise social media, as well as the potential for misuse of these technologies, whether intentional or not (Loukis et al., 2017; Bekkers et al., 2013a, 2013b; Criado et al., 2013).

For example, the Indian government withdrew a plan in (2018) amid concerns about potential violations of constitutional rights to free expression and privacy. The plan aimed to create a new government branch responsible for monitoring and analysing trends from social media platforms, promoting nationalistic sentiments, and categorising individuals based on their influential rates into three categories: positive, neutral, or negative (Financial Times, 2018a, 2018b).

To avoid the creation of social and political concerns related to the use of social media technologies, governments should: (a) regulate the use of these technologies, and (b) develop strategic agendas and policies to prioritise their use to improve government decisions and actions, services, and promote the well-being of societies and citizens (Stamati et al., 2015; Janssen et al., 2012; Janssen, 2011).

2.5. Chapter Conclusion

There are various issues related to the smart government concept as well as open innovation and social media technologies in the context of smart governments. The first issue identified was how the concepts of smart government, open innovation, and social media are defined, evolved, and presented in the information systems field.

The second issue was the identification of different methods that can increase the transparency of smart governments and empower citizens to participate in decision-making and policy-formulation processes to address their economic, cultural, and social challenges. Further, we examined how these different methods can impact and improve the well-being of citizens and facilitate a more inclusive collaboration between citizens and smart governments to resolve and achieve their communities' goals.

The third issue identified was the different smart government initiatives around the world. These initiatives aim to facilitate collaboration between citizens and their governments by empowering citizens to address their needs. These initiatives also strive to increase confidence in governments, promote government transparency, and advance democracy and the well-being of communities.

The fourth issue identified was the unique properties of social media platforms and social media monitoring tools that can facilitate a new type of innovation between smart governments and citizens. Further, one social media monitoring tool called "Mention" was experimented with and presented.

—CHAPTER 3—

Chapter 3 - Towards an Attention-based Innovation Framework

Summary

Information systems are linked to reducing the operational costs of organisations, improving their competitiveness, and strengthening their competencies (Shiau et al., 2018; Geiger & Von Lucke, 2012). Further, organisational attention is associated with shaping organisational structure, advancing organisational learning, and improving how organisations react to their environment (Ocasio et al., 2018; Rerup, 2009; Hoffman & Ocasio, 2001; Ocasio, 1997). While most of the literature focuses on the implementation and technicalities of social technologies in organisational learning and knowledge creation in the private sector, there has been a recent surge in research on this topic within the government context (Qutaishat & Ramos, 2021; Abdalla et al., 2020; Loukis et al., 2017). Moreover, studies have demonstrated that governments that involve and empower citizens in decision-making processes tend to have better services and higher levels of citizen satisfaction and well-being. However, there is still a gap in research when it comes to the use of social media technologies for discovering, analysing, and managing collective knowledge within the context of smart government.

3.1. Smart Governments and Knowledge Management

Knowledge management is defined as the systematic and deliberate process of capturing, managing, applying, and sharing knowledge to add value and promote continuous learning (Dalkir, 2017; Pfeffer & Sutton, 2000). Moreover, knowledge management can be an enabler for efficiency, transparency, and accountability in organisations, as well as a driver for improved attention to issues and decision-making by leveraging the collective knowledge of an organisation (Dalkir, 2017; McAdam & Reid, 2000; Nickols, 2000). Therefore, for a successful implementation of knowledge management, the roles and responsibilities of knowledge managers must be clearly defined and widely understood. This requires organisations to thoroughly understand how individuals and groups collaborate, communicate, and share knowledge while working on similar matters (Arora & Raosaheb, 2011; Davenport, 2005; Nickols, 2003; Blackler, 1995).

The interest in knowledge management has significantly increased in the private sector compared to the public sector (Smith, 2016). Moreover, public sector organisations often have traditional structures with multiple layers of hierarchies and bureaucratic procedures, making it challenging for them to

adopt and utilise knowledge management tools, methods, and models (Agrifoglio et al., 2020; Smith, 2016; Criado et al., 2013; Meijer et al., 2012b; Mergel, 2012b; Arora & Raosaheb, 2011).

Knowledge management in the public sector and government context is a current research area that is increasing in importance (Massaro et al., 2015). However, there is a lack of publications focusing on knowledge management within the smart government context, with only three publications listed on Scopus from 2018 to 2020 (Albreiki & Bhaumik, 2019; Rahman et al., 2018; Rahman and Al Joker, 2018). Researchers have drawn attention to the benefits of integrating and utilising knowledge management tools, methods, and models in public sector organisations to capture, manage, apply, and share knowledge (Arora & Raosaheb, 2011; Mergel, 2011; Cong & Pandya, 2003; Wiig, 2002). Therefore, there is a need to the evolution of research on knowledge management within today's smart governments.

Smart government services can be divided into three main categories: (a) citizens "G2C", (b) businesses "G2B", and (c) governments "G2G" (either administrative units within the governments themselves or collaboration between different governments) (Belanger & Hiller, 2006; Carter & Belanger, 2004). Further, smart governments receive services, products, and information from: (1) citizens "C2G", (2) businesses "B2G", and (3) governments "G2G" (Belanger & Hiller, 2006; Carter & Belanger, 2004).

The implementation and utilisation of knowledge management approaches and tools by smart governments can play a crucial role in meeting the increasing demand for establishing, measuring, and monitoring performance standards for services, applications, and processes, with a greater focus on delivering results (De Angelis, 2013; Edge, 2005). The adoption of knowledge management approaches and tools by smart governments can also shape public expectations of how these governments should respond to their needs and demands, including providing more tailored services, being more innovative, transparent, responsive, and shifting the political culture from simply disseminating information to actively communicating with the public (Loukis et al., 2017; Kankanhalli et al., 2017; Gil-Garcia et al., 2014; Amayah, 2013; Jain & Jeppesen, 2013; Edge, 2005).

Smart governments' cycle of providing and receiving services, information, and applications can generate a wealth of information (Geiger & Von Lucke, 2012; Godbout & Godbout, 1999; Lehrer,

1990). Such information, when further processed, can provide valuable knowledge to smart governments about their internal and external environment, as well as the status and perception of their services, applications, and processes (Geiger & Von Lucke, 2012; Godbout & Godbout, 1999; Lehrer, 1990). With the use of social media monitoring tools by governments, the amount of collected and produced data and information will continue to grow (Qutaishat & Alex, 2018; Mergel, 2013b). However, the collected and produced data and information can only evolve into knowledge when they are acknowledged as appropriate comprehension of truth and a valid explanation of the real world (Mergel et al., 2009; Godbout & Godbout, 1999; Lehrer, 1990). Therefore, the high volume of available data, combined with the goal of promoting societal prosperity, can also motivate governments to provide more transparent and smart services (Gil-Garcia et al., 2016; Gil-Garcia, 2012).

Newly generated knowledge is classified into two categories: (a) tacit knowledge, and (b) explicit knowledge (Dalkir, 2017). While tacit knowledge is more challenging to articulate, capture, and share because it resides in the minds and experiences of individuals, explicit knowledge is easier to manage and share because it can be recorded in tangible means (Panahi et al., 2012; Leonard, 1995). Furthermore, scholars such as Dalkir (2017), Nonaka and Takeuchi (2007), and Nickols (2000) perceive explicit knowledge as the final outcome of a process or several processes, while tacit knowledge is the capacity or competence to produce that final outcome.

Today, the governmental environment is facing increasing challenges due to the rising costs of governance and the demand for smarter and more efficient services (Mc Evoy et al., 2019; Criado et al., 2013; Linna et al., 2010). Furthermore, the constant evolution of the Internet, social technologies, and e-government systems can further complicate the already complex operational environment of governments and deprive governments of the available knowledge in the collected and processed data and information (Qutaishat & Alex, 2018; Dalkir, 2017). Therefore, integrating effective knowledge management tools, methods, and models with smart government systems is pivotal for smart governments.

Currently, there is a wide range of tools that smart governments can utilise for capturing, managing, and sharing knowledge. These tools can be classified into the following categories:

- Knowledge management framework.

- Knowledge-based systems.
- Knowledge mining, analysis, and visualisation.
- Information and communication technologies.
- Decision support systems and expert systems.
- Content repository.

However, a combination of these tools should be integrated and utilised in alignment with the overall strategy and focus of smart governments for optimum employment and benefit (Qutaishat & Ramos, 2021; Dalkir, 2017).

For instance, Laurini (2021) studied knowledge management and its role in a knowledge society is examined through the lens of smart city governance. The author argues that to achieve sustainable development in smart cities, knowledge must be viewed as a valuable asset that is shared with citizens. Moreover, the author focuses on the potential of artificial intelligence to handle citizens' knowledge and integrate it with the geographic knowledge systems of smart cities to aid in the decision-making and problem-solving processes (Golledge, 2002). Furthermore, the study explores various knowledge management models, such as locational models and multi-criteria multi-actor decisional models, that local governments can use to facilitate decision-making and problem-solving in smart cities.

Alvarenga et al., (2020) have analysed the development of the digital government to describe the aspects of digital transformation in the Portuguese public sector and how knowledge management contributes to such transformation. The authors carried out a literature analysis, then conducted a survey to investigate the role of digital government research on the practice of knowledge management within governments and estimate how the digital transformation is progressing in governments. The authors found that knowledge management can drive and determine the strategy and approach of managing digital governments successfully and make organisational knowledge more attainable and up to date. Moreover, the authors have also found out that knowledge management is a significant factor in the success of digital transformation of governments.

Seo and Joo (2020) studied the South Korean government's open tourism data to develop a tourist opinion mining and tourism destination assessment platform. For mining the opinions of tourists, the authors have created an integrated big data system to analyse then visualise the information from

tourism information service systems including geographic information system-based maps. Furthermore, the authors have interconnected the visualised information with mined tourists' opinions from the comments on the web then categorised them based on sentiment to provide an evaluation of tourist destinations in South Korea.

Albreiki and Bhaumik (2019) have carried out a quantitative method of research by collecting information from the employees in The United Arab Emirates Federal entities through a survey to investigate the influence of knowledge management on the effectiveness of smart government initiatives. The authors have found that knowledge management in terms of knowledge sharing, knowledge organisation, knowledge accountability, and the utilitarian role of knowledge management can be capitalised on to improve the effectiveness of smart government initiatives.

3.2. Knowledge Management Research Trends in the Context of Smart Governments

3.2.1. Review Principles

We conducted a systematic literature review to analyse the current trends in academic research on knowledge management within the context of smart government. The systematic literature review allowed us to collect and analyse data from various academic publications. As suggested by previous research (Liao et al., 2017), we used a qualitative approach for our systematic literature review. However, we only followed two of the three principles outlined by Liao et al. (2017) to ensure consistency during the analysis. These two principles were: (a) explicit outlining of adding and removing criteria, and (b) data collection with the support of the original description text of the publication. The third principle, which involves an objective review by at least two examiners for each collected paper and each cluster of summarised data, was not followed for all screened papers due to the second reviewer's time and availability constraints. Further, the third principle requires that if two examiners cannot reach a consensus, a "third examiner will make the final decision" (Liao et al., 2017). Table (3) presents the criteria for adding and removing publications.

Table 3 - Adding and removing criteria.

Adding and Removing Criteria		
Add/Remove	**Criteria**	**Clarification**
Removing	Without full text	(WFT) A paper without full text to be assessed
	Non-related	(NR) Knowledge management is not related to any aspect of the smart government.
	No citation	(NC) A paper does not have any citation.
	Roughly related	A paper in which:
		RR-1: An aspect of smart government is only used as an example but was not the focus of the paper.
		RR-2: Smart government is only used as a cited expression.
		RR-3: Smart government is only used in keywords and/or references.
Adding	Partially related	PR-1: A research about an aspect of smart government without referring to smart government.
		PR-2: An aspect of smart government only used to support the description of some challenges, issues, or trends that a knowledge management paper intends to deal with.
		PR-3: An aspect of smart government is one of several objects that is reviewed, surveyed, or discussed.
		PR-4: The publican was between the period from 2018 to 2020.
		CR-1: The research efforts of a paper are explicitly and specifically about the role knowledge management plays in smart government or

	Closely related	the way smart government implementation is affecting the utilisation of knowledge management in smart governments.
		CR-2: The publican was between the period from 2018 to 2020.

3.2.2. Systematic Literature Review

The increased interest in knowledge management in today's governments and smart governments has presented different contributions to the literature and the body of knowledge. To provide an empirical analysis of the collected data, this research will follow the same methodology outlined by previous studies and implement both qualitative and quantitative approaches (Liao et al., 2017; Curry et al., 2009; Pickering & Byrne, 2013).

We built our repository to conduct a systematic literature review. We have limited our search to two main search engines: (a) Scopus, and (b) Emerald. We have used Google Scholar as a secondary search engine if we could not access the publication through the two main search engines and to verify the number of total citations per each gathered document.

For Scopus, we have employed three queries, with each one retrieving a different number of publications:

Query (1): This query was aimed to search and retrieve publications related to knowledge management and smart government keywords. The query resulted in four publications retrieved, one of which was removed due to non-compliance with CR-2 and PR-4 criteria.

The query was as follows:

TITLE-ABS-KEY ("smart governments" "knowledge management")

Query (2): This query was aimed to gather publications related to knowledge management and knowledge communication within the context of governments. The query retrieved 51 publications, which we then filtered according to the outlined criteria in table (3).

The query was as follows:

TITLE-ABS-KEY ("governments" "knowledge management" "communication") AND (LIM-IT-TO (PUBYEAR , 2021) OR LIMIT-TO (PUBYEAR , 2020) OR LIMIT-TO (PUBYEAR , 2019) OR LIMIT-TO (PUBYEAR , 2018))

Query (3): This query was aimed to collect publications on knowledge management within the context and aspects of smart governments. Therefore, we selected the following keywords that falls within the smart government field based on our analysis of the smart government literature: Developing Countries; Knowledge; Knowledge Based Systems; Decision Making; Knowledge Management System; Public Sector; Sustainable Development; Local Government; Government; Knowledge Acquisition; Knowledge Transfer; Governance Approach; Intellectual Capital; Government Institutions; Organizational Performance; E-government; Knowledge Sharing; Public Policy; Regional Planning; Collaboration; Knowledge-sharing; Learning Organization; Organizational Learning; Public Administration; Risk Management; Data Mining; Digital Transformation; Government Data Processing; Government Organizations; Higher Education; Higher Education Institutions; Information Dissemination; Knowledge Exchange; Knowledge Management Practices; Knowledge Management Process; Smart City; Urban Growth; Big Data; Budget Control; Decision Support; Developing World; Educational Institutions; Exploratory Research; Government Agencies; Government IS; Government To Governments; Information And Knowledge Managements; Knowledge Creations; Knowledge Workers; Planning; Policy Making; Population Statistics; Risk Assessment; Social Capital; Social Media; Social Networking (online); Supply Chains; Tourism; Academic Institutions; Artificial Intelligence; COVID-19; County Governments; Data Visualization; Decentralization; Decision Support Systems; Decision Supports; E-governance; E-governments. Furthermore, this query was aimed to collect publications from the following fields related to the smart government operating aspects: (a) Decision Sciences; (b) Social Sciences; (c) Multidisciplinary; (d) Business, Management, and Accounting. The query resulted in 184 publications retrieved, which we then filtered according to the criteria outlined in table (3).

The query was as follows:

TITLE-ABS-KEY ("knowledge management" + "government") AND (LIMIT-TO (SUBJAREA , "BUSI") OR LIMIT-TO (SUBJAREA , "DECI") OR LIMIT-TO (SUBJAREA , "SOCI") OR LIMIT-TO (SUBJAREA , "MULT")) AND (LIMIT-TO (PUBYEAR , 2020) OR LIMIT-TO (PUBYEAR , 2019) OR LIMIT-TO (PUBYEAR , 2018)) AND (LIMIT-TO (LANGUAGE , "English"))

For emerald, we have employed one query which has retrieved 62 publications. We set the year filter from 2018 to 2020 and inserted the query was as follows:

knowledge management AND "Government" AND "Smart government"

Those queries brought our sample size to 301 publications. The filtration process of the collected sample is illustrated in figure (4). This process has reduced our repository, to 40 relevant papers. For each paper deposited in the final repository we collected the following data: (1) Paper title, (2) Authors, (3) Publisher, (4) Type of publisher (Journal or conference), (5) ranking of the publisher, (6) year of publication, (7) Number of citations, (8) Keywords, (9) Purpose/focus of the paper, (10) methodology.

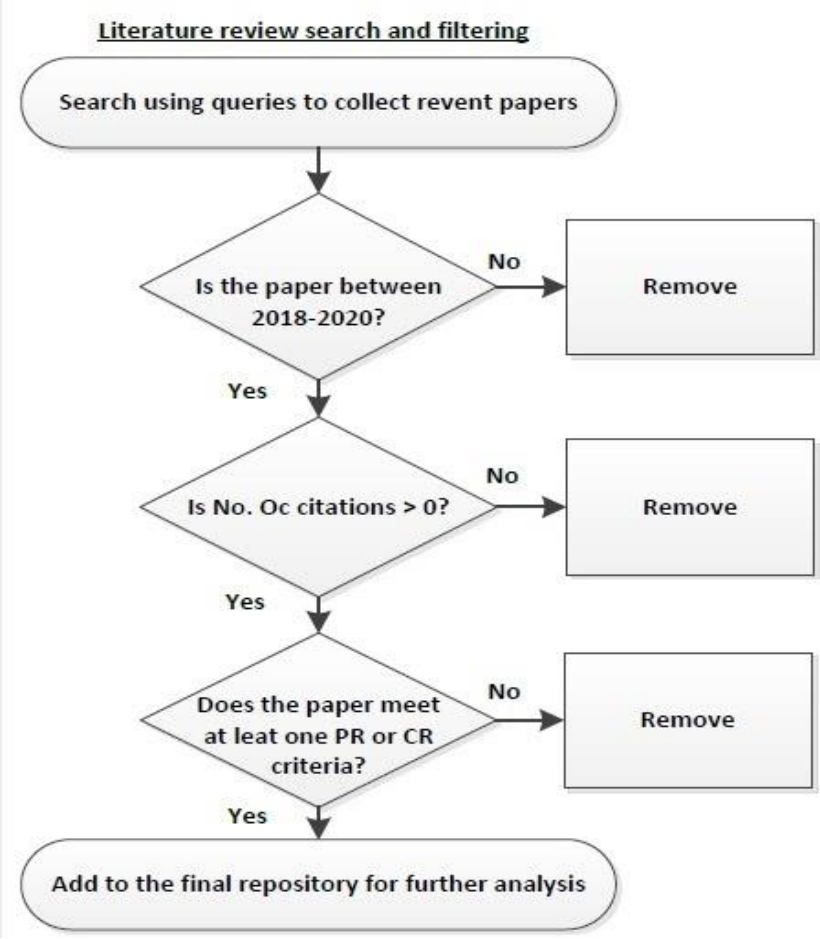

Figure 4 - Systematic literature review search and filtration process.

3.2.3. Analysis and Results

The 40 publications in our final repository were first analysed through qualitative analysis to derive cohesion data. Then the derived data were analysed through quantitative analysis to find the trends in academic research regarding knowledge management within the context of smart governments.

First, all (40) final collected papers are indexed in Scopus, which indicates a high level of quality and relevance in the selection process. Second, the papers were sourced from journals and conferences, with the majority of the publications coming from journals. The distribution of papers in the repository was as follows: 90% (36) from journals and 10% (4) from conferences.

Third, the frequency of publication citations increases over time, with 57% (419) total citations in the year 2018, followed by 41% (302) total citations in the year 2019, then by 3% (19) citations in the year 2020. Fourth, the journals' ranking consisted as follows: Q1 journals had the most publications, with 58% (21), followed by Q2 and Q3, with 19% (7) publications each, then Q4, with only 3% (1) publication.

Fifth, the journal with the most publications was the Journal of Knowledge Management, with 10% (4) publications, followed by Government Information Quarterly and VINE Journal of Information and Knowledge Management Systems, with 8% (3) publications each. Then followed by the International Journal of Public Sector Management and Journal of Cleaner Production, with 5% (2) publications each. The rest of the journals and conferences each provided 3% (1) publication. Furthermore, 48% (19) publications were dated to the year 2018 followed by 43% (17) publications from 2019 and 10% (4) publications from 2020. Sixth, 34% (20) publications used case studies as a research methodology to conduct their research, followed by 28% (16) publications utilised surveys; then 16% (9) publications utilised interviews, while 22% (13) focused on literature review analysis.

Seventh, in 2018, 38% (10) of publications focused on the effects and implications of knowledge management on governments and smart governments. Furthermore, 31% (8) of publications focused on knowledge discovery and capture within the context of governments and smart governments, while another 31% (8) focused on knowledge sharing and transfer within the same context. In 2019, 67% (14) of publications focused on knowledge management effects and implications, followed by 19% (4) focused on knowledge sharing and transfer, and 14% (3) focused on knowledge discovery and capture. In 2020, 75% (3) of publications focused on knowledge management effects and implications,

compared to 25% (1) focused on knowledge sharing and transfer within the context of governments and smart governments.

After analysing our final repository and gathered documents, we have come to the following conclusions: (a) Knowledge management is becoming increasingly important within the context of smart governments and is gaining traction as a significant area of academic research. (b) Social media platforms can serve as a means of transferring and sharing knowledge, as demonstrated by studies conducted by Recupero et al. (2016), Mergel (2017), and Mergel (2012b). (c) Social media monitoring tools can also play a role in discovering and capturing knowledge, as shown by studies conducted by Severo et al. (2016) and Mergel (2011). (d) Further research is needed to fully understand the relationship between knowledge discovery and capture, social media monitoring, and smart governments, as indicated by Qutaishat and Ramos (2021).

3.3. Towards an Attention-based Innovation Framework

Attending adequately to anything requires the focus and concentration of one's mind on the thing that is being attended to (Ocasio, 1997; James, 1890). Attention in psychology is defined as the cognitive orientation of the mind on one selected thing out of several alternative things (Gardner et al., 1989; Dictionary.com, n.d. d). Furthermore, the focus of attention is defined as intensifying the concentration of the mind on the input and output streams of information and pre-existing knowledge in one's mind as well as on the goals to be achieved regarding a particular thing at a particular time (Gardner et al., 1989; Wyer & Srull, 1986).

Many scholars have studied organisational attention, communication channels within organisations, and how organisations identify, attend to, and learn from external and internal issues.

For example, Ocasio (1997) developed a model of organisational behaviour based on three theoretical principles that describe how the decision-makers in organisations focus their attention on events occurring inside their organisations. Furthermore, the three theoretical principles can be used to explain and understand how events occurring inside organisations shape decision-makers decisions that guide their organisations towards a specific direction:

- Decision-makers actions depend on the issues and solutions they focus on.
- The issues and solutions depend on the situations that decision-makers are facing.

- The situations depend on the allocation of resources within the organisation procedures, communications, and processes.

Hoffman and Ocasio (2001) utilised deductive and inductive analysis of eight cases to develop a model that builds on previous research on attention theory. Their model examines the characteristics of the initial public attention towards a specific event and how an industry publicly responds to external events. Their findings indicate that external events can significantly impact the level of attention within an industry, particularly if there are internal concerns regarding the industry's image or external entities hold the industry accountable for these events.

Rerup (2009) used historical qualitative data to create the concept of attention triangulation. Attention triangulation refers to the identification of high-priority issues that could have a detrimental effect on the organisation by examining the relationship between attention to weak cues and how an organisation learns from crises to design preventative measures. The authors found that attention triangulation can be achieved by overlapping three aspects of organisational attention:

- Attention stability: which refers to "sustained attention to issues" where "stability is realized when the mind takes clear possession of one out of what seem several simultaneously possible issues or objects" (Rerup, 2009).
- Attention vividness: refers to "the complexity of representation of issues" where the mind develops "fluid and evolving categories for noticing and classifying issues and stimuli" (Rerup, 2009).
- Attention coherence: the degree of attention to the same issues across the organisation members and levels.

Ocasio et al. (2018) proposed a more comprehensive role for communications that can shape and focus entities' attention on organisational issues. The authors have also highlighted the advantages and important roles that different communication practices, tactics, and vocabularies play in shaping organisational attention.

We drew upon previous research and the foundations of the organisational attention theory (Ocasio et al., 2018; Rerup, 2009; Hoffman & Ocasio, 2001; Ocasio, 1997) to define mindful attention and mindful attentional engagement. We define mindful attention as the quality of focusing one's mind on

the present, information, objectives, and one's thoughts without pre-judging them to form a complete awareness regarding a specific issue at any given time (Dictionary.com, n.d. e, n.d. f; merriam-webster.com, n.d. a, n.d. b). Further, we define mindful attentional engagement as an action, a process, or a set of processes and actions that leverage(s) the focus of one's mind to form a complete awareness regarding a specific issue at any given time.

Integrating social media monitoring tools with smart government systems can leverage their organisational attention, which involves observing, analysing, and concentrating the time and efforts of decision-makers to resolve issues (Ocasio, 1997). This integration can lead to a more mindful and engaged approach, a "mindful attentional engagement". Furthermore, the integration can encourage and empower citizens to engage in dialogue with their smart governments, utilising various communication practices outlined in "Chapter 2, sections 2.3 and 2.4, as well as Chapter 4, section 4.1", to foster a new type of innovation. However, this type of innovation can only be achieved through collaboration with citizens to analyse, prioritise, and systematically address their needs, requirements, and issues within their communities.

Mergel et al. (2018) examined how government departments are adopting agile approaches and integrating them into their project management, software development, and process reengineering. The adoption of agile approaches is to effectively respond to changes and trends in their dynamic environment and to rapidly implement improvements to their operating processes and procedures. The authors identified four areas in which the term "agile" is used in government contexts: (a) agile project management, (b) agile software development, (c) agile evaluation, and (d) agile acquisition.

Liu et al. (2017) studied rhetorical devices that foster user engagement by holding users' attention and keeping them involved in the dialogue. The researchers identified (24) rhetorical devices by applying regression analysis to (2135) transcripts of TED talks and were able to build a model that can identify applause-evoking sentences.

Cooren et al. (2014) studied how the use of language and communication at work implies that they are connected to the processes, activities, and practices that constitute organisations or organisational phenomena.

Wasik and Iannone-Campbell (2012) examined the role of purposeful and strategic conversations in improving young children's word vocabulary, their learning, and success in school. The authors found that while regular conversations can generate value, purposeful and strategic conversations can be designed to explicitly develop children's understanding and use of vocabulary to further expand young children's vocabulary and develop their knowledge.

Jarzabkowski and Seidl (2008) studied the impact of strategy meetings maintaining current strategic orientations or introducing new variations that drive change in strategic orientations. The authors also analysed eleven key characteristics of strategy meetings and their influence on either reinforcing or weakening existing strategic orientations.

Gentner and Goldin-Meadow (2003) studied the relationship between the cognitive functioning of the mind, language, and thoughts. The authors found that language can both influence and be influenced by an individual's cognitive functioning and thoughts.

Figure (5) presents an abstract visualisation of our attention-based innovation framework for smart governments. We developed this framework by combining the theoretical foundations of organisational attention and our definitions and incorporating social media platforms and social media monitoring capabilities. As a result, this integration creates multi-way communication channels that promote a mindful attentional engagement and facilitate an attention-based innovation between smart governments and citizens.

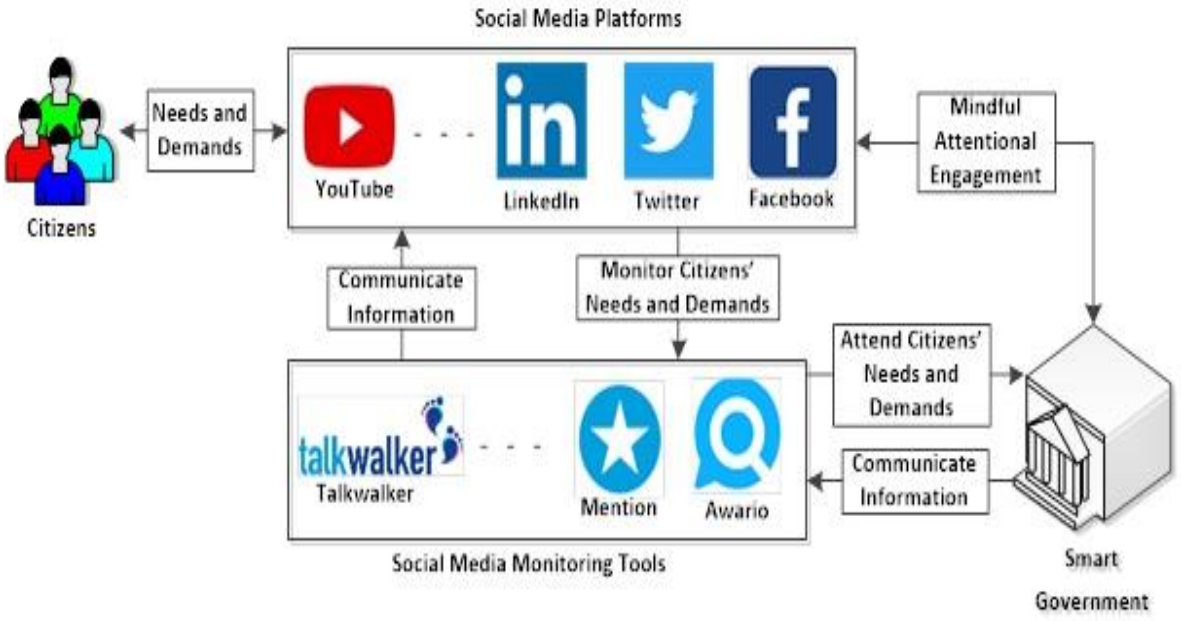

Figure 5 - Abstract visualisation of attention-based innovation framework for smart governments.

Furthermore, our framework consists of four aspects:

Indirect communication channels: This aspect involves the use of social media monitoring tools by smart governments to gather the needs and issues publicly expressed by citizens on social media platforms (Qutaishat & Alex, 2018; Loukis et al., 2017; Fensel et al., personal communication, 2012).

Direct communication channels: In this aspect, smart governments utilise the capabilities of social media platforms to engage in constructive dialogues with citizens and gain context-awareness of their needs and issues (Alarabiat, 2018; Mergel, 2013a, 2012c; Bertot et al., 2012a). As a result, the utilisation will lead to the establishment of e-participation and e-collaboration initiatives, in which smart governments work with citizens to analyse and prioritise their needs and issues (Allen et al., 2020; Siyam et al., 2020; Naranjo-Zolotov et al., 2019a, 2019b).

Mindful attentional engagement: This aspect is achieved through the use of public workspaces on social media platforms, allowing for collaboration between smart governments and citizens to find solutions for expressed needs and issues. The resulting collaboration leads to the fourth aspect of our framework, the "attention-based innovation".

Attention-based innovation: This innovation results in improvements in public services and applications, higher citizen satisfaction with smart government performance, faster processing of requests and inquiries, and faster communication of information.

Figure (6) illustrates how the data and information flow between the different elements of our framework; while figure (7) demonstrates how these different elements interact with and impact each other.

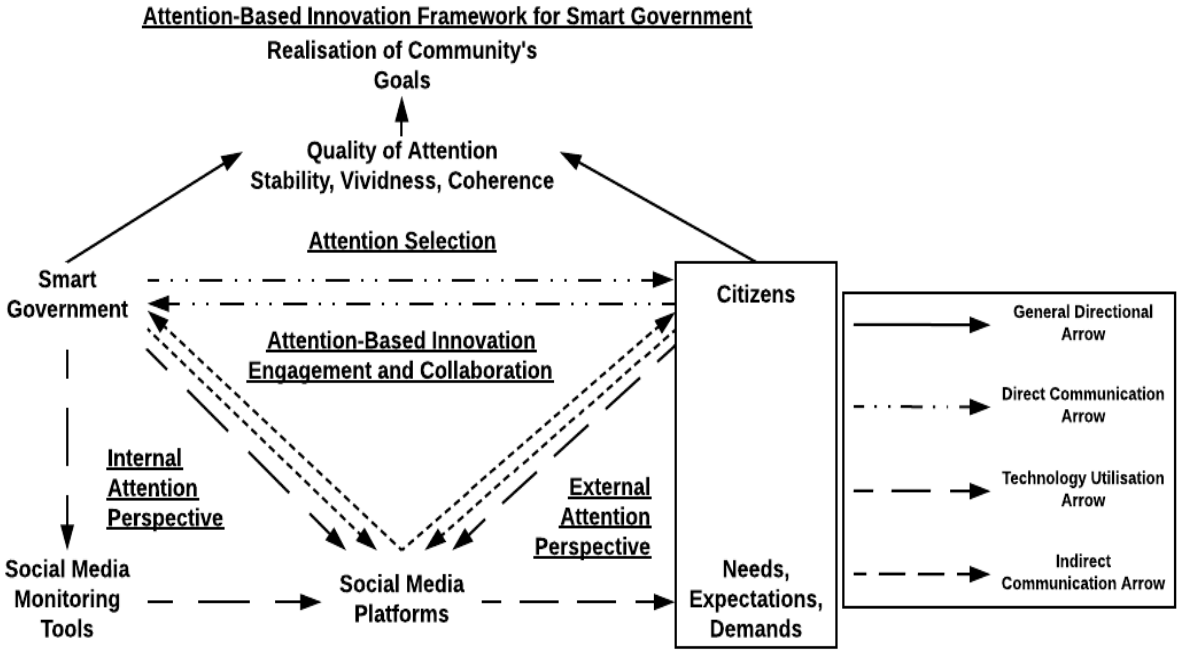

Figure 6 - Attention-based innovation framework for smart government.

In figure (7), the element of social media monitoring tools was adapted from Barros and Ramos (2019), which is based on the work of DeLone and McLean (2016). Furthermore, the element of smart government mindfulness was also adapted from Barros and Ramos (2019), which is based on the work of Weick et al. (1999). In this figure, our framework proposes that smart government attention plays a moderating role in the relationship between the use of social media monitoring tools and smart government mindfulness. In other words, smart government attention moderates the impact of the use of social media monitoring tools on smart government mindfulness.

The use of social media monitoring tools with a certain degree of attention coherence, stability, and vividness towards the needs and issues of citizens can direct "collective attention" (Barros & Ramos, 2019) towards prioritising certain issues or needs over others. As a result, it allows smart governments

to display a certain degree of "collective mindfulness" (Barros & Ramos, 2019) towards these issues and needs, as well as potential solutions and relevant changes to monitored topics, all supported by social media monitoring tools.

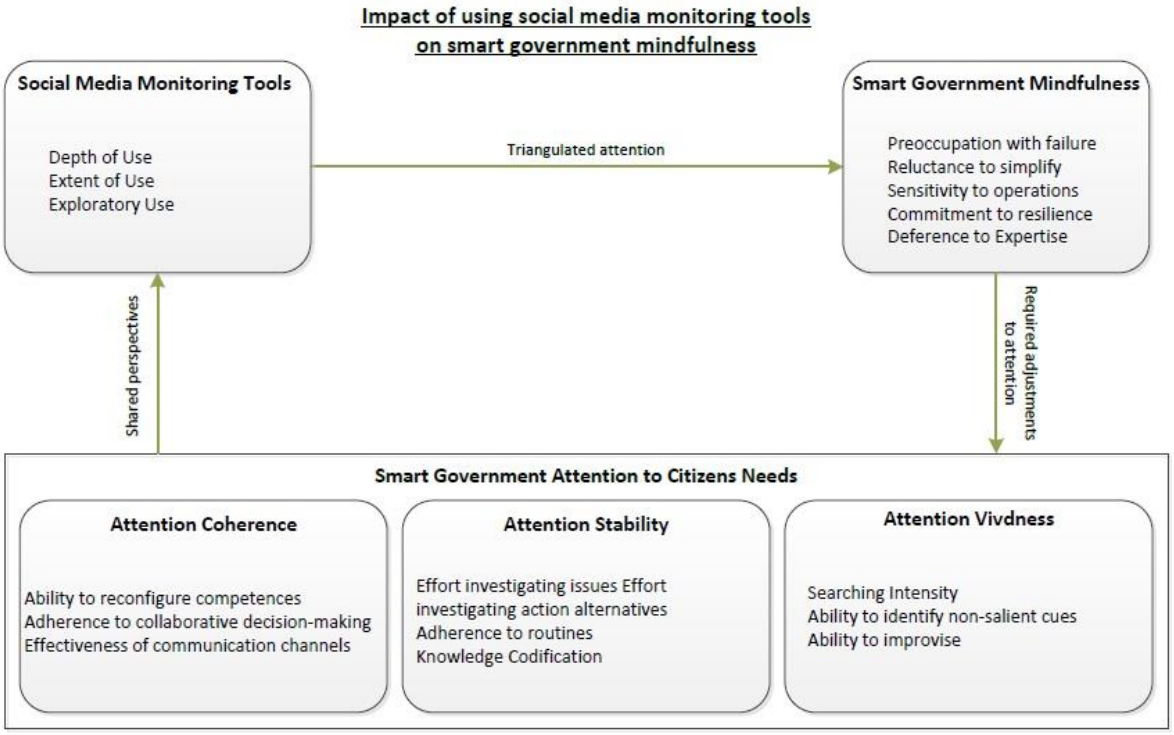

Figure 7 - Impact of using social media monitoring tools on smart government mindfulness.

3.4. Chapter Conclusion

What do we know about organisational attention in the information systems field? On the one hand, information systems are linked to reducing the operational costs, improving competitiveness, and strengthening competencies within organisations. On the other hand, organisational attention is associated with shaping organisational structure, promoting organisational learning, and improving how organisations respond to their environment.

While most of the literature focuses on the implementation and technicalities of social technologies in organisational learning and knowledge creation in the private sector, there has been a recent increase in research in the government context (Qutaishat & Ramos, 2021; Abdalla et al., 2020; Qutaishat & Alex, 2018; Loukis et al., 2017; Medaglia & Zheng, 2016). However, there is still a gap in research

regarding the use of communicative practices and social media technologies in the short and long term to direct the attention of decision-makers in smart governments and facilitate a mindful engagement between citizens and smart governments. Furthermore, studies have shown that governments that encourage interaction, collaboration, and citizen empowerment in decision-making processes tend to have better services, higher achievement rates, and greater citizen well-being and satisfaction compared to those that do not (Shamsi et al., 2018; Boelhouwer & van Campen, 2013; Carter & Bélanger, 2005).

Culture is an important success factor when smart governments utilise social media monitoring tools to interact with their citizens (Gil-Garcia et al., 2014; Pardo & Tayi, 2007; Dawes & Pardo, 2002). The cultural factor plays a significant role in determining the appropriate use of social media monitoring tools by smart governments to engage with their citizens and focus the attention of decision-makers, as culture greatly influences individuals' behaviour (Geiger & Von Lucke, 2012; Gil-Garcia, 2012; Shadbolt et al., 2012).

There were several issues identified in this chapter related to the use of communicative practices mediated by social media technologies in the short and long term, with the goal of promoting mindful attention and facilitating attention-based innovation between citizens and smart governments. The first issue was the history of knowledge management within the context of smart governments and the various approaches used to discover, capture, manage, and share knowledge, with a particular focus on social media platforms and social media monitoring.

The second issue is the current trends in knowledge management research within the context of smart governments, which were identified through a systematic literature review and defined criteria.

Finally, the third issue was the introduction of the attention-based innovation framework for smart governments, which outlines how the different elements interact and impact each other to: (a) direct the attention of decision-makers in smart governments towards urgent issues in their communities; (b) identify deficiencies in government services, products, and applications; and (c) enable the allocation of adequate resources to address the identified issues.

–CHAPTER 4–

Chapter 4 - Research Design and Methodology

Summary

This chapter aims to describe the selected research design and methodology that was applied to collect data related to the theme of our thesis as part of the rigorous scientific research. The chapter starts by describing the research design, including the research question and its aspects, then details the research methodology based on the grounded theory approach due to the nature of our research. Finally, the chapter concludes with a summary of its contents.

4.1. Research Design

Our research design consists of defining the research question, its aspects and goals, and the research timeline. It also describes the chosen research methodology and the tasks for each activity in our research plan. We first describe the purpose of our research in the research. Then, we address the utilised approach to investigate the phenomenon in question. In our research plan, we also present the supporting tools.

Figure (8) presents the research question and its aspects deduced from the conducted literature review. The figure starts by stating the research question and then shows its three aspects, which will be explored in detail throughout this chapter.

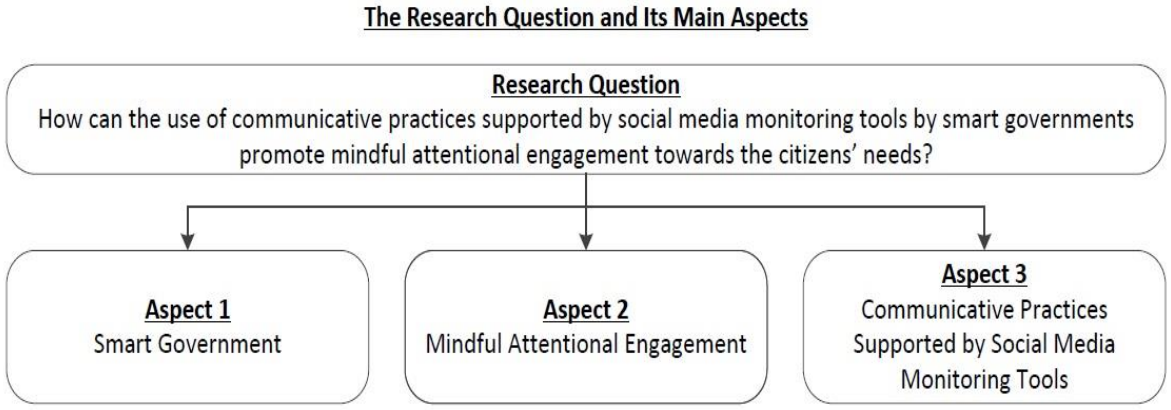

Figure 8 - The research question and its main aspects.

The Research Question: "How can the use of communicative practices supported by social media monitoring tools by smart governments promote mindful attentional engagement towards the citizens' needs?".

Developing an agile and successful framework that promotes mindful attentional engagement between smart governments and citizens and facilitates attention-based innovation is a complex process. This process requires resilient approaches to the dynamic environment of smart government and the rapid changes occurring both inside and outside of it (Mergel et al., 2018; Mergel, 2013b). These issues can present significant challenges, particularly when current approaches and methods fail to achieve desired goals and objectives (Toots, 2019; Bright & Margetts, 2016).

Our research question aims to develop a framework that describes the attention-based innovation process for smart governments. This framework can develop guidelines and techniques that promote mindful attentional engagement during interactions between smart governments and citizens on social media platforms. Consequently, by facilitating attention-based innovation through communicative practices mediated by social media monitoring tools, smart governments can further advance their societies by addressing community issues and achieving their public mission.

Furthermore, understanding the research question aspects and goals allows us to understand what drives communications, engagement, and collaboration between smart governments and citizens. The communicative practices supported by social media monitoring consist of several steps. First, we focus on the identified components of the communicative practices. Then, we explore how governments become smart and the tools and methods that can facilitate smartness in governments.

Aspect 1: Smart government.

A smart government is much more than a government concerned with its citizens' well-being. According to our definition in "Chapter 2, section 2.2", the smartness involves being connected to society, empowering citizens, effectively managing public resources, and achieving pre-defined SMART goals and objectives through the use of social media technologies and other innovative ICTs.

Citizen empowerment is imperative for effective collaboration between smart governments and their citizens. The collaboration can provide smart governments with new perspectives and resources that would otherwise not be available to them. The collaboration also allows citizens to have better

communication with their governments, ensuring that their voices are heard and empowering them to participate in improving government decisions, services, policies, and applications that directly impact their daily lives.

For instance, in "Chapter 2, section 2.3", we highlight examples from countries such as The Netherlands, the United Kingdom, Greece, Spain, Singapore, the United States of America, and The United Arab Emirates that have either announced or implemented smart government initiatives. These initiatives aim to increase citizen participation in government decisions and provide free access to government services and records by enhancing the flow of data and information communication by integrating social media technologies with their systems.

Aspect 2: Mindful attentional engagement.

The first aspect highlights the growing trend of smart government initiatives, which aim to improve communication between governments and their citizens. However, it is important for governments to prioritise the needs and expectations of their citizens by first engaging them in routine communication (Tanveer, 2010). This process can be achieved by utilising social media monitoring tools to establish continuous and reliable information streams. By monitoring social media platforms, governments can gain context-awareness of the issues being discussed in public workspaces. Once information is gathered, smart governments can use social media technologies to directly engage citizens in constructive dialogues to find practical solutions for the raised issues (Qutaishat & Alex, 2018). In this aspect, social media platforms and social media monitoring tools can play an important role in facilitating mindful attentional engagement between smart governments and citizens (Barros & Ramos, 2019; Alarabiat, 2018; Qutaishat & Alex, 2018).

For example, routinized communications between governments and citizens can be found on Twitter, as seen with the National Weather Service in the United States creating the hashtag (#wxreport) and asking users to report significant weather events (Tanveer, 2010). The National Weather Service also provided instructions on using the hashtag and reporting weather events (Tanveer, 2010).

Furthermore, an example of mindful communication is the use of social media by police in the United Kingdom to monitor public events and potential crimes (Tanveer, 2010). During one demonstration, rumours of violence and vandalism spread online. However, officers were able to receive updates and

investigate the situation through social media, ultimately finding the rumours to be false (Tanveer, 2010).

Aspect 3: Communicative practices supported by social media monitoring.

Ocasio (1997) studied the attention in organisations and introduced the attention-based view model, which describes how attention influences organisational decision-making. Ocasio et al. (2018) expanded the attention-based view and highlighted the role of communications in driving strategic change in organisations. Furthermore, they have introduced four principles on how attention can shape the strategic agendas in organisations:

Communicative practices in communication channels: In this principle, the characteristics of the communicative practices are analysed as they represent the techniques used to transfer information between entities. Furthermore, these techniques can drive and direct the attentional engagement between those entities.

Strategic vocabularies as micro-foundations of attention formation: In this principle, the language vocabularies that govern individual attention are analysed for strategic purposes, as they influence the way individuals think. These vocabularies shape the attention of individuals (Wasik & Iannone-Campbell, 2012; Gentner & Goldin-Meadow, 2003).

Rhetorical tactics as determinants of attentional engagement: Attracting and retaining the attention of others is a major challenge (Liu et al., 2017), particularly for smart governments. Further, a link that can form and retain attention between different entities involved in the communication process can be established by using different rhetorical tactics, such as expressing gratitude, asking rhetorical questions, and using a specific language style during communication (Liu et al., 2017; Cooren et al., 2014).

Forms of talk and text to study how strategic agendas are articulated and shared: In this principle, meetings and documents are analysed to form, interconnect, and share strategic agendas between different entities. Under this principle, virtual meetings supported by social media platforms and documents created by using social media monitoring tools play an important role in bringing the attention of smart governments and citizens towards common objectives and goals, even if they have differing perspectives (Cooren et al., 2014; Jarzabkowski & Seidl, 2008).

These communicative practices empower citizens by fostering mindful engagement between governments and citizens and aiding in identifying and prioritising SMART goals and objectives. Further, by utilising these tools, governments can improve their decision-making, services, policies, products, and applications, as well as positively impact their communities.

4.2. Research Methodology

Confining our research to existing technological solutions is due to time and resource constraints and the guidelines of grounded theory, which emphasise building upon existing theoretical foundations and knowledge. These guidelines allow us to build on prior theoretical foundations and existing knowledge (Grams, 2001) and eliminate ambiguity in our research and its associated aspects (Grams, 2001). Further, we make three key assumptions: (a) efficient and comprehensive social media monitoring tools already exist, (b) citizens are willing to have their smart governments use social media monitoring tools to monitor and attend to their needs and demands, and (c) the use of social media monitoring tools by smart governments is only intended for gathering and processing publicly available data to draw attention to important and urgent matters in society and raise awareness about citizens' needs and demands.

Although we found many publications discussing social media technologies in the government and public context, they primarily focused on the implementation and technical aspects of these technologies. Further, we were unable to find studies that specifically examine the role of communicative practices supported by social media monitoring in promoting mindful attentional engagement between smart governments and citizens required to enable attention-based innovation. As a result, we will be using grounded theory to adequately address the issues and technologies related to our research topic. Furthermore, this study will follow the structure of grounded theory, as our goal is to develop a framework that will allow us to approach our research topic in an innovative manner.

The grounded theory approach is not the only method for conducting qualitative research (Grams, 2001). While there are other approaches available, the grounded theory approach is the most suitable due to the nature of our research question and its various aspects. Furthermore, our comprehensive understanding of the research question and its aspects, as well as the emerging issues and challenges identified in "Chapter 1, Sections 1.2 and 1.4", further support this choice.

Grounded theory is a method of developing a theory through a series of stages based on inductive reasoning that explains a specific phenomenon at a conceptual level (Ivankova & Creswell, 2009; Charmaz & Belgrave, 2015; Martin & Turner, 1986). By utilising the grounded theory approach, we can fill the gap in research in our area by incorporating the experiences of other scholars.

Figure (9) presents the six phases of the grounded theory approach, which facilitates the creation of rigorous and scientifically sound research (Grams, 2001).

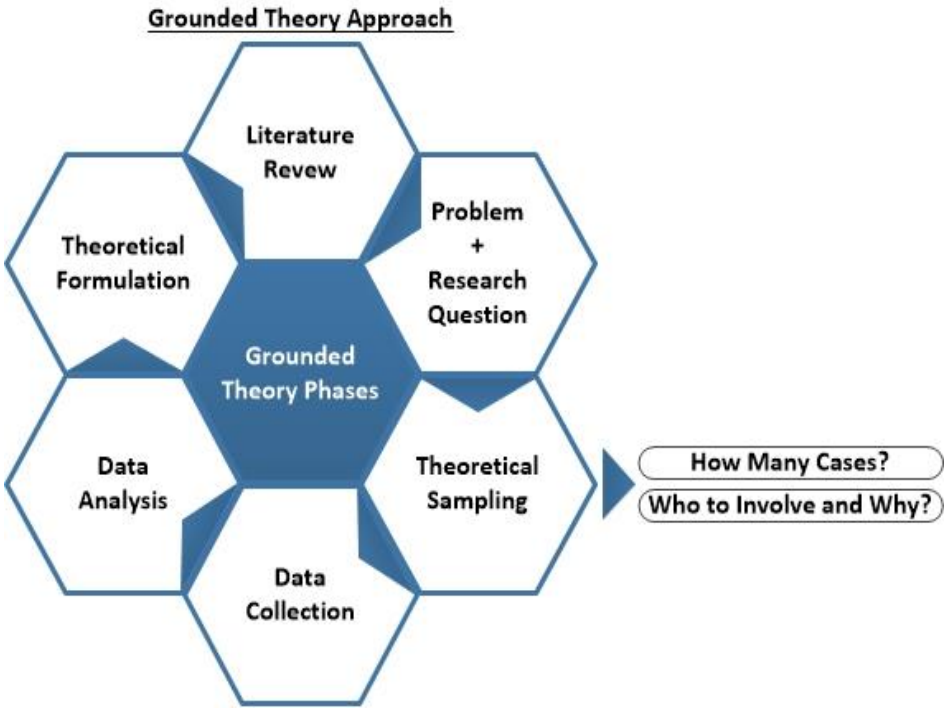

Figure 9 - Grounded theory approach.

In the grounded theory approach, the first step is to select a phenomenon of interest to study. The phenomenon can be an event occurring in the world or an anomaly that is of interest but not yet empirically understood (Grams, 2001). In our study, the phenomenon under investigation was derived from three areas of interest: e-government, open innovation, and social media technologies.

The second step is to conduct a thorough literature review within the scope of the phenomenon of interest. This phase provides scholars with information about what is already known about their selected phenomenon and helps to identify opportunities and research gaps in that area (Grams, 2001). In our study, we utilised Google Scholar, ResearchGate, and Semantic Scholar as initial search engines to survey and retrieve publications related to our three areas of interest.

Figure (10) demonstrates the process we used to create our repository for our literature review. We began our search by using broad terms related to our areas of interest. For example, in the e-government field, we utilised terms such as: e-government, public service, open government, public service and management, and citizen engagement to find relevant publications. In the social media technologies field, we searched for articles using terms such as: social media, social media monitoring, surveillance, social media measurement and monitoring, interactivity and connectivity, and ICT. For the open innovation field, we employed terms such as: open innovation, openness, open data, smart cities, linked open data, and open development.

As a result of our search using broad terms, we retrieved (377) papers that cover our three areas of interest. We followed the PRISMA methodology to conduct a rigorous systematic literature review to maintain consistency with previous research (Liao et al., 2017; Liberati et al., 2009; Moher et al., 2009). This approach allowed us to carefully evaluate the publications based on their titles, abstracts, and keywords, resulting in the exclusion of (283) publications from our initial repository. We then screened the full text of the remaining (94) publications, eliminating (12) due to unavailability and an additional (28) after a thorough review. Our final repository consisted of (54) publications covering our three areas of interest.

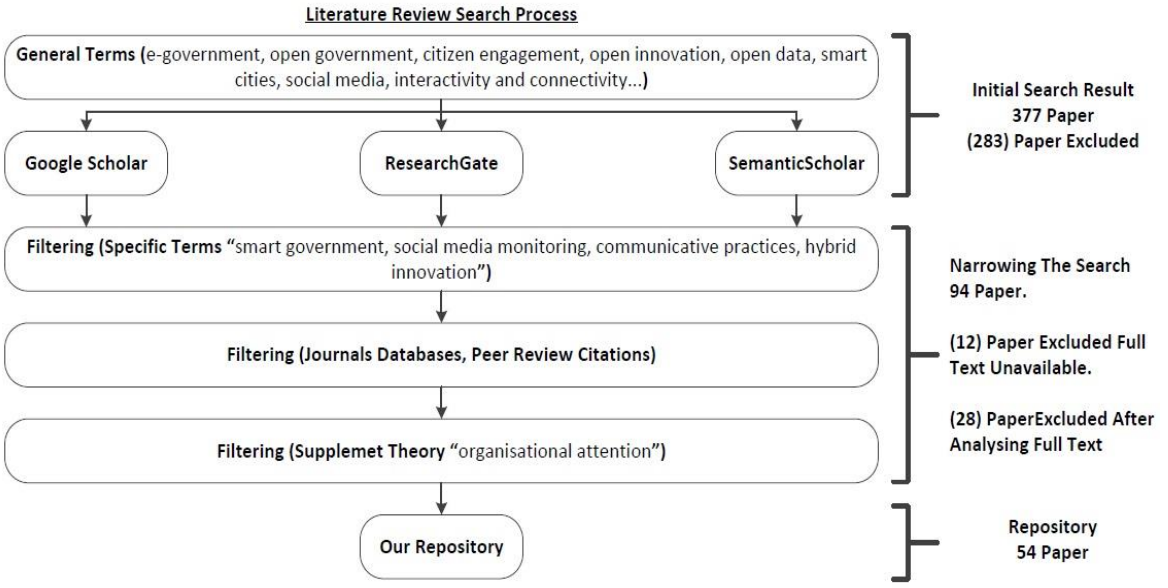

Figure 10 - Literature review search process.

Table (4) presents our approach to organising and structuring the relevant literature that we have gathered (for more details, see table (27) in appendix (7)). This approach is based on the areas of interest specified in the work of Webster and Watson (2002).

Table 4 - Our approach to organise the gathered literature review.

The Approach to The Literature Review		
Concept	**Indicating Keywords**	**Authors**
Smart Government	E-Government	Pereira et al. (2018); Shamsi et al. (2018); Ruijer et al. (2017); Gil-Garcia et al. (2016); Recupero et al. (2016); Chung (2015); Awoleye et al. (2014); Campbell et al. (2014); Gil-Garcia et al. (2014); Harrison & Sayogo (2014); Mellouli et al. (2014); Nam & Pardo (2014); Schmachtenberg et al. (2014); Abu-Shanab (2013); Bekkers et al. (2013a); Boelhouwer & van Campen (2013); Christos et al. (2015); Criado et al. (2013); Howard (2013); Yang & Kankanhalli (2013); Geiger & Von Lucke (2012); Gil-Garcia (2012); Janssen et al. (2012); Meijer et al. (2012a; 2012b); Shadbolt et al. (2012); Wasik & Iannone-Campbell (2012); Janssen (2011); Jain et al. (2010); Walser & Schaffroth (2011); Bizer et al. (2009); Grimmelikhuijsen (2009); Ayers & Völkel (2008); Dawes & Pardo (2002);
	Open Government	
	Linked Open Government	
	Smart Government	
Innovation	Innovation	Kankanhalli et al. (2017); Loukis et al. (2017); Bekkers et al. (2013a); Christos et al. (2015); Mergel, & Desouza (2013); Yang & Kankanhalli (2013); Lee et al. (2012); Mergel (2012b); Nam & Pardo (2011); Almirall & Casadesus-Masanell (2010); Fuglsang (2010); Chesbrough (2006a);
	Open Innovation	
	Closed Innovation	
	Government Innovation	
	Public Innovation	

	Social Innovation	Chesbrough (2006b); Carter & Bélanger (2005); Hartley (2005); Leonard (1995);
Attention	Attention	Ocasio et al. (2018); Liu et al. (2017); Cooren et al. (2014); Rerup (2009); Surowiecki (2004); Hoffman & Ocasio (2001); Ocasio (1997); Gardner et al. (1989); Wyer & Srull (1986); James (1890);
Social Media Technologies	Social Media Platforms	Kankanhalli et al. (2017); Loukis et al. (2017); Mergel (2017); Olmedilla et al. (2016); Recupero et al. (2016); Severo et al. (2016); Stamati et al. (2015); Campbell et al. (2014); Zeng & Gerritsen (2014); Criado et al. (2013); Oliveira & Welch (2013); Mossberger et al. (2013); Fensel et al. (personal communication, 2012); Mergel (2012a); Panahi et al. (2012); Kaplan & Haenlein (2010);
	Social Media Monitoring	
	Social Media Surveillance	

After thoroughly analysing the retrieved publications and gaining a comprehensive understanding of the concepts within our selected area of interest, we utilised filters to refine, focus, and narrow our research theme. For instance, we employed more specific search terms, such as linked open government and smart government, instead of the broader terms open government and e-government. Further, we shifted our attention from social media to social media monitoring. Furthermore, we utilised reputable journal databases, such as Government Information Quarterly, The American Review of Public Administration, and IEEE Intelligent Systems, and employed the peer review citation technique to further narrow our area of interest. However, despite these efforts, our research still needed more focus.

After conducting a thorough analysis of the publications gathered, we discovered a research gap in our selected area of interest. As a result, we decided to focus our study on the role of communication practices supported by social media monitoring tools in two specific areas: (a) promoting mindful attention towards the needs of citizens, and (b) facilitating innovation in the context of smart government, using the organisational attention theory (Ocasio et al., 2018; Rerup, 2009; Hoffman &

Ocasio, 2001; Ocasio, 1997). Figure (11) exhibits the difference between our initial interest area and our focused interest area.

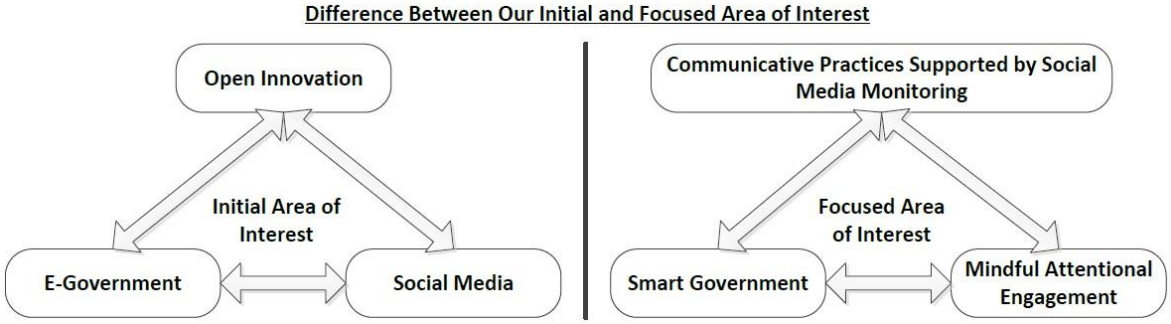

Figure 11 - Difference between our initial and focused area of interest.

The third step in the grounded theory approach is formulating a research question that addresses the research gap identified through the literature review (Ivankova & Creswell, 2009; Charmaz & Belgrave, 2015; Grams, 2001; Martin & Turner, 1986).

The fourth phase involves determining whether to use qualitative or quantitative methods to investigate the chosen phenomenon (Grams, 2001). In our research, after analysing the literature and finding a need for more publications in our research area, we decided to use a qualitative approach, specifically semi-structured interviews. Furthermore, our goal to create a framework that enables smart governments to develop guidelines, models, and techniques has also led us to choose and implement a qualitative approach, specifically semi-structured interviews.

The fifth phase of the grounded theory approach involves implementing the chosen method to collect and analyse data to form meaningful information (Charmaz & Belgrave, 2015). However, due to limitations in time, resources, and budget, we decided to conduct only eight interviews with government officials, subject matter experts (SMEs), and the general public. To ensure the validity and accuracy of the collected data, all the interviews will adhere to Klein and Myers' (1999) seven principles of interpretive field research:

The principle of the hermeneutic circle: This principle can be described as the continuous shift between the interconnected meanings of individual parts and the overall meaning they form to establish a comprehensive meaning of both (Leiden University - Faculty of Humanities, 2017; Klein & Myers, 1999).

The principle of contextualisation: In this principle, the researcher illustrates to the targeted audience how the phenomenon being studied was developed (Klein & Myers, 1999).

The principle of interaction between researchers and subjects: Here the researcher demonstrates how the interactions between themselves, and the targeted audience constructed data related to the phenomenon under investigation (Klein and Myers, 1999).

The principle of abstraction and generalization: This principle states that the validity of the developed conclusions drawn from interpreted data is not determined by the number of cases examined. However, the validity of these conclusions is dependent on how the data was interpreted (Klein & Myers, 1999; Walsham, 1995).

The principle of dialogical reasoning: This principle requires the researcher to clearly define the assumptions and basis of their research. The aim of this requirement is to allow revisions to be made when potential contradictions arise between the actual findings and the initial assumptions (Miskon et al., 2015; Klein & Myers, 1999).

The principle of multiple interpretations: According to this principle, the social, cultural, and educational backgrounds of respondents can lead to different perspectives on the phenomenon under study. Further, it is important for the researcher to consider and examine these multiple perspectives and explain the rationale behind any differences (Miskon et al., 2015; Klein & Myers, 1999).

The principle of suspicion: This principle requires the researcher to carefully examine the responses collected from the participants to avoid biases and false preconceptions (Miskon et al., 2015; Klein & Myers, 1999).

In this step, we utilised the data coding technique to ensure a rigorous analysis of the collected data. We also grouped the concepts and ideas obtained from analysing participant responses into categories, which were then used to revise and improve our work.

The final step in the grounded theory approach is formulating theoretical work with a continuous consideration of the rigorously analysed data to accurately describe the selected phenomenon in the social world (Charmaz, 1996; Corbin & Strauss, 1990; Glaser et al., 1968).

4.3. Chapter Conclusion

This chapter explores the relationship between e-government, innovation, and social media, as identified by scholars. After conducting a literature review and examining the theoretical foundations of organisational attention theory, five main topics emerged: communicative practices, social media monitoring, smart government, attention-based innovation, and mindful attentional engagement. The first topic addressed in this chapter is the research design, including the formulation of the research question, the main aspects of the question, and their interrelatedness.

The second issue was identifying the research methodology. We provided a clear and thorough explanation of the grounded theory approach that we utilised in our research. The rationale behind using the grounded theory was based on three factors: the nature of our study, the lack of existing literature on our specific topic of interest, the research question and its aspects, and our goal of developing a resilient and agile framework to promote mindful attention and engagement between smart governments and their citizens. Further, our framework aims to improve communication, focus the attention of smart governments on their citizens' needs, and empower citizens to participate more effectively in decision-making and policy formulation processes.

Finally, our decision to employ the grounded theory approach and use the semi-structured interviews along with translated versions of the questions was based on the identification of several key issues during our literature review. These issues required an agile and open approach to be addressed. Furthermore, in “Chapter 5”, will provide a detailed explanation and rationale for our decision to switch from interviews to online questionnaires after the spread of the COVID-19 global health crisis.

–CHAPTER 5–

Chapter 5 - Data Gathering and Analysis

Summary

This chapter aims to present the processes of data gathering and analysis. The first section introduces the different approaches to data collection and discusses the challenges encountered during this process. The second section focuses on the reliability and validity of the gathered data and how the reliability and validity are established in our study. In the third section, the data-gathering process is described, along with a justification for the chosen approaches. The fourth section describes the steps and techniques used to analyse the collected data. Finally, the fifth section provides a summary of the chapter.

5.1. Introduction

In "Chapter 1, section 1.4.1", we briefly introduced the approach we have implemented to gather and analyse the necessary data to answer our research question. There are three approaches for collecting data to answer a research question: a qualitative approach, a quantitative approach, and a mixed approach of qualitative and quantitative approaches (Sekaran & Bougie, 2019; Ramos, personal communication, January 05, 2018; Odoh & Chinedum, 2014; Borrego et al., 2009; University of Leicester, 2009). Furthermore, the specific approach chosen depends on the phenomenon being studied, the nature of the research, and the research question itself (Alarabiat, 2018; Borrego et al., 2009; Leedy & Ormrod, 2005).

The qualitative approach involves gathering and analysing textual data related to a phenomenon occurring in the social world (Borrego et al., 2009; University of Leicester, 2009). Furthermore, this approach provides researchers with richer information and a deeper understanding of what is occurring in the social world and why phenomena occur the way they do. Moreover, it can explain individuals' attitudes and opinions towards the occurring phenomena (Borrego et al., 2009; University of Leicester, 2009).

The quantitative approach focuses on investigating a phenomenon occurring in the real world by gathering and analysing numerical data related to the phenomenon (Sekaran & Bougie, 2019; Alarabiat, 2018; Borrego et al., 2009; University of Leicester, 2009). Furthermore, this approach is

used to measure and justify variables and identify cause-and-effect relationships between them (Alarabiat, 2018; University of Leicester, 2009).

The mixed approach involves gathering and analysing qualitative and quantitative data, either sequentially or concurrently, in single research (McKim, 2017; Cunningham et al., 2013; Weathington et al., 2012; Borrego et al., 2009). Furthermore, this method is gaining popularity as it enables researchers to combine quantitative and qualitative approaches and gain a more comprehensive understanding of the phenomenon being studied. Moreover, this approach provides a more complete answer to the proposed research questions (McKim, 2017; Cunningham et al., 2013; Weathington et al., 2012).

Implementing mixed approaches can require more time and resources than implementing either qualitative or quantitative approaches alone due to gathering and analysing two different forms of data (Creswell & Clark, 2017; McKim, 2017). On the other hand, mixed approaches provide researchers with several advantages, such as: the ability to integrate two different forms of data, support the process of creating knowledge, increase confidence and validity of the findings, and provide more comprehensive answers to research questions (Creswell & Clark, 2017; McKim, 2017; O'Cathain et al., 2007; Hurmerinta-Peltomäki & Nummela, 2006).

A qualitative approach is more suitable for this thesis due to the nature of the study, the lack of publications related to the phenomenon under investigation, and the aim to develop a framework that promotes a mindful attentional engagement for smart governments towards their citizens' needs. The data was gathered through semi-structured interviews designed to collect textual data for later analysis and validation of the developed framework.

However, after conducting four interviews, the Coronavirus disease (COVID-19), also known as (SARS-CoV-2), began to spread globally (United Nations, 2020b). This global health crisis made it impossible to conduct in-person interviews with government officials due to the measures implemented to reduce the spread of the virus (United Nations, 2020a) and the lack of utilisation of online communication tools such as Zoom, Skype, and Microsoft Teams by governments (Mori et al., 2021; Chawla, 2020). As a result, the selected qualitative method was changed from semi-structured interviews to online surveys (Wright, 2005). The questionnaires consisted of two types of questions: open-ended questions

and closed-ended questions (Johns, 2010; Bertram, 2007). Consequently, this process consumed more time than originally planned, as illustrated in figure (12).

Figure 12 - The new research timeline.

According to Nemoto and Beglar (2014), Johns (2010), and Bertram (2007), the Likert scale is a psychometric scale, a method developed by an American sociologist named Rensis Likert in his doctoral thesis. The purpose of the Likert scale is to capture and measure the respondents' extent to agree or disagree with a notion.

The most commonly used type of Likert scale is the five-point scale, which grants respondents some flexibility when answering these types of questions (Johns, 2010; Bertram, 2007). Further, online Likert scale items offer several advantages for researchers. First, they provide a clear understanding of respondents' attitudes towards a specific notion. Second, when combined with qualitative methods such as open-ended questions, they can provide a deeper understanding of these attitudes. Third, they allow for reliable analysis of respondents' attitudes. Finally, the data can be validated using various methods (Nemoto & Beglar, 2014; Wilson, 2023).

5.2. Reliability and Validity

Although the reliability and validity of research results are well established within the quantitative research paradigm (Sekaran & Bougie, 2019; Alarabiat, 2018; Lakshmi & Mohideen, 2013), many scholars emphasise the importance of ensuring the reliability and validity of qualitative research results (Lakshmi & Mohideen, 2013; Bashir et al., 2008; Roberts & Priest, 2006; Golafshani, 2003; Morse et al., 2002; Klein & Myers, 1999).

Currently, there is no agreed-upon definition among scholars that defines the concepts of reliability and validity in the qualitative research paradigm (Bashir et al., 2008; Golafshani, 2003). Reliability in qualitative research refers to the degree to which the processes of data collection, analysis, and design

are conducted without flaws, establishing rigor and demonstrating trustworthiness in the quality of the research (Lakshmi & Mohideen, 2013; Roberts & Priest, 2006; Golafshani, 2003; Morse et al., 2002). In other words, this means that the methods used to collect and analyse data must be consistent and free from errors to ensure the accuracy and credibility of the research. Furthermore, validity in qualitative research can be described as the extent to which the research accurately measures what it intends to measure (Lakshmi & Mohideen, 2013; Roberts & Priest, 2006; Golafshani, 2003).

To ensure the reliability and validity of the collected qualitative data through interviews for this thesis, all interviews adhered to Klein and Myers' (1999) seven principles of interpretive field research, as described in "Chapter 4, section 4.2". Furthermore, the data coding technique was utilised to rigorously analyse all qualitative data collected through interviews and mixed questionnaires. This technique involves grouping concepts and ideas from participants' responses into categories, which can then be used to improve the researcher's work (Linneberg & Korsgaard, 2019; Blair, 2015; Namey et al., 2008). Moreover, a reliability estimation method was used to ensure the consistency and stability over time of the Likert scale used to collect quantitative data through the mixed questionnaires.

The reliability of the quantitative data measurements can be measured using three methods: the alternate-form method, the split-halves method, and Cronbach's coefficient alpha method (Lakshmi & Mohideen, 2013; Tavakol & Dennick, 2011; Gliem & Gliem, 2003; Carmines & Zeller, 1979). The most commonly used method is Cronbach's coefficient alpha (Alarabiat, 2018; Lakshmi & Mohideen, 2013). Cronbach's coefficient alpha measures the internal consistency of a set of items designed to measure the same construct, with values of alpha ranging from (0) to (1) (Alarabiat, 2018; Lakshmi & Mohideen, 2013; Gliem & Gliem, 2003; Peterson, 1994; Cronbach, 1951). A higher alpha value indicates a more reliable measurement that accurately captures the intended construct (Alarabiat, 2018; Lakshmi & Mohideen, 2013; Tavakol & Dennick, 2011; Gliem & Gliem, 2003; Peterson, 1994; Cronbach, 1951). Table (5) presents Cronbach's coefficient alpha values and their interpretations.

Table 5 - Cronbach's alpha values and their reliability interpretation.

Cronbach's Alpha Values Reliability Interpretation	
Cronbach's Alpha Value	**Reliability Interpretation**
$\alpha >= 0.90$	Excellent
$0.90 > \alpha >= 0.80$	Very Good
$0.80 > \alpha >= 0.70$	Good
$0.70 > \alpha >= 0.60$	Questionable
$0.60 > \alpha >= 0.50$	Poor
$0.50 > \alpha$	Unacceptable

According to Gliem and Gliem (2003) and Carmines and Zeller, (1979) coefficient alpha value equal to or greater than 0.90 can be considered excellent, while coefficient alpha value equal to or greater than 0.80 but less than 0.90 can be considered very good. Furthermore, coefficient alpha value less than 0.80 but equal to or greater than 0.70 can be considered good, while coefficient alpha value equal to or greater than 0.60 but less than 0.70 can be considered questionable. Moreover, coefficient alpha value less than 0.60 but equal to or greater than 0.50 can be considered poor, while coefficient alpha value less than 0.50 can be considered unacceptable.

Unlike quantitative research, ensuring validity in qualitative research is a complex process. This is because validity is influenced by the researcher's perspective (Bashir et al., 2008; Golafshani, 2003; Creswell & Miller, 2000). While some researchers argue that validity only applies to quantitative research, others suggest that qualitative researchers should take measures to guarantee the validity of their research (Golafshani, 2003; Davies & Dodd, 2002; Winter, 2000; Seale, 1999; Carmines & Zeller, 1979).

We agree with Stenbacka (2001) and Kvale (1995; 1989a; 1989b) in viewing validity in qualitative research as a rigorous explanation of a phenomenon. This view involves establishing trustworthiness in the description of the research method, data gathering and analysis, and communication of the findings. Odoh and Chinedum (2014), Bashir et al. (2008), and Golafshani (2003) also support this notion, considering that validity is about providing clear explanations and descriptions to help others understand the data collection and analysis processes. Further, providing clear explanations and

descriptions allows others to evaluate the validity of the results and determine if the provided explanations align with the descriptions.

Furthermore, scholars such as McKim (2017), Borrego et al. (2009), Johnson et al. (2007), and Maxwell (1992) have argued that qualitative researchers should combine qualitative and quantitative approaches to increase the confidence in and validity of their research results. This notion is supported by Barbour (1998), Johnson (1997), and Mathison (1988), who consider that using both types of data collection and analysis methods can lead to more valid and reliable results. Moreover, the scholars also suggest that combining both qualitative and quantitative approaches allows the researcher to address any anomalies or discrepancies in the findings by revising theories until they align with the results.

5.3. Data Gathering

In this thesis, the chosen methodology for data collection was interviews. Interviews are defined as verbally questioning targeted individuals or groups to gather data on a specific subject under investigation (Ramos, personal communication, January 05, 2018; Marshall et al., 2013; Schultze & Avital, 2011; Kaplan & Maxwell, 2005). Interviews are a commonly used methodology in the information systems field for gathering qualitative data on a specific subject and its context (Blair, 2015; Doody & Noonan, 2013).

We agree with Bailey (2008) and Strauss and Corbin (1998) on the advantages of using interviews to collect data for our study. Interviews were determined to be the most adequate methodology for this study due to the following reasons: (a) The qualitative nature and structure of our study, (b) Our aim to develop an agile and resilient framework for a mindful attentional engagement based on social media monitoring integrated heterogeneous data for smart governments, (c) The issues and challenges related to our phenomenon of interest, which can be adequately addressed using grounded theory, and the interview is one of the main methodologies used to gather data from direct sources in a research where the grounded theory approach is implemented (Foley et al., 2021; Choy, 2014; University of Leicester, n.d.), and (d) Our aim to thoroughly address multiple areas and access the perspectives and experiences of participants while maintaining consistency (Choy, 2014; Myers, 2013).

Many scholars agree that, as a general rule, between six and twelve interviews are considered sufficient to reach data saturation in qualitative research. Further, the most common number of interviews performed is between eight and fifteen (Namey et al., 2016; Galvin, 2015; Francis et al., 2010; Guest et al., 2006; Morgan et al., 2002). However, due to time, resources, and budget limitations, we have decided to conduct eight semi-structured interviews with Western European government officials, subject matter experts (SMEs), and citizens.

While there are various techniques for sampling respondents in qualitative research, the credibility of the findings relies on selecting the appropriate sampling technique that aligns with the research characteristics and methodology (Robinson, 2013; Koerber & McMichael, 2008; Marshall, 1996). In this thesis, we have utilised the theoretical sampling technique, which involves iteratively collecting, coding, and analysing data to generate a theory based on the emerging categories from the data (Breckenridge & Jones, 2009; Coyne, 1997; Charmaz, 1996; Glaser et al., 1968).

Our reasoning for using theoretical sampling is based on several factors. First, theoretical sampling is a fundamental aspect of the grounded theory approach (Grams, 2001). Second, it can be used in conjunction with other sampling methods (Foley et al., 2021). Third, Theoretical sampling is advantageous for researchers who do not have predefined criteria for selecting participants, as the criteria can emerge from the data collection and analysis process (Coyne, 1997). Fourth, theoretical sampling allows for flexibility in participant recruitment and time frame (Robinson, 2013). Lastly, the flexibility of theoretical sampling is useful in semi-structured interviews, where questions and focus points can be adjusted based on emerging new categories (Strauss & Corbin, 1990).

Careful planning was necessary to ensure a successful implementation of interviews. Furthermore, to test the quality of the questions and their relevance to the concepts developed in this study (Cardoso, 2016; Nemoto & Beglar, 2014; Wilson, 2023; Van Teijlingen & Hundley, 2001), we conducted five piloted interviews. Moreover, we asked the participants for feedback at the end of each piloted interview, inquiring about their experience, any difficulties they may have had understanding the questions, and any recommendations or suggestions for improving the quality, structure, and cohesiveness of the questions and the overall quality of the interview (Roberts, 2020; Cardoso, 2016; Turner III, 2010).

Based on the feedback from the piloted interviews, budget considerations, availability of the participants, and the geographical dispersion of participants, we determined that conducting interviews through electronic means, such as Skype and Microsoft Teams, would be the most feasible option. Each interview was divided into five segments, with each segment dedicated to addressing a specific topic. The structure of the interviews was as follows:

- The first segment served as an introduction, welcoming the interviewees and providing them with background information on the thesis theme and the purpose of the interview. Consent for recording the interview was also obtained.
- The second segment focused on collecting general data from the interviewees, including their gender, age group, email, location of residence (city and country), preferred method of communication, job title, and social media accounts.
- The third segment aimed to collect qualitative information on the use of communicative practices between governments and the general public in the interviewees' city/country.
- The fourth segment focused on collecting qualitative information on the use of social media platforms by governments in the interviewees' city/country.
- The fifth segment aimed to gather qualitative information on the use of social media monitoring tools by governments in the interviewees' city/country.

Table (6) presents the number of conducted interviews, the time frame in which they were conducted, the language used for each interview, the medium through which each interview was conducted, the type of interviews conducted, and the participants' area of expertise.

Table 6 - Overview of the conducted interviews.

Overview of The Conducted Interviews	
Interviews type	Semi-structured interviews
Number of interviews conducted	4
Time frame of the interviews	February 2019 to May 2020
Participants' field of expertise	Western European government official: 1 Subject matter experts (SMEs): 2 Citizens: 1
Language in which each interview was conducted	English
Medium through which each interview was conducted	Skype: 2 through Microsoft Teams: 2
Methods used to back up interviews	Audio: 1, Audio and Notes: 3

All of the interviews were semi-structured interviews and conducted in English. Further, all interviews were conducted online, with two using Skype and two using Microsoft Teams. The interviews took place between February 2019 and May 2020. The first three months were dedicated to piloting five interviews. After analysing the feedback and refining the questions, the actual interviews were conducted. Three interviews were completed within the designated time frame, but one was conducted in July 2021. The interviews included two Subject Matter Experts (SMEs), one Western European government official, and one citizen. Moreover, one interview was only recorded as audio, while the other three were recorded as audio and notes.

The global spread of (SARS-CoV-2) has necessitated a change in our data collection approach, as conducting interviews was no longer possible due to the lack of use of online communication tools such as Zoom, Skype, and Microsoft Teams by governments (Mori et al., 2021; Chawla, 2020). However, we were determined not to disregard the data we had collected and analysed from the four interviews we had already conducted. Therefore, we searched for a methodology comparable to the one we had previously used.

We decided to change our chosen qualitative method from semi-structured interviews to online surveys. The decision is based on the research of Nayak and Narayan (2019), Dillman et al. (2014), Lefever et al. (2006), Van Selm and Jankowski (2006), and Wright (2005), who have all highlighted the benefits of using online questionnaires for data collection in our study. The advantages of using online questionnaires for data collection include the practicality of collecting a large amount of data in a short period, the ability to ensure respondents answer each question through built-in functions, the convenience of automatic data storage and analysis, and the cross-platform accessibility of online questionnaires through various web browsers.

We have decided to use a combination of purposive and snowball sampling in our study. Purposive sampling is a non-probability sampling technique that involves selecting a sample with specific characteristics based on the researcher's judgement, "knowledge of the research area, the available literature" (Marshall, 1996). Further, the purposive sampling is influenced by the purpose of the study itself (Black, 2019; Robinson, 2013; Koerber & McMichael, 2008). Furthermore, the snowball sampling technique is a non-probability sampling technique used when the population of the study is difficult to access (Guest, 2014; Robinson, 2013; Koerber & McMichael, 2008; Marshall, 1996). The snowball sampling involves recruiting further participants through referrals from current participants in the study (Guest, 2014; Robinson, 2013; Koerber & McMichael, 2008; Marshall, 1996).

Our decision to use purposive and snowball sampling for our online surveys is based on several factors. First, purposive and snowball sampling are known to be efficient in terms of time and cost, as noted by Black (2019). Second, purposive sampling allows us to use the iteratively collected, coded, and analysed data and the emerging categories from interviews to determine and approach suitable participants for our online questionnaires, as suggested by Saunders et al. (2009). Third, purposive sampling enables us to select a sample population that aligns with the characteristics of our desired participants, as highlighted by Robinson (2013). Fourth, snowball sampling allows us to expand our participant pool by recruiting additional individuals through the initial participants selected through purposive sampling, as discussed by Johnston and Sabin (2010). Lastly, snowball sampling allows us to continue collecting data from referrals until we reach data saturation, as recommended by Saunders et al. (2009).

To design and implement a quality online questionnaire, it is important to carefully articulate the questions in a way that is easily understood by participants and accurately measures what is being measured (Brace, 2018; Fowler, 1995). Furthermore, the questionnaire should have a clear, coherent, and organised structure to prevent confusion and ensure that participants can logically follow the questions, thus increasing the validity of their responses (Alarabiat, 2018; Vehovar & Manfreda, 2017).

After designing a structure for the interviews and formulating questions, we decided to implement the same structure for the online questionnaire. Furthermore, we adapted the interview questions from qualitative to both qualitative and quantitative in the online questionnaire. The structure of the online questionnaire was as follows:

- The first section provided background information on the thesis theme and the purpose of the questionnaire and expressed appreciation for the respondents' time.
- The second section collected general data such as gender, age group, email, location, future communication preference, job title, and social media accounts.
- The third section gathered qualitative and quantitative information on the use of communicative practices between governments and the general public in the respondents' city/country.
- The fourth section focused on collecting qualitative and quantitative data on the use of social media platforms by governments in the respondents' city/country.
- The fifth section gathered qualitative and quantitative information on the use of social media monitoring tools by governments in the respondents' city/country.

Table (7) presents an overview of the distributed online questionnaires, including the number of responses, the time frame for receiving responses, the language in which the online questionnaires were distributed, the medium used for distribution, and the types of questions asked.

Table 7 - Overview of the distributed online questionnaires.

Overview of The Distributed Online Questionnaires		
	Government Officials	**Citizens and Subject Matter Experts (SMEs)**
Type of asked questions	Open-ended and closed-ended questions	Open-ended and closed-ended questions
Number of responses	8	39
Time frame for receiving responses	May 2021 to September 2021	May 2021 to September 2021
Distribution language	English	English Arabic
Distribution tool	Google Forms	Google Forms

From each interview question, we derived two types of questions: open-ended and closed-ended. Further, we developed two versions of the questionnaire, one for government officials and one for citizens and subject matter experts (SMEs). Furthermore, both versions were created using Google Forms and distributed in English. Moreover, the version for citizens and subject matter experts (SMEs) was also translated and distributed in Arabic. The translated version of the questionnaire was distributed alongside the English version to mitigate any difficulties citizens may have had in understanding the questions and statements, as highlighted by Sekaran and Bougie (2016) and Harkness and Schoua-Glusberg (1998). The online questionnaire was available for responses from May 2021 to September 2021.

There is no significant difference between the two versions of the online questionnaire; however, the difference lies in articulating the questions. For example, in the government officials' version, we asked: "In the past five years, has the government department that you work for used any social media platform to communicate with the public in your city/country?". In contrast, in the citizens and subject matter experts (SMEs) version, we asked: "In the past five years, have you used any social media platform to communicate with any government department in your city/country?".

In the citizens and subject matter experts (SMEs) version, we asked, "Do you support the use of social media monitoring tools by different government departments in your city/country to gather and process relevant data that is being made public explicitly by citizens as well as to derive Key Performance Indicators (KPIs) and metrics regarding their current services, applications, and processes to detect and resolve deficiencies?". In comparison, in the government officials' version, we asked: "Do you support the use of social media monitoring tools by the government department you work for to gather and process relevant data that is being made public explicitly by citizens as well as to derive Key Performance Indicators (KPIs) and metrics regarding their current services, applications, and processes to detect and resolve deficiencies?".

Table (8) illustrates the questions developed and used in the interviews and online questionnaire as well as the studies that support each question.

Table 8 - Interview and online questionnaire developed questions with supporting literature.

Interview and Online Questionnaire Developed Questions with Supporting Literature	
Question	**Supporting Studies**
How do you usually communicate with the various government departments in your city/country?	Kala et al. (2020); Androutsopoulou et al. (2019); Misnikov et al. (2017); Ostling (2017); Hofmann et al. (2013a; 2013b); Kolsaker & Lee-Kelley (2008);
How does the government department that you work for usually communicate with citizens?	
Is/are the indicated communication method(s) effective in terms of delivering the citizens' and your (voice, messages, concerns, complaints, suggestions, and so forth.) to the government officials in your city/country?	Ho & Cho (2017); Sanina et al. (2017); Elvira et al. (2014); Jianu et al. (2013); Meijer et al. (2012b); Ebbers et al. (2008);
Is/are the indicated communication method(s) effective in terms of delivering the citizens' (voice, messages, concerns, complaints, suggestions, and so forth.) to the government decision-makers and officials in the government department you work for?	

In the past five years, have you used any social media platform to communicate with any government department in your city/country?	Graham et al. (2015); Mossberger et al. (2013); Yi et al. (2013); Khasawneh & Abu-Shanab (2013); Kavanaugh et al. (2011); Picazo-Vela et al. (2012);
In the past five years, has the government department that you work for used any social media platform to communicate with the public in your city/country?	
Do you support the current use of social media platforms by different government departments in your city/country?	Mergel (2017); Campbell et al. (2014); Mickoleit (2014); Panahi et al. (2012); Kaplan & Haenlein (2010);
Do you support the use of social media platforms by the government department you work for as a method of communication with the citizens?	
Do you support the use of social media platforms by different government departments in your city/country to communicate information to the general public and respond to their suggestions, complaints, needs, requests, and demands?	
Is the current use of social media platforms by various government departments in your city/country effective in terms of providing you and the public with timely answers to the requests, suggestions, and complaints made through social media platforms?	Fuchs (2021); Cho & Melisa (2021); Mansoor (2021); Evans et al. (2018); Reuter & Spielhofer (2017); Song & Lee (2015); Ciancio & Dennett (2015);
Is the current use of social media platforms by the government department you work for effective in terms of providing the public with timely answers to the requests, suggestions, and complaints made through social media platforms?	
Does the current use of social media platforms by various government departments in your city/country	Evans et al. (2018); Loukis et al. (2017); Guillamón et al. (2016); Park et al.

create transparency and trust in the communication process and information provided to you and the public over social media platforms?	(2015); Song & Lee (2015); Stamati et al. (2015);
Does the current use of social media platforms by the government department you work for create transparency and trust in the communication process and information provided to you and the public over social media platforms?	
Do you support the use of social media monitoring tools by different government departments in your city/country to gather and process relevant data that is being made public explicitly by citizens as well as to derive Key Performance Indicators (KPIs) and metrics regarding their current services, applications, and processes to detect and resolve deficiencies?	Lin (2022); Olmedilla et al. (2016); Stamati et al. (2015); Omar et al. (2014); Zeng & Gerritsen (2014); Criado et al. (2013); Oliveira & Welch (2013);
Do you support the use of social media monitoring tools by the government department you work for to gather and process relevant data that is being made public explicitly by citizens as well as to derive Key Performance Indicators (KPIs) and metrics regarding their current services, applications, and processes to detect and resolve deficiencies?	
Can social media platforms and social media monitoring enable innovation based on attendance and the continuous collaboration between smart governments and their citizens?	Lin (2022); Criado & Villodre (2020); Ocasio et al. (2018); Loukis et al. (2017); Recupero et al. (2016); Zeng & Gerritsen (2014); Criado et al. (2013); Yang & Kankanhalli (2013); Mergel (2012b); Rerup (2009); Surowiecki (2004); Hoffman & Ocasio (2001); Ocasio (1997);
Can social media platforms and social media monitoring enable innovation based on attendance and	

the continuous collaboration between smart governments and their citizens?	
Can the use of social media platforms and social media monitoring tools support mindful attentional engagement between governments and citizens?	Evans et al. (2018); Haro-de-Rosario et al. (2018); Ocasio et al. (2018); Bonsón et al. (2017); Liu et al. (2017); Ciancio & Dennett (2015); Howard (2012); Hand & Ching (2011);
Can social media monitoring tools enable the perspectives of decision-makers in smart governments to be aligned with the demands and needs of their citizens and societies?	Criado & Villodre (2020); Simonofski et al. (2021); Singh et al. (2020; 2018); Severo et al. (2016); Bekkers et al. (2013b); Howard (2012); Hoffman & Ocasio (2001);

5.4. Data Analysis

In this thesis, the qualitative approach was chosen as the data collection methodology. However, due to the events described in the previous section of this chapter, "Chapter 5, section 5.1 and section 5.3", we adapted to the change and implemented a mixed-methods approach, collecting both qualitative and quantitative data. This section will present and discuss the steps for coding qualitative data and analysing quantitative data.

In grounded theory, qualitative data has three coding steps: open coding, axial coding, and selective coding (Williams & Moser, 2019; Corbin & Strauss, 1990). However, Charmaz (2006) suggests that the grounded theory involves two steps of coding: initial coding and focused coding. For practicality and convenience, we followed the three coding steps outlined by Williams and Moser (2019) and Corbin and Strauss (1990) throughout our qualitative data analysis.

5.4.1. Open Coding

Open coding is the first step in analysing qualitative data, where new concepts are derived from the collected data to formulate frameworks and theories (Williams & Moser, 2019). Open coding involves dividing large qualitative data into smaller conceptualised data to gain a deeper understanding of the data and how the phenomenon of interest is being presented (Corbin & Strauss, 1990).

To ensure a valid and reliable analysis, each interview was transcribed immediately after it was conducted. Transcribing qualitative data is a common practice among researchers who use interviews as a data collection method (Alsaawi, 2014; Kvale, 2007). In this study, we utilised the denaturalized transcription technique, which involves creating a "full and faithful transcription" (Cameron, 2001) that is also more readable by removing irrelevant "elements of speech" (Oliver et al., 2005). This step allowed us to become familiar with the collected data (Williams & Moser, 2019).

Once each transcript was completed, the process of open coding began. While there are many qualitative data coding software options available with "advanced software packages" (Williams & Moser, 2019), we chose to use Microsoft Word and Excel due to budgetary constraints. The goal of this step was to identify and group together similar concepts, labels, or themes from the analysed data (Corbin & Strauss, 1990). Further, it is important to pay "attention to thematic associations" (Williams & Moser, 2019) when creating concepts and labels that accurately reflect the data. Furthermore, this process involves constantly comparing emerging data with the already coded and organised data (Charmaz, 2006; Corbin & Strauss, 1990).

5.4.2. Axial Coding

Axial coding is the second step in analysing qualitative data, following open coding (Corbin & Strauss, 1990). Axial coding involves interconnecting, organising, and categorising the codes that have emerged during the open coding to derive conceptual themes and categories (Williams & Moser, 2019; Scott & Medaugh, 2017; Corbin & Strauss, 1990).

To effectively perform axial coding, the researcher must have a thorough understanding of the analysis technique to interconnect, organise, and categorise the codes (Williams & Moser, 2019). Furthermore, line-by-line coding and constant comparison of the collected data and emerging categories lead to continuous refinement of the derived conceptual themes and interconnections between categories (Williams & Moser, 2019; Scott & Medaugh, 2017; Kolb, 2012).

Corbin and Strauss (1990) identified a coding paradigm for axial coding that includes six subcategories to "systematically seek the full range of variation of the phenomena under scrutiny" (Corbin & Strauss, 1990). These subcategories are: (1) phenomenon, (2) causal conditions, (3) strategies, (4) consequences, and (5) context.

Phenomenon: This subcategory is fundamental to the coding paradigm as it addresses the question of what is being explored in the study (Charmaz, 2006). One approach to this subcategory is the line-by-line technique, which allows the researcher to stay "close to the data" (Charmaz, 2006) and "deeply engage the text, and, in turn, recognize and codify nuances and discrete thematic connectivity with other themes" (Williams & Moser, 2019).

Causal Conditions: Once a phenomenon is identified from the data and coded, the researcher iteratively examines the data and codes to determine why the phenomenon occurs (Charmaz, 2006). In this subcategory, the researcher categorises the "conditions that gave rise to" (Corbin & Strauss, 1990) the phenomenon under study.

Strategies: In this subcategory, the researcher categorises codes and data that describe the actions taken by respondents in response to the phenomenon (Charmaz, 2006; Corbin & Strauss, 1990). Furthermore, the researcher categorises potential responses that respondents could have taken to the phenomenon under study (Williams & Moser, 2019; Scott & Medaugh, 2017; Moghaddam, 2006; Kendall, 1999).

Consequences: This subcategory represents the results of the potential responses that could have been taken and actions that have been carried out by the respondents in response to the phenomenon (Moghaddam, 2006; Brown et al., 2002; Corbin & Strauss, 1990). Here, the researcher categorises codes and data that describe "what happens because of these actions/interactions" (Charmaz, 2006).

Context: This subcategory represents the attributes and "general context and specific conditions in which a particular phenomenon" (Charmaz, 2006) occurs. Here, the researcher categorises codes and data that describe the "interactional contexts" (Charmaz, 2006) of respondents' actions and "in what context" (Corbin & Strauss, 1990) they were taken in relation to the phenomenon under study.

5.4.3. Selective Coding

Selective coding is the third step in analysing qualitative data, following open and axial coding (Corbin & Strauss, 1990). In this step, the researcher organises and groups the emerging categories from the axial coding under an abstract core category (Corbin & Strauss, 1990). Furthermore, the researcher develops a story that describes the occurring phenomenon and details the relationships between the different attributes of the phenomenon (Flick, 2022; Williams & Moser, 2019). Moreover, this step can

achieve generalizability as the "more abstract the concepts, especially the core category, the wider the theory's applicability" (Corbin & Strauss, 1990).

5.4.4. Quantitative Analysis

The focus of this thesis is on the qualitative data, as detailed in the previous section of this chapter. The quantitative was intended to support the qualitative data and increase the reliability and validity of the qualitative data analysis (Creswell & Clark, 2017; McKim, 2017; Cunningham et al., 2013; Weathington et al., 2012). The results of both the qualitative and quantitative data analysis will be presented in the next chapter. In this regard, the characteristics of the sample were analysed, and Cronbach's Alpha was used to test and measure the reliability of the quantitative data. Furthermore, descriptive statistics were used to assess and measure the standard deviation, mean, standard error, and skewness of the quantitative data.

5.5. Chapter Conclusion

This chapter provides a detailed explanation of the data gathering and analysis process in this thesis. It covers various important issues, including the differences and benefits of qualitative, quantitative, and mixed approaches, the chosen qualitative approach, and the rationale for incorporating a mixed approach.

The chapter also discusses the reliability and validity of the collected data and how they can be evaluated in both qualitative and quantitative approaches. Further, it details the process of collecting qualitative data through interviews and the reasoning behind using this method. Furthermore, the chapter explains the use of theoretical sampling as a technique for selecting appropriate participants for the interviews. It also discusses the decision to switch from interviews to an online questionnaire and the reasoning behind using a combination of purposive and snowball sampling for the questionnaire.

The chapter also presents how the questions for interviews and the online questionnaire were formulated and the studies that support these questions. The final issue addressed in this chapter is the use of data coding techniques to analyse the qualitative data, as highlighted by Corbin and Strauss (1990). Furthermore, the chapter describes the role of quantitative data in this thesis and the statistical techniques used to analyse the collected quantitative data.

–CHAPTER 6–

Chapter 6 - Study Results

Summary

This chapter presents the results of the data analysis from interviews and online questionnaires. The qualitative data was analysed using the data coding technique, and both versions of the online questionnaire exhibited a very good degree of reliability. The descriptive statistics were intended to support the qualitative data and provide a richer representation of the derived findings. Furthermore, a story has been developed that describes the phenomenon of interest and details the relationships between its aspects.

6.1. Introduction

This chapter presents the results of both qualitative and quantitative data analysis. The chapter is divided into three sections, including this introduction. The second section is divided into four subsections. The first subsection discusses the demographic characteristics of the participants. The second subsection presents the results of the qualitative data analysis using the data coding technique (Williams & Moser, 2019; Corbin & Strauss, 1990). The third subsection assesses the reliability of the qualitative data using the Cronbach alpha method. The fourth subsection presents the descriptive statistics obtained from quantitative data analysis in both versions of the online questionnaire. The third section concludes and summarises the chapter.

6.2. Study Results

6.2.1. Characteristics of The Sample

As discussed in the previous chapter, it was determined that eight interviews were sufficient to reach data saturation and establish empirical research in qualitative research. However, due to disruptions during the data collection process, it was decided that a sample of (47) qualitative and quantitative online questionnaires would be appropriate to compensate for the four interviews that were not conducted. Table (9) presents the combined characteristics of both samples, including age group, gender, city and country of residence, current job title, future communication preference, and types of used social media platforms.

Table 9 - Characteristics of the sample.

Characteristics of The Sample		
Characteristics	**Frequency**	**Percentage**
Gender		
Female	13	25%
Male	38	75%
Age Group		
Under 20	1	2%
20 – 29	16	31%
30 – 39	8	16%
40 – 49	13	25%
50 – 59	11	22%
60 and Above	2	4%
Future Communication Preference		
Yes, I prefer to be contacted in the future	25	49%
No, I do not want to be contacted in the future	26	51%
City of Residence		
Abu Dhabi (UAE)	1	2%
Alkmaar (NL)	1	2%
Amman (JOR)	5	10%
Ashburn (USA)	1	2%
As-Salt (JOR)	5	10%
Baltimore (USA)	1	2%
Bellevue (USA)	1	2%
Braga (PT)	7	14%
Branchdale (USA)	1	2%
Caguas (PRI)	2	4%
Cape Town (ZAF)	1	2%
Centurion (ZAF)	1	2%

Fafe (PT)	1	2%
Guimarães (PT)	7	14%
Harrisburg (USA)	1	2%
Houston (USA)	1	2%
Kingston (JAM)	1	2%
Lancaster (USA)	1	2%
Lauderhill (USA)	1	2%
Lisbon (PT)	1	2%
Madrid (ES)	2	4%
Mexico City (MEX)	1	2%
Miami (USA)	1	2%
Porto (PT)	2	4%
Santo Tirso (PT)	1	2%
Vila Nova de Famalicão (PT)	2	4%
Virginia Beach (USA)	1	2%
Country of Residence		
Jamaica	1	2%
Jordan	10	20%
Mexico	1	2%
Portugal	21	41%
Puerto Rico	2	4%
South Africa	2	4%
Spain	2	4%
The Netherlands	1	2%
United Arab Emirates	1	2%
United States of America	10	19%
Job Title Category		
Accounting	1	2%
Education and Research	12	23%

Engineering	1	2%
Finance	2	4%
Government Employee	8	16%
Information Technology	15	29%
Management	4	8%
Marketing	2	4%
Student	5	10%
Unemployed	1	2%
Social Media Account Type		
Facebook	41	28%
Instagram	14	9%
LinkedIn	36	25%
Not Available	1	1%
Snapchat	1	1%
Twitter	19	13%
WhatsApp	10	7%
YouTube	24	16%

The data in table (9) shows first that 25% (13) of the respondents were females and 75% (38) were males. Second, the largest age group was between (20-29) years, with 31% (16) of participants falling into this category. This was followed by those between (40-49) years with 25% (13) of participants, and then by those between (50-59) years, with 22% (11) of participants. Furthermore, 16% (8) of participants were aged between (30-39) years, followed by 4% (2) participants who were (60) years and above, and 2% (1) participant who was under (20) years old. Third, in terms of future contact, 49% (25) of respondents stated that they would prefer to be contacted if more information or clarifications were needed regarding their input, while 51% (26) stated they do not prefer to be contacted.

Fourth, the data shows that the majority of responses came from Guimarães and Braga, with (7) responses each, representing (14%). This was followed by Amman and As-Salt, with (5) responses each, representing (10%). Furthermore, the cities of Caguas, Madrid, Porto, and Vila Nova de Famalicão each had (2) responses, representing (4%), while Abu Dhabi, Alkmaar, Ashburn, Baltimore, Bellevue,

Branchdale, Cape Town, Centurion, Fafe, Harrisburg, Houston, Kingston, Lancaster, Lauderhill, Lisbon, Mexico City, Miami, Santo Tirso, and Virginia Beach each had (1) response, representing (2%). Fifth, Portugal had the highest number of responses, with (21) representing (41%). Jordan followed with (10) responses, representing (20%), and the United States of America with (10) responses, representing (19%). Moreover, Puerto Rico, South Africa, and Spain each had (2) responses, representing (4%), while Jamaica, Mexico, the Netherlands, and the United Arab Emirates each had (1) response, representing (2%).

Sixth, out of the total participants, 29% (15) were employed in the field of information technology, while 23% (12) worked in education and research. Additionally, 16% (8) of the participants were government employees, 10% (5) were students, and 8% (4) held managerial positions. The data also reveals that 4% (2) of the participants had careers in finance, while another 4% (2) were in marketing. Furthermore, 2% (1) of the participants were employed in accounting and engineering each, and 2% (1) were unemployed.

Seventh, in terms of social media presence and usage, 28% (41) of the participants indicated having a Facebook account, followed by 25% (36) who stated having a presence on LinkedIn. Furthermore, 16% (24) of the participants had accounts on YouTube, and 13% (19) were active on Twitter. 9% (14) of the participants had an Instagram account, and 7% (10) used WhatsApp. Moreover, only 1% (1) of the participants had a Snapchat account, while another 1% (1) stated not having any social media accounts.

6.2.2. Qualitative Data Coding Result

Table (10) presents the results of the first stage of qualitative data coding, which is open coding. The open codes were developed following the process and steps of open coding outlined by Williams and Moser (2019) and Corbin and Strauss (1990), as described in "Chapter 5, section 5.4.1". Furthermore, the table provides descriptions of the codes and excerpts from the collected data for each developed code.

Table 10 - Open codes alongside their description and data excerpts.

Open Codes Alongside Their Description and Data Excerpts		
Open Code	**Code Description**	**Data Excerpts**
G2C Communication Channels	Methods and channels governments use to communicate with their citizens	"Social Media"
		"Government Website"
C2G Communication Channels	Methods and channels citizens use to communicate with their governments	"Email"
		"Face to face meetings"
Use of Social Media	How social media is used by governments and citizens to communicate with each other and the benefits of using social media for communication between governments and their citizens	"I express my opinion and thoughts over different government department's official pages on Facebook."
		"Social media has the potential and ability to connect governments to broader segments of their society."
Use of Social Media Monitoring	In which way can the use social media monitoring be supported by governments and citizens and the perceived benefits of using social media monitoring tools	"Yes, I support the use of social media monitoring by the government to gather and process relevant public data to derive Key Performance Indicators (KPIs) and metrics regarding the current services"
		"The systematic monitoring and evaluation not only of results but above all the evaluation of the processes favors the decision-making process based on criteria, clear and transparent."

Technology Acceptance Factor	Factors determining the effectiveness of the current communication channels in use between governments and citizens and critical factors that are determinative for accepting the use of social media platforms for communication between governments and citizens as well as accepting the use of social media monitoring tools	"I agree that the indicated communication methods are effective as the communication methods used have shown positive results in community involvement and active participation."
		"because of the Covid-19 situation we expanded the use of social media"
Awareness	Data that determine if the use of social media platforms and social media monitoring tools can result in creating knowledge among the government officials regarding the needs and issues of their citizens	"I believe that when policymakers or government officials be familiar with citizens' wants, needs, and expectations and become more aware of the most important issues or subjects for citizens"
		"because the more governments know about these issues the more awareness they would have about them and they can approach these issues and needs in appropriate way."
Attention	Data that determine if the use of social media platforms and social media monitoring tools can lead towards opening constructive dialogues between governments and citizens and draw the attention of decision-makers to what needs to be done in their communities	"Additional processes and procedures should be established to manage and translate the information and knowledge gained from social media into actionable recommendations."
		"they can extract information from the collected data to make decisions and

		promotes dialogue between entities to the benefit of the citizens."
Innovation	Data that determines if the use of social media monitoring tools by smart governments enables innovation based on the attention formulated among the decision-makers as a result of the processed public data and the subsequent constructive dialogues between smart governments and their citizens	"The systematic monitoring and evaluation not only of results but above all the evaluation of the processes favors the decision-making process based on criteria, clear and transparent. Allowing its citizens to become more aware, more involved, and more active and involved in society."
		"I do think that social media, social media monitoring, and the two elements I mentioned before the processes and procedures to manage the information and knowledge can enable innovation and better collaboration between governments and their citizens."
Social Media and Social Media Monitoring Challenges	Data that indicates constraints and limitations regarding the use of social media platforms and social media monitoring tools, as well as that the use could not be supported and is rejected by governments and citizens	"although today the chaos existing in the social networks tends to destroy the relationships of trust between citizens and rulers"
		"Monitoring cannot be part of the decision-making process, because the decision on the concept of common good results only from democratic legitimacy. And this is another discussion."

Government Internal Environment Challenges	Factors that lay within the internal government environment that indicates constraints and limitations regarding the communication between governments and citizens, technology adoption, resistance to change, management culture, and so forth. These challenges are within the government ability to change them or resolve them.	"Too much delay on the process (receiving data, updating data, answering)"
		"Not enough opportunity for an exchange. Mostly one-way communications."
Government External Environment Challenges	Factors that lay within the external government environment that indicates constraints and limitations regarding the communication between citizens and governments, general culture, technological readiness of citizens and governments, budget, and so forth. These challenges are outside the government ability to change them or resolve them.	"most people are still not connected or not using social media. Its effectiveness can only be measured by its reach."
		"I think the public in here does not care much about the government officials having a social profile since it is a one side communication"

The first open code, "*G2C Communication Channels*", contains data related to the main methods of communication that the respondents' governments usually use to communicate with them and the general public. The second open code, "*C2G Communication Channels*", contains data related to the main methods of communication that respondents usually use to communicate with the various government departments in their city or country.

The third open code, "*Technology Acceptance Factor*", consists of data that demonstrates a positive sentiment indicated by respondents towards the effectiveness of the current in-use communication methods. Furthermore, it includes critical factors that lead respondents to accept the use of social

media platforms and social media monitoring tools as additional communication methods, and view the use of social media platforms in a positive way. The fourth open code, "*Use of Social Media*", contains data indicating that social media platforms have been used as a medium for government-citizen communication in the past five years. It also shows that respondents support the use of social media platforms as a communication tool, and it promotes transparency and trust in the communication process and information provided by governments to the public over social media platforms.

The fifth open code is the "*Use of Social Media Monitoring*". This code contains data that indicates respondents' support for their governments' use of social media monitoring tools in their city and country. These social media monitoring tools are used to collect and process public data to derive KPIs and metrics that can detect and resolve deficiencies. The code also includes data that explicitly shows respondents' support for the use of social media monitoring tools, on the condition that the data being gathered and processed is only from data that is being made public by the citizens. In other words, there will be no data collection or processing of data that is not explicitly made public, and there will be no intrusion into the users' privacy and private information. Furthermore, the code contains data that indicates the respondents' support for their governments' use of social media monitoring tools if the purpose is to aid decision-making processes, improve the delivery of public services, reduce costs and waste of valuable public resources, and increase the speed of processing and responding to suggestions, complaints, needs, requests, and demands.

The sixth open code is "*Attention*". This code contains data indicating that the respondents think and believe that the use of social media monitoring tools by smart governments can draw the attention of decision-makers to address community needs and issues. This can lead to the prioritisation and selection of common goals, efficient allocation of resources, and reduction of government waste and taxpayers' money. Moreover, the data suggests that this attention is a result of processed public data and constructive dialogues between smart governments and citizens. The seventh open code is "*Awareness*". This code contains data indicating that respondents think and believe that the use of social media monitoring tools and social media platforms by smart governments can increase awareness among government officials about the needs and issues of citizens. This can lead to constructive dialogues between governments and citizens, increasing transparency and providing

citizens with a better understanding of how public resources and tax money are used to address their needs.

The eighth open code is "*Innovation*". This code contains data indicating that respondents think and believe that the use of social media monitoring tools by smart governments can drive innovation. This innovation results from the attention formulated among decision-makers, the empowerment of citizens to participate in decision-making processes and policy formulation processes, strategic agenda implementation, and resource usage optimisation. The data also suggests that this attention-based innovation is a result of continuous collaboration between smart governments and citizens in prioritising, selecting, and achieving goals.

The ninth open code is "*Social Media and Social Media Monitoring Challenges*". This code contains data in which the respondents view the use of social media platforms as a medium for communication between governments and citizens, either negatively or neutrally. Furthermore, it includes data indicating that the respondents view the use of social media monitoring tools by smart governments negatively or neutrally. Moreover, the code reveals constraints and limitations related to the use of social media platforms and social media monitoring tools, and that the use of these tools is neither fully supported nor rejected by governments and citizens.

The tenth open code is "*Government Internal Environment Challenges*". This code contains data that highlights constraints and limitations in communication between governments and citizens, technology adoption, resistance to change, management culture, and so forth. Furthermore, these challenges are within the government's ability to address and resolve. The eleventh open code is "*Government External Environment Challenges*". This code contains data that reveals constraints and limitations in communications between citizens and governments, general culture, the technological readiness of citizens and governments, budget, and so forth. Moreover, these challenges are outside the government's control and cannot be easily resolved.

Table (11) presents the results of the second stage of qualitative data coding: axial coding. These axial codes were developed through constant review, categorization, and grouping of fragmented data, as described in "Chapter 5, section 5.4.2".

Table 11 – The categories of axial coding and their open codes components.

The Categories of Axial Coding and Their Open Codes Components	
Axial Codes: Categories	**Open Codes**
Methods of Communication	G2C Communication Channels
	C2G Communication Channels
Social Media and Social Media Monitoring Use	Technology Acceptance Factor
	Use of Social Media
	Use of Social Media Monitoring
Mindful Attention	Attention
	Awareness
	Innovation
Constraints and Limitation	Social Media and Social Media Monitoring Challenges
	Government Internal Environment Challenges
	Government External Environment Challenges

Table (12) presents the results of the third stage of qualitative data coding: selective coding. These selective codes were developed through constant review of interview transcripts and questionnaire data, categorization of axial codes under abstract core categories, and identification of relationships between open codes and axial codes, as described in "Chapter 5, section 5.4.3".

Table 12 - The selective coding step result.

The Selective Coding Step Result		
Selective codes	Axial Codes	Open Codes
Mindful Attentional Engagement	Methods of Communication	G2C Communication Channels
		C2G Communication Channels
	Social Media and Social Media Monitoring Use	Technology Acceptance Factor
		Use of Social Media
		Use of Social Media Monitoring
	Mindful Attention	Attention
		Awareness
		Innovation
Constraints and Limitation on Mindful Attentional Engagement	Constraints and Limitation	Social Media and Social Media Monitoring Challenges
		Government Internal Environment Challenges
		Government External Environment Challenges

In our research, we found that smart governments' *use of communicative practices supported by social media monitoring tools* (causal condition) led the participants in our study to think and believe that *mindful attentional engagement* (phenomenon) towards the citizens' needs would be promoted. There was a variety of *beliefs and thoughts expressed by the participants, ranging from strongly agreeing to strongly disagreeing* (strategies) in terms of the use of social media platforms by smart governments *is effective* (consequences) in *providing the public with timely answers to the requests, suggestions, and complaints made through social media platforms* (context). There was also a variety of *beliefs and thoughts expressed by the participants, ranging from strongly agreeing to strongly disagreeing* (strategies) in terms of the use of social media platforms by smart governments *can create* (consequences) *transparency and trust in the communication process and information provided to the public over social media platforms* (context).

Furthermore, there was a variety of *beliefs and thoughts expressed by the participants, ranging from strongly agreeing to strongly disagreeing* (strategies) in terms of the use of social media monitoring tools by smart governments *is supported* (consequences) *to gather and process relevant data that is being made public explicitly by citizens as well as to derive Key Performance Indicators (KPIs) and metrics regarding their current services, applications, and processes to detect and resolve deficiencies* (context). Moreover, there was a variety of *beliefs and thoughts expressed by the participants, ranging from strongly agreeing to strongly disagreeing* (strategies) in terms of the use of social media platforms and social media monitoring tools *can support* (consequences) *mindful attentional engagement between governments and citizens* (context).

We also found a variety of *beliefs and thoughts expressed by the participants, ranging from strongly agreeing to strongly disagreeing* (strategies) in terms of social media monitoring tools *can enable* (consequences) *the perspectives of decision-makers in smart governments to be aligned with the demands and needs of their citizens and societies* (context). Furthermore, we found a variety of *beliefs and thoughts expressed by the participants, ranging from strongly agreeing to strongly disagreeing* (strategies) in terms of social media platforms and social media monitoring *can enable* (consequences) *innovation based on attendance and the continuous collaboration between smart governments and their citizens* (context).

6.2.3. Assessing the Reliability

Table (13) presents the overall value of Cronbach's alpha for the items in the citizens' version of the distributed online questionnaire. The closer the value of alpha is to (1) than to (0), the more reliable the measurement is and the better it reflects its intended purpose (Alarabiat, 2018; Lakshmi & Mohideen, 2013; Tavakol & Dennick, 2011; Gliem & Gliem, 2003; Peterson, 1994; Cronbach, 1951). Cronbach's alpha can be calculated using the following equation:

$$\alpha = \left(k \,/\, (k-1)\right) * \left(\left(s_x^2 - \Sigma s_y^2\right) / \, s_x^2\right)$$

Where: k is the number of items, $\sum s_y^2$ is the sum of the item variance, and s_x^2 is the variance of the total score. The overall Cronbach's alpha for the citizens' version was found to be (0.8), which can be interpreted according to table (5) in "Chapter 5, section 5.2" as exhibiting a very good degree of reliability.

Table 13 – Cronbach's alpha overall value for the citizens' version of the online questionnaire.

Cronbach's Alpha Overall Value for the Citizens' Version of the Online Questionnaire		
Variables	Description	Values
$\boldsymbol{k}$	Number of items	7
$\sum \boldsymbol{s_y^2}$	Sum of the item variance	7.05
$\boldsymbol{s_x^2}$	Variance of total score	22.27
$\boldsymbol{\alpha}$	Cronbach's alpha	0.8

Similarly, by using the same equation, the overall Cronbach's alpha for the government officials' version was (0.87), also indicating a very good degree of reliability according to table (5) in "Chapter 5, section 5.2". Table (14) presents the overall value of Cronbach's alpha for the items in the government officials' version of the distributed online questionnaire.

Table 14 - Cronbach's alpha overall value for the government officials' version of the online questionnaire.

Cronbach's Alpha Overall Value for the Government Officials' Version of the Online Questionnaire		
Variables	Description	Values
$\boldsymbol{k}$	Number of items	8
$\sum \boldsymbol{s_y^2}$	Sum of the item variance	5.86
$\boldsymbol{s_x^2}$	Variance of total score	24.21
$\boldsymbol{\alpha}$	Cronbach's alpha	0.87

Table (15) shows the values of Cronbach's alpha for both versions of the online questionnaire if an item is removed from each one of them. In the citizens' version, removing "Item 1" would not affect the overall value of alpha (0.8), but removing any other item would decrease it.

In the government officials' version, removing "Item 3" would increase the overall value of alpha by (0.01), reaching (0.88). However, removing "Item 4" would not affect the overall value (0.87), and removing any other item would decrease it.

Table 15 - Cronbach's alpha overall values If an item is removed from the online questionnaire.

Cronbach's Alpha Overall Values If an Item is Removed from the Online Questionnaire				
Items	**Citizens' Version**		**Government Officials' Version**	
	Corrected Item-Total Correlation	**Overall alpha's value if Item Deleted**	**Corrected Item-Total Correlation**	**Overall alpha's value if Item Deleted**
Item 1	0.39	0.8	0.92	0.81
Item 3	0.56	0.76	0.33	0.88
Item 4	0.52	0.77	0.4	0.87
Item 5	0.69	0.74	0.69	0.84
Item 6	0.61	0.76	0.51	0.86
Item 7	0.45	0.79	0.51	0.86
Item 8	0.48	0.78	0.82	0.82
Item 9	-	-	0.77	0.83

6.2.4. Descriptive Statistics

Descriptive statistics is a technique used to describe and summarise quantitative datasets (Kemp et al., 2018; Lawless & Heymann, 2010). In our study, the participants' responses to the items in both versions of the questionnaire consisted of two types of questions: open-ended and closed-ended questions (Johns, 2010; Bertram, 2007). The closed-ended question consisted of nominal and ordinal items. Furthermore, the ordinal items were measured on a 5-point Likert scale, ranging from "strongly disagree" to "strongly agree", with "strongly disagree" equal to "1" and "strongly agree" equal to "5".

Descriptive statistics were intended to support the qualitative data and provide a richer representation of the conclusions drawn from the qualitative data. This notion is supported by Archibald et al. (2019), Lacey and Luff (2001), and MacQueen and Milstein (1999). Further, three main categories of descriptive statistics were calculated: central tendency, frequency distribution, and variability and spread.

Microsoft Excel's built-in functions were used to calculate descriptive statistics values (Guerrero, 2019). For instance, in the central tendency category, the "AVERAGE()" function was used to calculate the

mean, the "MEDIAN()" function for the median, and the "MODE.SNGL()" function for the mode (Guerrero, 2019; Watson, 2015; Rasinger, 2013). Table (16) presents the central tendency values for items in both versions of the online questionnaire.

The mean refers to the central tendency of a dataset, the median refers to the value that lies in the middle of a dataset, and the mode refers to the value that was recorded the most in a dataset (Wan et al., 2014; Lawless & Heymann, 2010; Hogg & Craig, 1995).

Table 16 - central tendency values for items in the online questionnaire.

Central Tendencies Values for Items in the Online Questionnaire						
Items	**Citizens' Version**			**Government Officials' Version**		
	Mean	Median	Mode	Mean	Median	Mode
Item 1	3.26	4	4	3.63	4	4
Item 3	3.67	4	4	3.63	4	4
Item 4	2.87	3	3	4	4	4
Item 5	2.9	3	3	3.5	4	4
Item 6	3.9	4	4	3.63	4	4
Item 7	3.44	4	4	3.63	4	4
Item 8	3.67	4	4	3	3	2
Item 9	-	-	-	3.25	3.5	2

In the frequency distribution category, the "COUNTIFS()" function was used to calculate the percentage of each score for item (Guerrero, 2019; Watson, 2015; Rasinger, 2013). Table (17) presents the frequency distribution values for each score in both versions of the online questionnaire.

Table 17 - Frequency distribution values for items in the online questionnaire.

Frequency Distribution Values for Items in the Online Questionnaire			
Items	**Score**	**Citizens' Version**	**Government Officials' Version**
		Percentage	Percentage
Item 1	Strongly agree (5)	5%	13%
	Agree (4)	46%	62%
	Neutral (3)	23%	0%
	Disagree (2)	21%	25%
	Strongly disagree (1)	5%	0%
Item 2	Yes (1)	72%	88%
	No (0)	28%	12%
Item 3	Strongly agree (5)	15%	0%
	Agree (4)	54%	12%
	Neutral (3)	15%	12%
	Disagree (2)	13%	76%
	Strongly disagree (1)	3%	0%
Item 4	Strongly agree (5)	10%	12%
	Agree (4)	10%	76%
	Neutral (3)	44%	12%
	Disagree (2)	28%	0%
	Strongly disagree (1)	8%	0%
Item 5	Strongly agree (5)	5%	0%
	Agree (4)	23%	63%
	Neutral (3)	36%	25%
	Disagree (2)	28%	12%
	Strongly disagree (1)	8%	0%
Item 6	Strongly agree (5)	26%	0%
	Agree (4)	54%	76%

	Neutral (3)	8%	12%
	Disagree (2)	10%	12%
	Strongly disagree (1)	2%	0%
Item 7	Strongly agree (5)	10%	0%
	Agree (4)	46%	76%
	Neutral (3)	28%	12%
	Disagree (2)	8%	12%
	Strongly disagree (1)	8%	0%
Item 8	Strongly agree (5)	8%	0%
	Agree (4)	67%	38%
	Neutral (3)	15%	24%
	Disagree (2)	5%	38%
	Strongly disagree (1)	5%	0%
Item 9	Strongly agree (5)	-	13%
	Agree (4)	-	37%
	Neutral (3)	-	13%
	Disagree (2)	-	37%
	Strongly disagree (1)	-	0%

In the analysis of the variability and spread of the values category, we have used the "STDEV.S()" function to calculate the standard deviation for each item (Guerrero, 2019; Watson, 2015; Rasinger, 2013). Furthermore, we have used the "VAR.S()" function to calculate the variance and the "SKEW()" and "KURT()" functions to calculate the skewness and kurtosis, respectively (Guerrero, 2019; Watson, 2015; Rasinger, 2013). As there is no built-in function for calculating the standard error, we have used the "Data Analysis" tool from the "Data" tab and selected "Descriptive Analysis" (Guerrero, 2019). Table (18) presents the variability and the spread of the values for each score in both versions of the online questionnaire.

The difference in central tendencies between the entire population and a selected sample from the population is known as the standard error (Lawless & Heymann, 2010; Hogg & Craig, 1995). While the variance is similar to the standard deviation in that they both measure the deviation of the data

from the central tendency, the main difference is that the standard deviation represents the square root of the variance (Lawless & Heymann, 2010; Hogg & Craig, 1995). Furthermore, skewness refers to the asymmetry of the data distribution, while kurtosis refers to the tailedness of the data distribution (Joanes & Gill, 1998; Groeneveld & Meeden, 1984).

Table 18 - Descriptive statistics of each item in the online questionnaire.

Descriptive Statistics of Each Item in the Online Questionnaire					
Citizens' Version of the Online Questionnaire					
Items	**SD**	**SE**	**Variance**	**Skewness**	**Kurtosis**
Item 1	1.02	0.16	1.04	-0.55	-0.51
Item 3	0.98	0.16	0.96	-0.85	0.37
Item 4	1.06	0.17	1.11	0.41	0.01
Item 5	1.02	0.16	1.04	0.06	-0.46
Item 6	0.99	0.16	0.99	-1.14	1.13
Item 7	1.05	0.17	1.09	-0.84	0.47
Item 8	0.9	0.14	0.81	-1.56	2.78
Government Officials' Version of the Online Questionnaire					
Item 1	1.06	0.38	1.13	-0.91	-0.13
Item 3	0.74	0.26	0.55	-1.95	3.2
Item 4	0.53	0.19	0.29	0	3.5
Item 5	0.76	0.27	0.57	-1.32	0.88
Item 6	0.74	0.26	0.55	-1.95	3.2
Item 7	0.74	0.26	0.55	-1.95	3.2
Item 8	0.93	0.33	0.86	0	-2.1
Item 9	1.16	0.41	1.36	0.09	-1.61

6.3. Chapter Conclusion

This chapter presents the results of the analysis of the data obtained from interviews and online questionnaires. The first issue discussed is the combined demographic characteristics of both the

interview and the online questionnaire samples. The analysis of the combined sample characteristics shows that the participants who participated in the study are diverse and have diverse backgrounds.

The second issue presented is the analysis of the qualitative data obtained from the semi-structured interviews and online questionnaires. The data was analysed using the data coding technique. During the open coding stage, initial unrelated codes were produced. In the axial coding stage, the produced initial codes were interconnected, organised, and categorised to derive conceptual themes and categories. Furthermore, in the selective coding stage, relationships between initial codes and axial codes were identified, grouped, and categorised under abstract core categories. Moreover, a story that describes the phenomenon of interest and details the relationships between its different attributes has been developed.

The third issue discussed is the assessment of the reliability of the quantitative data obtained from the online questionnaire. The reliability was assessed using the Cronbach alpha method. The result showed that both versions of the questionnaire exhibited a very good degree of reliability, with the citizens' version exhibiting a (0.8) degree of reliability and the government officials' version exhibiting a (0.87) degree of reliability.

The fourth issue presented is the descriptive statistics of the qualitative data obtained from the online questionnaire. While the findings and conclusions were derived from the qualitative data, the descriptive statistics were used to support the qualitative data and provide a richer representation of the derived findings and conclusions. In total, three main categories of descriptive statistics were calculated: central tendency, frequency distribution, and variability and spread of the values.

–CHAPTER 7–

Chapter 7 - Discussion and Conclusion

Summary

This chapter aims to thoroughly discuss the findings and results obtained from the data analysis, present the scientific contribution of the study, and provide recommendations for practitioners. Further, the study limitations and future research paths will be discussed. Finally, the chapter will conclude with a summary and conclusion of the entire thesis.

7.1. Introduction

In this thesis, we conducted interviews and distributed online qualitative and quantitative questionnaires to answer our research question and validate and improve our developed framework. In the second section of this chapter, we will thoroughly discuss the results obtained from the analysed data of the interviews and both versions of the online questionnaire. We will also explain how these findings answer our research question and its aspects, as well as how they correspond to and validate our developed framework and its aspects. The third section of this chapter will provide the scientific contribution of our study and recommendations for practitioners, while the fourth section will address the study's limitations. The fifth section will outline future research paths for our thesis. Finally, the chapter will conclude with a summary and conclusion of the entire thesis.

7.2. Discussion

The results obtained have validated our framework and significantly improved it due to the valuable perspectives provided by the participants and the findings derived from the analysed data. Our research question has three aspects: smart government, mindful attentional engagement, and communicative practices supported by social media monitoring. These three aspects of our research question correspond to the four aspects of our developed framework: indirect communication channels, direct communication channels, mindful attentional engagement, and attention-based innovation. The following nine categories provide an overview of how these aspects interact with and impact each other, as well as how they relate to the literature.

7.2.1. Communication Methods Used Between Smart Governments and Citizens

In our results, we have identified that both direct and indirect methods of communication are being utilised for interactions between governments and citizens. This notion has been supported in the literature by Kala et al. (2020), Androutsopoulou et al. (2019), Misnikov et al. (2017), Ostling (2017), and Wukich and Mergel (2015). Figure (13) shows the percentage distribution of communication methods used between governments and citizens, with the highest percentage being through emails and face-to-face meetings (24% each), followed by phone calls and SMS (20%), government websites and contact pages (15%), social media (12%), and letters (5%)..

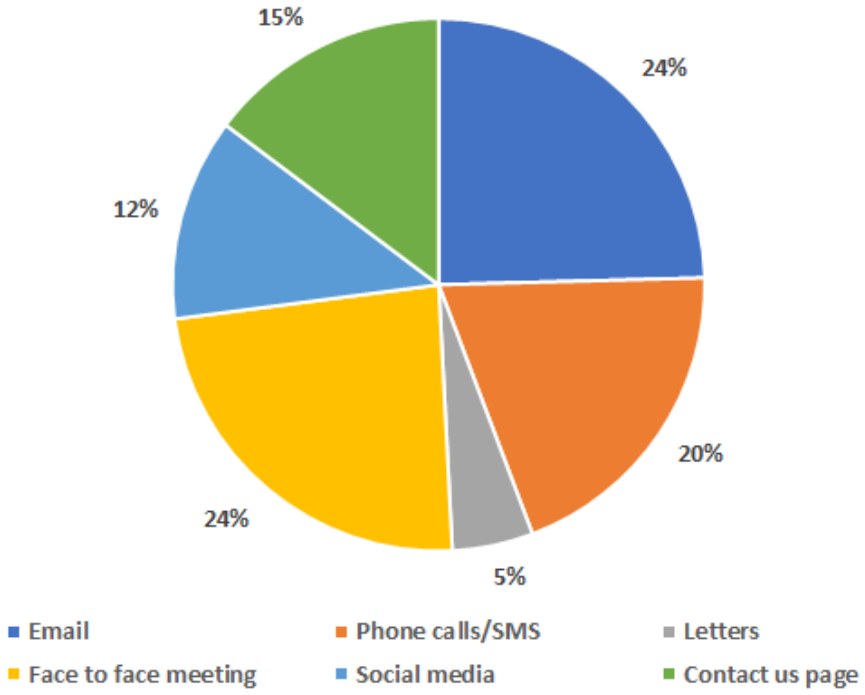

Figure 13 - Communication methods between governments and citizens.

7.2.2. Effectiveness of the Used Communication Methods between Governments and Citizens

In our results, we found that 49% of the participants agreed that the current methods of communication between governments and citizens effectively convey the citizens' voices, messages, concerns, complaints, suggestions, and other forms of feedback to government decision-makers and officials. However, 21% of participants disagreed with this statement, while 19% believed that the methods used were neither efficient nor effective. Furthermore, 7% of participants strongly agreed with the

effectiveness of these communication methods, compared to 4% who strongly disagreed. Table (19) shows the percentage of participants' sentiments towards the effectiveness of communication methods between governments and citizens.

Table 19 - Sentiment percentage of the effectiveness of the used communication methods between governments and citizens.

Sentiment Percentage of the Effectiveness of the Used Communication Methods between Governments and Citizens					
Category	**Strongly Agree**	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
Effectiveness of the used communication methods between governments and citizens	4%	49%	19%	21%	7%

Participants who agreed and strongly agreed with this category argued that traditional methods, such as phone calls or direct visits to government departments, are more effective for discussing issues because they allow quick responses. They also noted that these methods have shown positive results in promoting community involvement and participation, as they are convenient and non-intrusive. However, they acknowledged that there is room for improvement.

On the other hand, participants who disagreed and strongly disagreed with this notion argued that the traditional methods do not provide enough opportunities for two-way or multi-way communication. Further, they pointed out that while some government departments are adopting and embracing technology, there are still delays in the process, such as receiving and updating data and providing responses. Other participants also stated that some government departments are resistant to change and continue to use outdated technology, hindering the evolution and digitization of government services. Moreover, they noted that these traditional methods are often busy or do not receive a response through them.

7.2.3. Social Media as Method of Communication between Governments and Citizens

The use of social media as a method of communication between governments and citizens has been supported in the literature, as noted by Mergel (2017), Campbell et al. (2014), Mickoleit (2014), Panahi

et al. (2012), Kaplan and Haenlein (2010), among others. Our research also found that 57% of participants agree with and support the use of social media platforms by their governments for communication with the general public to communicate information and respond to suggestions, complaints, and requests. Further, 15% of participants strongly agree and support this notion. However, 15% of participants neither agreed nor disagreed with supporting the use of social media platforms by their governments as a communication method with the public, while 11% expressed disagreement and 2% strongly disagreed with this notion. Table (20) presents the percentage of participants at each sentiment level regarding using social media as a communication method between governments and citizens.

Table 20 - Sentiment percentage for supporting the use of social media as a method of communication between governments and citizens.

Sentiment Percentage for Supporting the Use of Social Media as a Method of Communication between Governments and Citizens					
Category	**Strongly Agree**	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
Support the use of social media platforms as a method of communication between governments and citizens	15%	57%	15%	11%	2%

Participants who expressed agreement and strong agreement stated that they support the use of social media platforms by their governments as a method of communication. They believe that these platforms provide easy access to information and are an effective way to disseminate information to large groups of citizens. They also stated that social media platforms could aid in improving some processes and requests, making them more agile and efficient. However, they also acknowledged that physical meetings are still necessary for security and privacy reasons. Furthermore, they highlighted the potential of social media to connect governments to a wider range of citizens and suggested that it should be used as an additional method of communication alongside traditional methods, as not all citizens have an online presence.

On the other hand, participants who expressed disagreement and strong disagreement argued that government social media accounts are primarily used to share information about events or policy

changes, with most of these accounts being managed by public relations employees. Further, they raised concerns about the ownership of data provided by citizens, stating that it should belong to the government and not be controlled by private companies rather than being controlled by private companies. Furthermore, some participants also expressed concerns about privacy and security.

7.2.4. Effectiveness of Governments' Current Use of Social Media in Providing Citizens with Timely Responses

The effectiveness of governments' use of social media platforms to respond to citizens' requests, suggestions, and complaints has been supported in the literature by Fuchs (2021), Mansoor (2021), Evans et al. (2018), Song and Lee (2015), among others. Our study found that 21% of participants agreed that governments' current use of social media is effective in providing timely responses, while 26% disagreed. Furthermore, 38% of participants did not think or believe that governments' current use of social media was effective, nor did they think it was effective. Moreover, only 9% strongly agreed with the notion, compared to 6% who strongly disagreed. Table (21) presents the percentage of participants' sentiments towards the effectiveness of governments' use of social media in providing timely responses.

Table 21 - Sentiment percentage of the effectiveness of governments' current use of social media in providing timely responses.

Sentiment Percentage of the Effectiveness of Governments' Current Use of Social Media in Providing Timely Responses					
Category	**Strongly Agree**	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
Effectiveness of governments current use of social media in providing timely responses	9%	21%	38%	26%	6%

Participants who agreed and strongly agreed argued that governments' current use of social media is effective because it provides quick and easy access to information, which increases confidence in their governments' political and strategic decisions. They also noted that social media is an effective tool for reaching large groups of citizens and addressing their complaints and requests. However, they acknowledged that there is still room for improvement.

On the other hand, participants who disagreed and strongly disagreed argued that most governments only use social media platforms to disseminate information and do not prioritise citizens' contributions, comments, and concerns. They also pointed out a disconnect between citizens' willingness to embrace new forms of communication and governments' reluctance to adopt new technologies that may cause disruption and dissatisfaction. Furthermore, they expressed concerns about the privacy and security of social media platforms.

7.2.5. Governments' Use of Social Media Creates Transparency and Trust in the Communication Process

The literature supports the notion that governments using social media can foster trust and transparency in the communication process with citizens, as indicated by Evans et al. (2018), Loukis et al. (2017), Guillamón et al. (2016), Park et al. (2015), Stamati et al. (2015). In our study, 30% of participants agreed with this notion, while 26% disagreed. However, 34% of participants did not think or believe that the current use of social media by governments can create transparency and trust in the communication process or the information provided to citizens, nor did they think the current use can create them. Furthermore, only 4% of participants strongly agreed with this notion, while 6% strongly disagreed. Table (22) presents the percentage of sentiment levels among participants regarding the impact of government social media use on transparency and trust in the communication process.

Table 22 - Sentiment percentage towards governments' use of social media creates trust and transparency in the communication process with citizens.

Sentiment Percentage Towards Governments' Use of Social Media Creates Trust and Transparency in the Communication Process with Citizens					
Category	**Strongly Agree**	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
governments' use of social media creates trust and transparency in the communication process with citizens	4%	30%	34%	26%	6%

Participants who expressed agreement and strong agreement emphasised the importance of governments using social media to foster trust and transparency in their communication with citizens. They also noted that social media can be a useful tool for local governments to raise awareness about their goals and objectives. Further, they argued that the availability of information on social media can help prevent corruption by making it easily auditable, thus increasing transparency and trust in the process of communication over social media.

On the other hand, participants who expressed disagreement and strong disagreement pointed out that social media posts can easily be ignored or overshadowed by other posts on different topics. They also argued that direct communication is still preferable because it creates public records. Furthermore, some participants expressed frustration with governments providing vague answers on social media without clear explanations for the issues at hand.

7.2.6. Smart Governments' Use of Social Media Monitoring Tools to Gather Relevant Data to Detect and Resolve Deficiencies

The use of social media monitoring tools by governments has been supported in the literature by Lin (2022), Olmedilla et al. (2016), Omar et al. (2014), Zeng and Gerritsen (2014), Criado et al. (2013), Oliveira and Welch (2013), among others. The results of our study found that 51% of participants agreed and supported the use of social media monitoring by smart governments to collect and process public data to support decision-makers in their decisions and derive Key Performance Indicators (KPIs) and Metrics to detect and resolve deficiencies. However, this support was conditional on the data being explicitly made public, and there was no intrusion into users' privacy or private information. Further, participants' support was also conditional on the purpose of data gathering and processing, which should be to aid decision-making processes, improve the delivery of public services, reduce costs and waste of valuable public resources, and increase the speed of processing and responding to suggestions, complaints, needs, requests, and demands.

We also found that 26% of participants neither agreed nor disagreed with this notion. While 9% of participants disagreed with governments' use of social media monitoring tools to support decision-makers in their decisions and derive Key Performance Indicators (KPIs) and Metrics, 6% strongly disagreed compared to 8% who strongly agreed. Table (23) presents the percentage of sentiment levels

among participants regarding smart governments' use of social media monitoring tools to gather relevant data to detect and resolve deficiencies.

Table 23 - Sentiment percentage towards smart governments' use of social media monitoring tools to gather relevant data.

Sentiment Percentage Towards Smart Governments' Use of Social Media Monitoring Tools to Gather Relevant Data					
Category	**Strongly Agree**	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
Smart governments' use of social media monitoring tools to gather relevant data to detect and resolve deficiencies	8%	51%	26%	9%	6%

Participants who expressed agreement and strong agreement argued that they support this notion as long as the data monitored is public and there are mechanisms in place to protect the privacy of the users and ensure data security. They also emphasised that the conscious use of social networks benefits all stakeholders, as these platforms are ideal for creating dialogues within communities and between citizens and governments.

On the other hand, participants who expressed disagreement and strong disagreement highlighted the danger posed by fake information posted on social media and fake profiles that exist on social media, as demonstrated by Azzimonti and Fernandes (2023), Naeem et al. (2021), and Meel and Vishwakarma (2020). Moreover, other participants emphasised the importance of adhering to data protection regulations (Vasupula et al., 2022; Yan & Chua, 2020).

7.2.7. Social Media Platforms and Social Media Monitoring Tools Can Support Mindful Attentional Engagement between Smart Governments and Citizens

In our study, we defined mindful attentional engagement as an action, a process, or a set of actions and processes that leverage the focus of one's mind to form a complete awareness regarding a specific issue at any given time. Our study found that 68% of participants agreed that social media monitoring tools and social media platforms can help smart government officials become more aware of the needs and issues of citizens. Further, this can lead to constructive dialogues between smart governments

and citizens, increasing transparency and providing the public with a better understanding of how public resources and taxes are being used to address their needs.

We also found that 15% of participants did not express agreement with this notion, nor did they express disagreement with it. Further, 6% of participants disagreed with the effectiveness of social media in building awareness among smart government officials. Furthermore, 7% of participants strongly agreed with this notion, while 4% disagreed. Table (24) presents the percentage of sentiment levels among participants regarding the ability of social media monitoring tools and social media platforms to build awareness among smart government officials about the needs and issues of citizens.

Table 24 - Sentiment percentage towards social media monitoring tools and social media platforms ability to build awareness among smart government officials towards the needs and issues of citizens.

Sentiment Percentage Towards Social Media Monitoring Tools and Social Media Platforms Ability to Build Awareness Among Smart Government Officials Towards the Needs and Issues of Citizens					
Category	**Strongly Agree**	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
Social media monitoring tools and social media platforms ability to build awareness among smart government officials regarding the needs and issues of citizens	7%	68%	15%	6%	4%

Participants who agreed and strongly agreed noted that systematic monitoring and evaluation of social media data can improve decision-making by using clear and transparent criteria. This notion is supported in the literature by Karafillakis et al. (2021), Stier et al. (201), and Velasco et al. (2014), among others. However, other participants agreed with this notion only if it leads to streamlined and improved interactions between smart governments and citizens, thus improving government services. They also stressed the need for additional processes and procedures to manage and translate the information and knowledge gained from social media into actionable recommendations. Furthermore, they emphasised the importance of allowing citizens to see how their information was used to reach

these actionable recommendations, including when it was captured and by which government department.

On the other hand, participants who expressed disagreement and strong disagreement raised concerns about security and privacy, as well as possible misuse of the collected data. They also argued these platforms and tools should be regulated by governments, rather than being controlled by private companies.

7.2.8. Social Media Platforms and Social Media Monitoring Tools Enable Innovation Based on Attendance and Continuous Collaboration between Smart Governments and Citizens

In our study, we found that 62% of participants agreed that social media monitoring tools and social media platforms can facilitate innovation based on attendance and continuous collaboration between smart governments and citizens. This innovation is driven by the attention given to processed public data by decision-makers in smart governments, leading to constructive dialogues between them and citizens. Further, this innovation also empowers citizens to participate more effectively in decision-making and policy formulation processes, thus resulting in collaboration between smart governments and citizens to prioritise, select, and achieve common goals.

We also found that 17% of participants did not express agreement with this notion, nor did they express disagreement with it. Furthermore, 11% of participants disagreed with the potential of social media monitoring tools and social media platforms to enable innovation based on attendance and continuous collaboration between smart governments and citizens. Moreover, 6% of participants strongly agreed with this notion, while 4% strongly disagreed. Table (25) presents the percentage of sentiment levels among the participants regarding the ability of social media monitoring tools and social media platforms to drive innovation based on attendance and continuous collaboration between smart governments and citizens.

Table 25 - Sentiment percentage towards social media monitoring tools and social media platforms ability to enable innovation based on attendance and continuous collaboration between smart governments and citizens.

Sentiment Percentage Towards Social Media Monitoring Tools and Social Media Platforms Ability to Enable Innovation Based on Attendance and Continuous Collaboration between Smart Governments and Citizens					
Category	**Strongly Agree**	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
Social media monitoring tools and social media platforms ability to enable innovation based on attendance and continuous collaboration between smart governments and citizens	6%	62%	17%	11%	4%

Participants who expressed agreement and strong agreement emphasised that social media monitoring tools and social media platforms have the potential to drive innovation, but only if they are implemented and used correctly. They also stressed the importance of clear guidelines to protect the privacy of users. Further, they highlighted the valuable insights that citizens possess about their needs and those of their communities. Therefore, incorporating feedback from citizens can lead to innovative solutions and foster innovation.

On the other hand, participants who expressed disagreement and strong disagreement argued that measuring the success and progress of communities, as well as fostering collaboration between governments and citizens, should be done through official channels rather than social media platforms. Furthermore, other participants expressed concerns regarding the security of social media platforms and social media monitoring tools.

7.2.9. Social Media Monitoring Tools Enable Decision-Makers' Perspectives in Smart Governments to be Aligned with the Demands and Needs of Citizens

In our study, we found that 51% of participants agreed that social media monitoring tools are effective in bringing attention to the needs of their communities to decision-makers in smart governments. This

process allows decision-makers to better understand and address the demands and needs of citizens, leading to an alignment of both decision-makers' and citizens' perspectives, more efficient allocation of resources, and reducing government waste of public resources and taxpayers' money.

We also found that 9% of the participants did not express agreement with this notion, nor did they express disagreement with it. Further, 15% of the participants disagreed with the effectiveness of social media monitoring tools in aligning decision-makers' perspectives with the demands and needs of citizens. On the other hand, 23% of the participants strongly agreed with this notion, while only 2% strongly disagreed. Table (26) presents the percentage of sentiment levels among the participants regarding the ability of social media monitoring tools to align decision-makers' perspectives in smart governments with the demands and needs of citizens.

Table 26 - Sentiment percentage towards social media monitoring tools ability to align decision-makers' perspectives in smart governments with the demands and needs of citizens.

Sentiment Percentage Towards Social Media Monitoring Tools Ability to Align Decision-Makers' Perspectives in Smart Governments with the Demands and Needs of Citizens					
Category	**Strongly Agree**	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
Social media monitoring tools ability to align decision-makers' perspectives in smart governments with the demands and needs of citizens	23%	51%	9%	15%	2%

Participants who agreed and strongly agreed noted that when decision-makers in governments become familiar with their citizens, they are better equipped to engage in open dialogue and collaborate with citizens to address their needs and resolve their issues. They also argued that the use of social media platforms and social media monitoring tools is important for decision-makers to gain and maintain comprehensive understanding of their communities. On the other hand, participants who disagreed or strongly disagreed expressed concerns about the security of social media platforms and social media monitoring tools.

7.3. Contribution

This thesis conveys the following contributions to research on smart governments, specifically in the areas of social media monitoring tools, mindful attentional engagement, and attention-based innovation.

First, the definition of a smart government provided in this thesis builds upon existing definitions in the information systems field and expands upon it by incorporating concepts from the information systems and strategic management fields. This provides a comprehensive understanding of the smartness of government.

Second, the role of communicative practices supported by social media monitoring tools for smart governments is thoroughly examined in this thesis. This complex role is viewed as a framework that offers guidelines for smart governments to develop models and techniques that facilitate mindful attentional engagement with their citizens. Further, the mindful attentional engagement aims to identify, prioritise, resolve, fulfil, and meet the needs and aspirations of communities and citizens by promoting collective and transparent collaboration, participation, and innovation.

Third, an attention-based innovation framework for smart governments is introduced. This framework combines the theoretical foundations of organisational attention with our own definitions, as well as the capabilities of social media platforms and social media monitoring to create multi-way communication channels. These channels, supported by the capabilities of social media platforms and social media monitoring, can promote mindful attentional engagement and facilitate attention-based innovation between smart governments and citizens. In other words, this innovative framework is based on smart governments leveraging the capabilities of social media monitoring tools to become aware of and focus their attention on the needs and issues of their citizens and communities. This process leads to the establishment of constructive dialogues between smart governments and citizens, allowing for collaboration and resolution of voiced issues.

7.3.1. Recommendations for Practitioners

The findings of this thesis provide valuable recommendations for practitioners, smart government officials, and decision-makers seeking to implement new initiatives that promote citizen collaboration through social media platforms, supported by social media monitoring tools.

First, it is important to establish transparent and inclusive citizen collaboration by setting Specific, Measurable, Achievable, Realistic, and Time-based (SMART) goals and objectives. These goals and objectives should address the needs and concerns of citizens, foster innovation in the public sector, and improve government communication with citizens and communities.

Second, there should be a focus on aligning and integrating social media communication capabilities with smart government systems, as this will lead to improved governmental performance, communication, and flow of information. Further, the analysis of gathered information should be enhanced by utilising both active and passive social media monitoring methods to assess current government services, applications, and processes by detecting and resolving deficiencies. Passive social media monitoring can help raise awareness of citizen concerns and identify areas of improvement, while active social media monitoring can facilitate collaboration with citizens to find effective solutions for identified deficiencies in government services.

Third, employing social media monitoring tools that rely on advanced artificial intelligence algorithms is a powerful way to capture, analyse, and process explicit public citizen-generated content and the collective knowledge of the public (Geiger & Von Lucke, 2012; Surowiecki, 2004). These artificial intelligence algorithms can then determine which linked and open government datasets should be connected with, drawing the attention of decision-makers in smart governments to important and pressing matters in their societies. This process can create awareness regarding citizens' needs and demands..

Fourth, our study revealed that many participants expressed concerns about user privacy and data security. Therefore, new initiatives aimed at increasing citizen collaboration supported by social media monitoring tools should prioritise implementing mechanisms to protect the user's privacy and ensure data security in alignment with data protection regulations such as the European GDPR.

Fifth, it is important to establish additional processes and procedures to manage and translate the information and knowledge gained from social media into actionable recommendations. Furthermore, mechanisms should be implemented that allow citizens to see how their information was used to reach these recommendations, as well as when and by which government department the information was captured.

Sixth, governments should also be willing to engage in constructive dialogues and offer substantial content to citizens to further increase trust and transparency in communication between governments and citizens over social media.

7.4. Study Limitations and Future Research

There are several constraints and limitations to our study, as is common in any research conducted in a current area of research. First, our study is exploratory in nature. This is because, while we were able to find many publications discussing social media technologies in the government and public context, they primarily focused on the implementation and technical aspects. Further, as mentioned in "Chapter 2, section 2.4", there is a lack of research in this field that specifically examines the role of the communicative practices supported by social media monitoring in promoting mindful attentional engagement. This mindful attentional engagement is important for enabling attention-based innovation between smart governments and citizens.

Second, our study is based on four assumptions: (a) There are already efficient and comprehensive social media monitoring tools available. (b) Citizens are willing to have their smart governments monitor and address their needs and demands using social media monitoring tools. (c) The use of social media monitoring tools by smart governments is solely for the purpose of collecting and analysing publicly available data to draw the attention of decision-makers towards important issues in society and raise awareness about citizens' needs and demands. (d) The use of social media monitoring tools by smart governments is culturally accepted. Culture is a crucial factor in the success of this approach, as it influences individuals' behaviour and determines when and how smart governments can effectively engage with their citizens using social media monitoring tools and focus decision-makers' attention (Geiger & Von Lucke, 2012; Gil-Garcia, 2012; Shadbolt et al., 2012).

Third, one of the main limitations of our study was the budget. Due to limited resources, we decided to experiment with a social media monitoring tool called "Mention". We selected this tool based on its affordability, user-friendliness, availability of documentation and online support, and technical capabilities, as outlined in "Chapter 2, section 2.4". Mention is a real-time social media monitoring tool that was launched in (2012) with the purpose of helping private organisations enhance brand

awareness, improve reputation, and cultivate meaningful and valuable relationships on social media platforms.

Fourth, one significant limitation of our study was the sample size. Initially, we planned to conduct eight interviews, which is considered sufficient for data saturation in qualitative research (Namey et al., 2016; Galvin, 2015; Francis et al., 2010; Guest et al., 2006; Morgan et al., 2002). However, after conducting four interviews, the global spread of the Coronavirus disease (COVID-19), also known as SARS-CoV-2, necessitated a change in our data collection approach. Due to the lack of access to online communication tools such as Zoom, Skype, and Microsoft Teams by governments (Mori et al., 2021; Chawla, 2020), we were unable to continue conducting interviews. Despite this challenge, we were determined not to disregard the data we had already collected and analysed from the four interviews. As a result, we decided to switch from semi-structured interviews to online surveys as our chosen qualitative method.

Our study provides a foundation for further research, as it has the potential to be expanded in various ways and can incorporate different theories to examine the mindful attentional engagement between smart governments and citizens. For instance, Activity Theory could be utilised to analyse the activities involved in the communicative practices facilitated by social media monitoring tools between smart governments and citizens. This research could include exploring the objectives of these activities and the criteria that govern them (Jonassen & Rohrer-Murphy, 1999).

Furthermore, social exchange theory could be employed to investigate the motivations behind the decisions, actions, and interactions between smart governments and citizens. This theory suggests that decisions and actions are based on the balance between outcomes and consequences (Emerson, 1976; Homans, 1974). However, in today's constantly evolving societies, it can be challenging for governments to weigh the benefits and consequences without a stable, vivid, and coherent attention (Rerup, 2009).

Another way to expand our study is by collaborating with a local government and implementing our framework as a case study in a real-world setting. This research would allow us to define and evaluate the challenges and limitations of using social media monitoring tools to attain mindful attention and address the needs and issues of citizens and communities.

Finally, a relatively unexplored area that warrants further investigation is the use of social media monitoring tools by smart governments as a means of knowledge mining, analysis, and visualisation. This research could provide valuable insights for implementing our framework and assessing its effectiveness in a real-world context. This research could provide valuable insights for implementing our framework and assessing its effectiveness in a real-world context.

7.5. Thesis Conclusion

This thesis aimed to develop a comprehensive framework holistically describing mindful attentional engagement between smart governments and citizens. The research question guiding this thesis was "How can the use of communicative practices supported by social media monitoring tools by smart governments promote mindful attentional engagement towards the citizens' needs?".

The framework demonstrates that by utilising both active and passive social media monitoring methods, smart governments can attain awareness of the needs and issues expressed by citizens. Further, by leveraging the multi-way communication channels provided by social media monitoring tools, smart governments can acquire the necessary knowledge to effectively address these needs and concerns.

All interviews were transcribed and analysed using the qualitative data coding technique. Similarly, qualitative data collected from online questionnaires were analysed using the data coding technique. Furthermore, quantitative data were used to support and provide a richer representation of the conclusions drawn from the qualitative data. The results of our study indicate that while there is support from participants for the use of social media as a communication tool between governments and citizens, the current use of social media by governments is not effective.

Our findings also demonstrate significant support from the participants for the use of social media monitoring tools by smart governments to gather and analyse relevant data to improve government services and address the needs and issues of citizens. Furthermore, our results suggest that social media platforms and social media monitoring can facilitate mindful attentional engagement between smart governments and citizens, as well as foster innovation based on attendance to the needs and issues of citizens and the continuous collaboration between smart governments and citizens.

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Appendices

Appendix 1

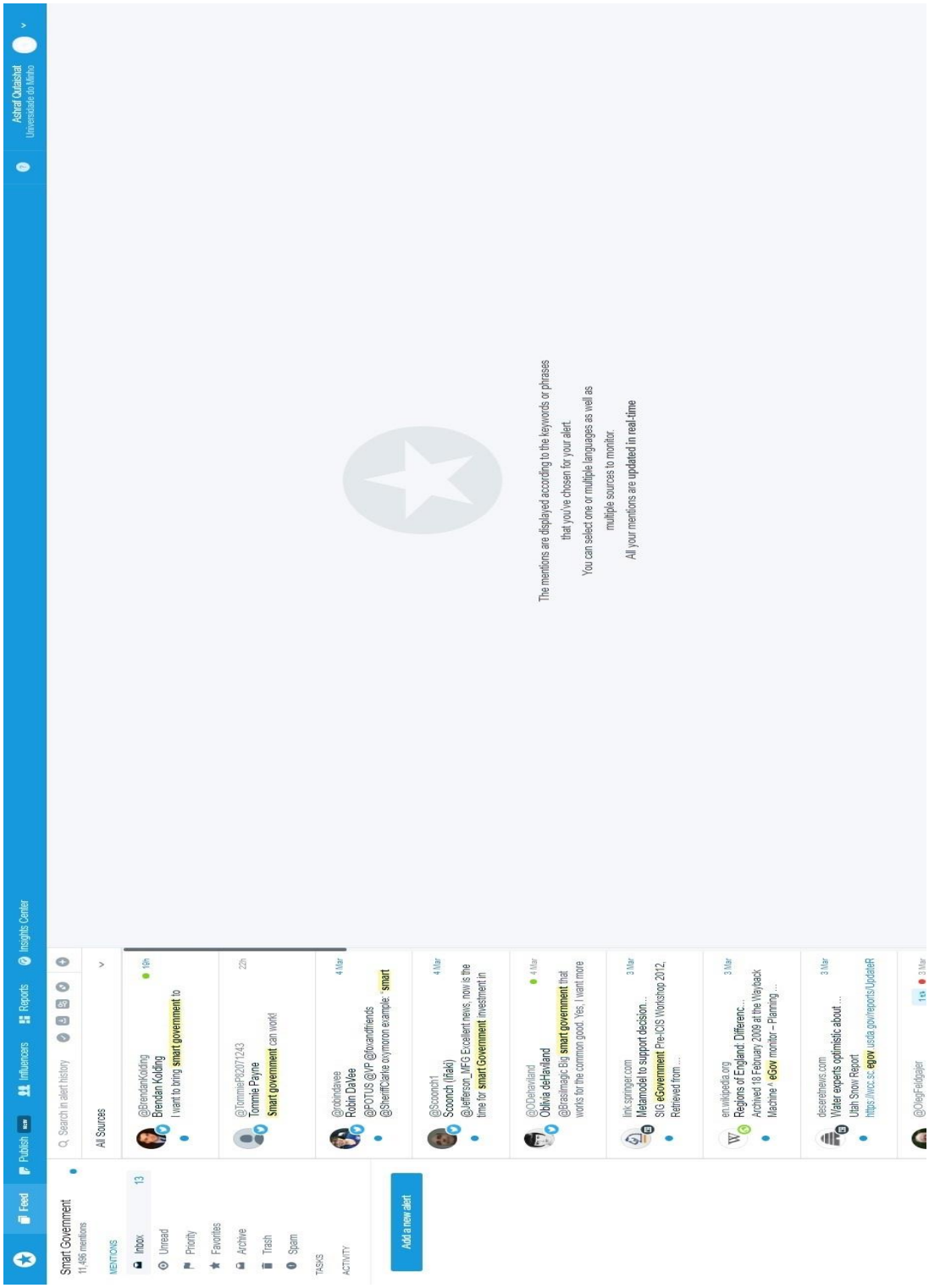

Figure 14 - Mention home page.

Appendix 2

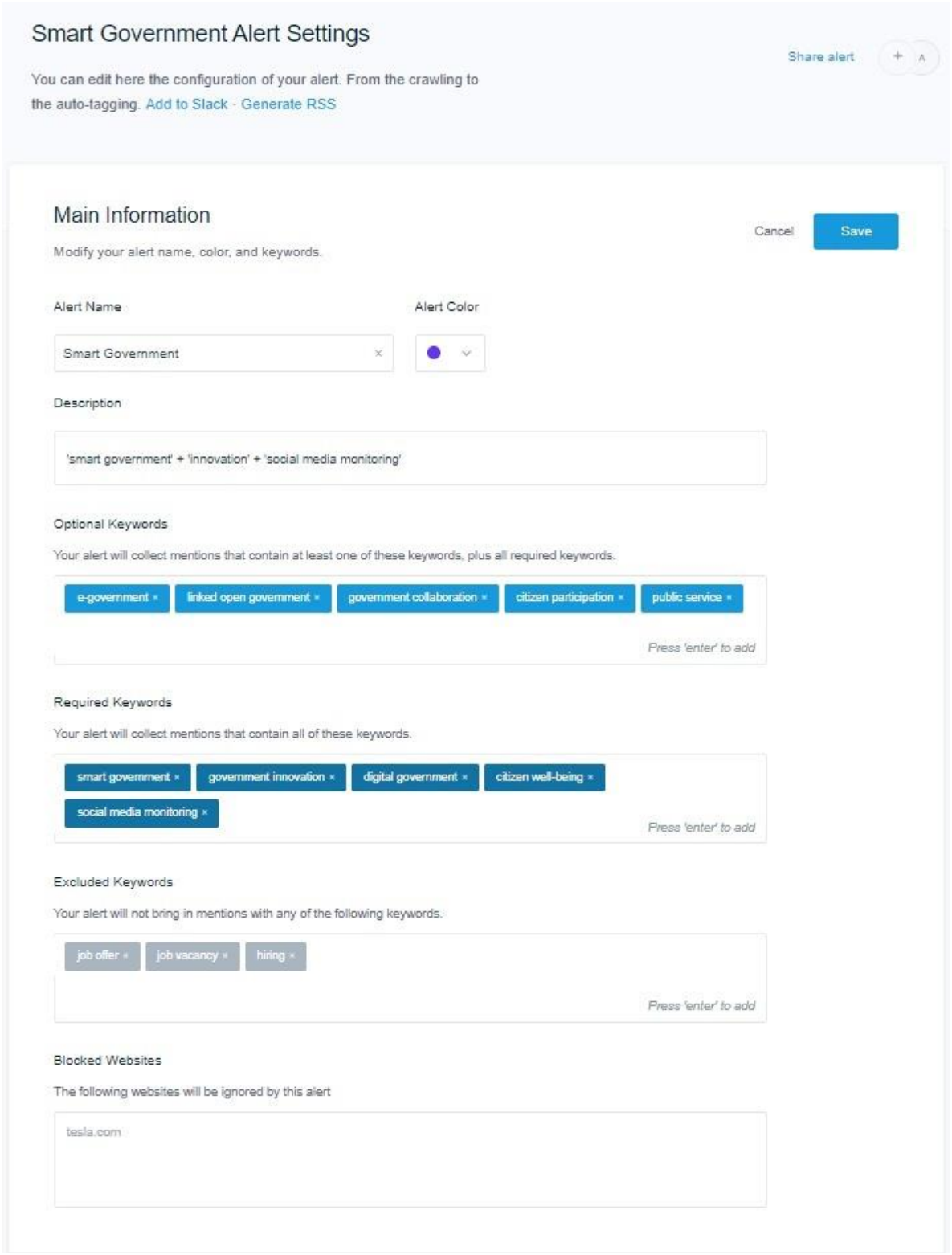

Figure 15 - Mention topic monitoring settings.

Appendix 3

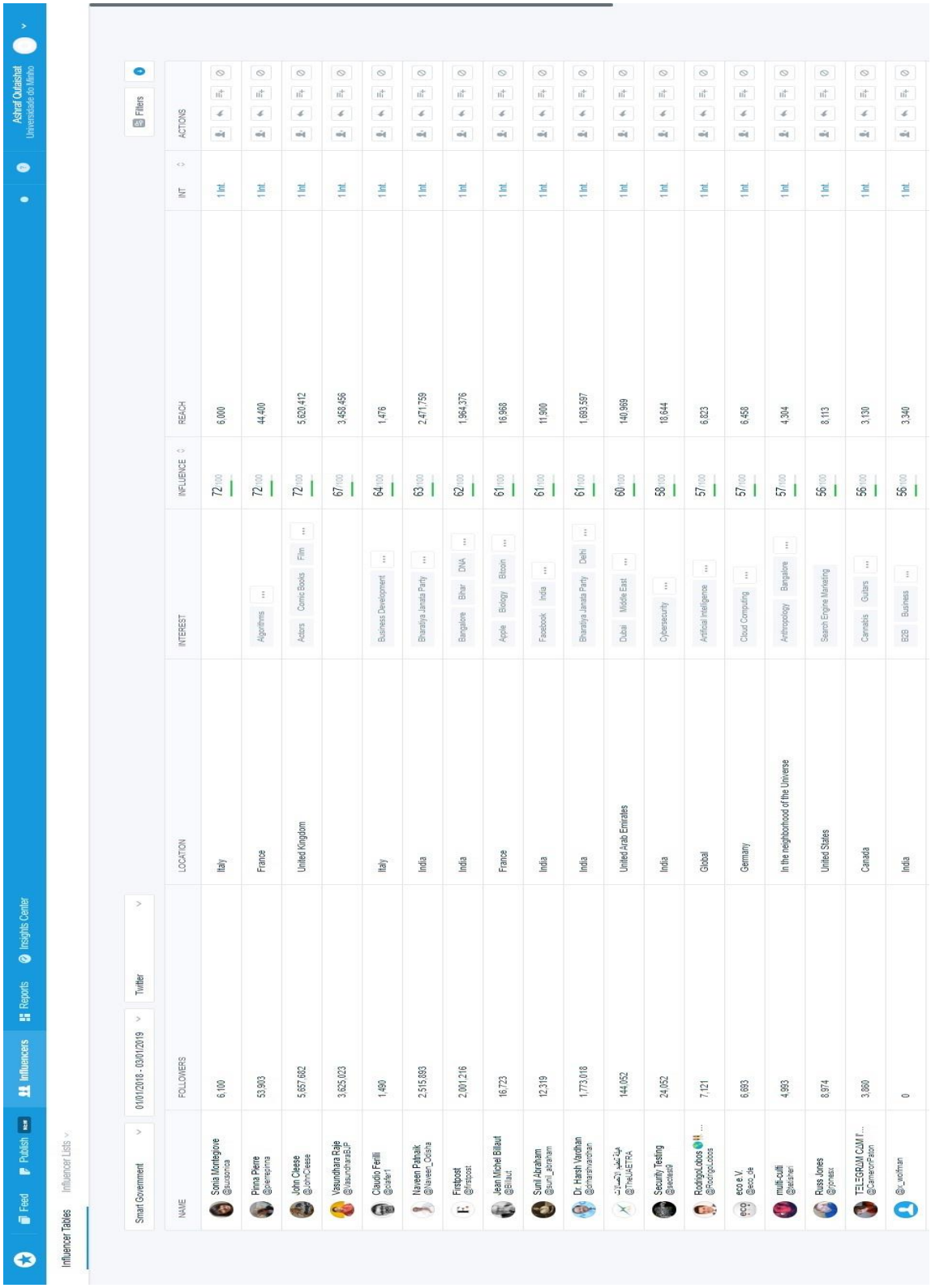

Figure 16 - Mention influencers page.

Appendix 4

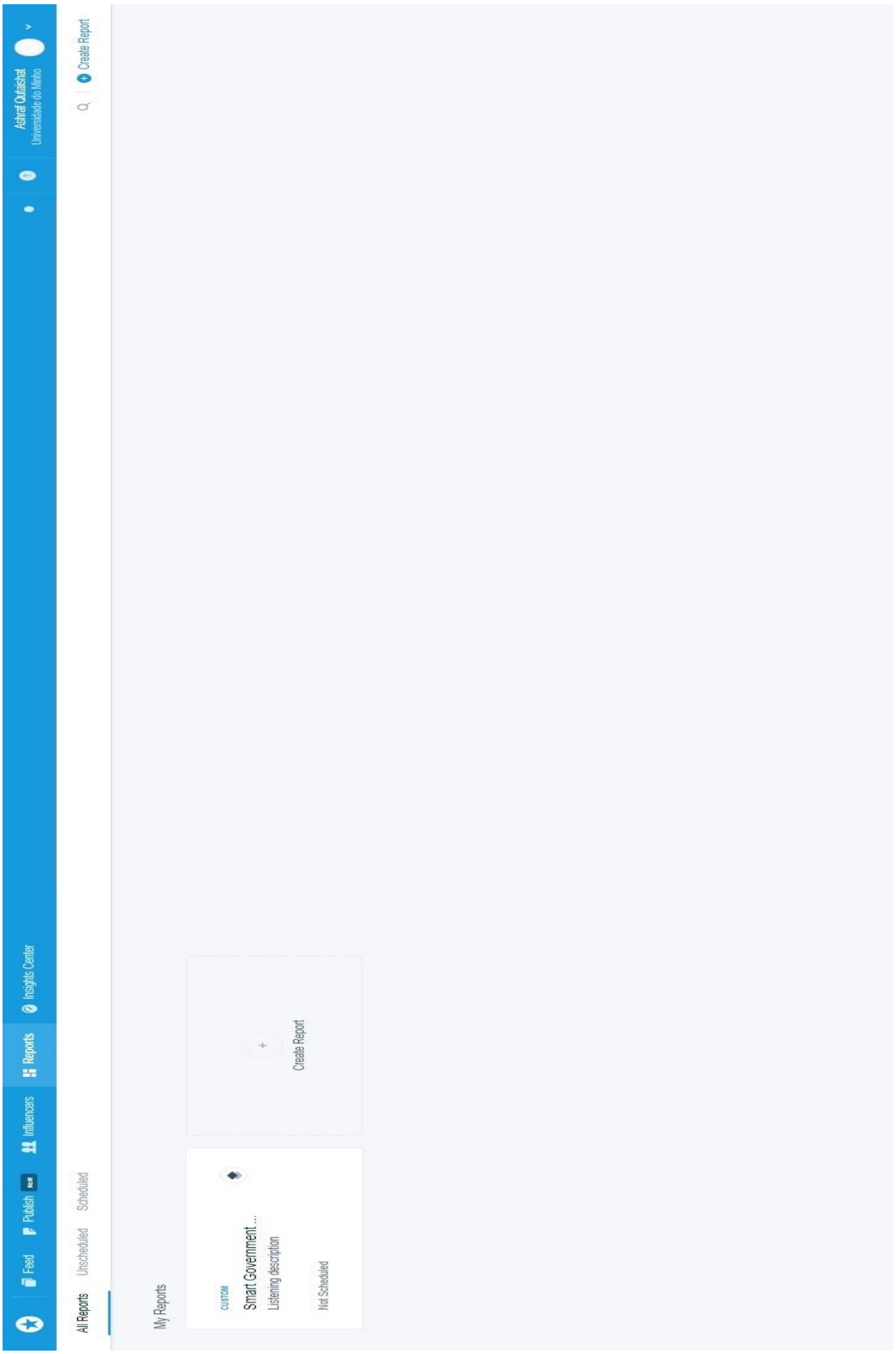

Figure 17 - Mention report creation page.

Appendix 5

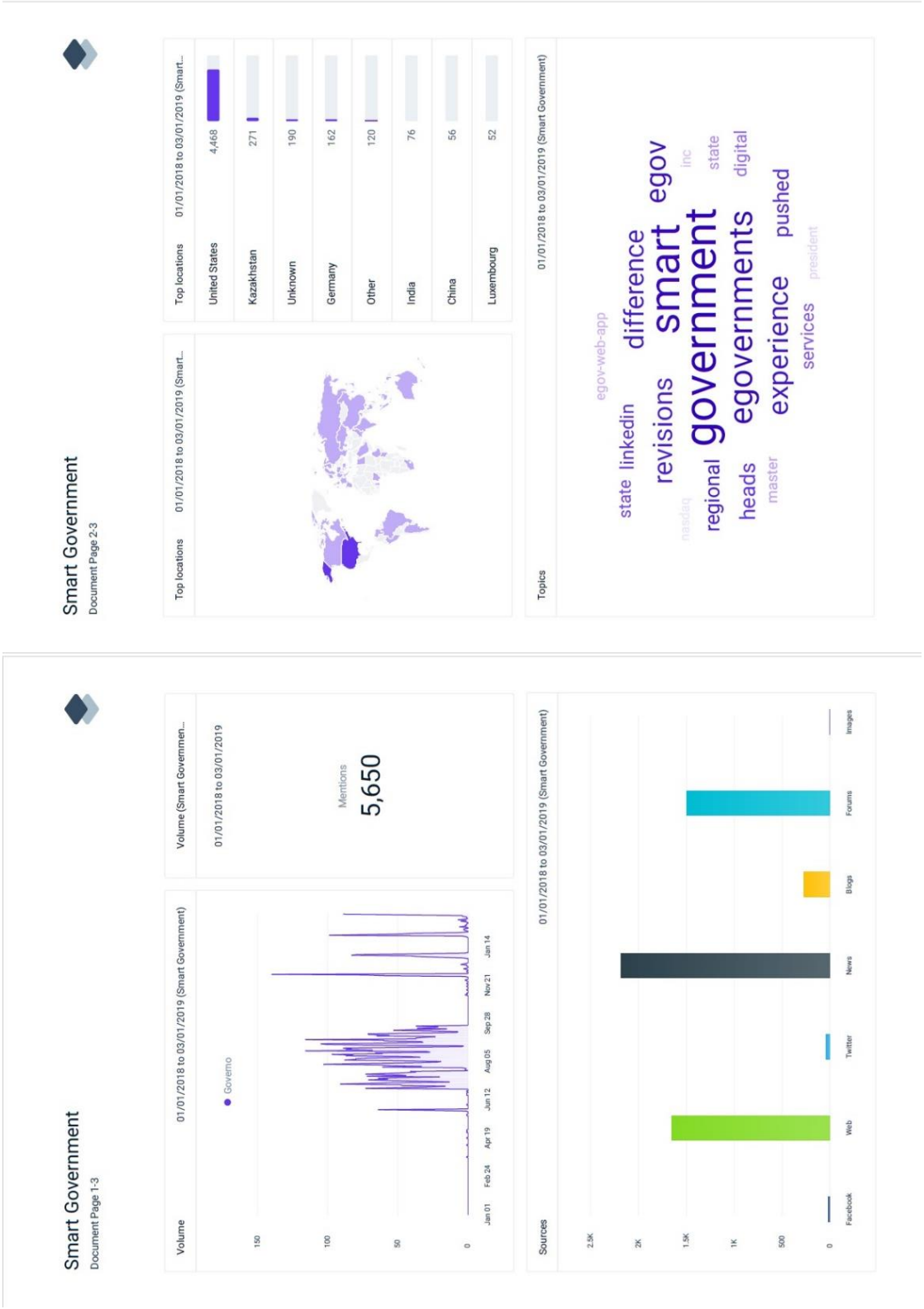

Figure 18 - Mention report sample.

Appendix 6

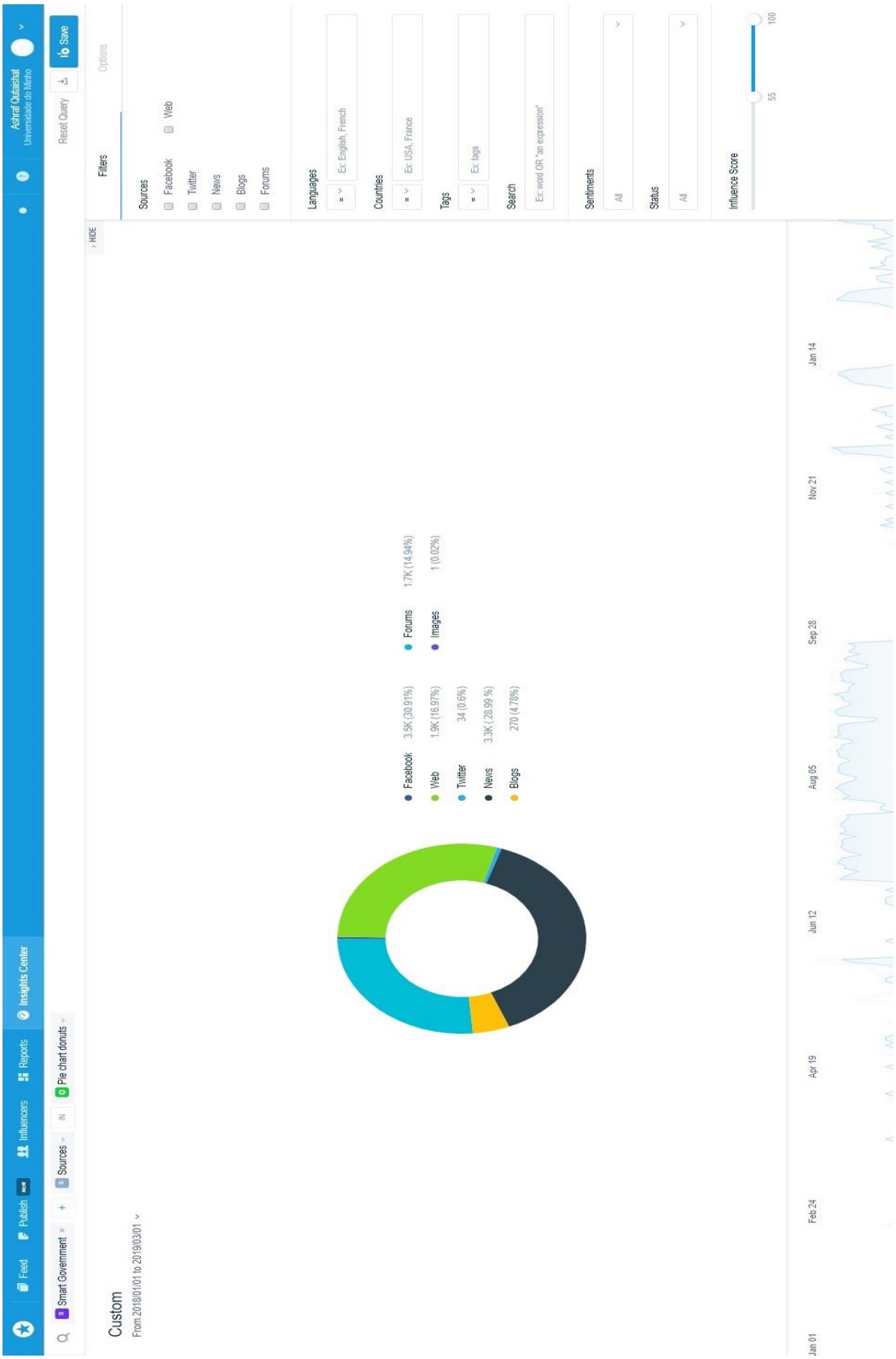

Figure 19 - Mention insight centre custom data.

Appendix 7

Table 27 - Concept matrix.

Concept Matrix					
Article Number	**Title**	**Authors**	**Journal / Publishing Entity**	**Number of Citations**	**Keywords**
A001	The relationship between transparency and e-government: An empirical support.	Abu-Shanab, (2013)	Electronic Government and Electronic Participation-Joint Proceedings of Ongoing Research of IFIP EGOV and IFIP ePart 2021	24	E-Government Development; Transparency; Corruption Perception Index (CPI); Open Budget Index (OBI); E-Government Readiness Index (EGRI)
A002	Open versus closed innovation: A model of discovery and divergence	Almirall et al., (2010)	Academy of management review	521	Open Innovation; Closed Innovation;
A003	Web application vulnerability assessment and policy direction towards a secure smart government	Awoleye et al., (2014)	Government Information Quarterly	20	E-Government; Smart Government; Web Vulnerability; Policy; Cross Site Injection; SQL Injection; Cookie Manipulation
A004	Cool URIs for the Semantic Web	Ayers & Völkel, (2008)	Woking Draft. W3C	31	Resource Description Framework (RDF); Uniform Resource Identifiers (URIs); 303 URIs; hash URIs; Web documents
A005	From public innovation to social innovation in the public sector: A literature review of relevant drivers and barriers.	Bekkers et al., (2013)	Rotterdam: Erasmus University Rotterdam	106	Public Innovation; Social Innovation; Public Sector Service; Innovation Drivers and Barriers

A006	Linked data: The story so far	Bizer et al., (2011)	Semantic services, interoperability and web applications: emerging concepts. IGI Global.	5552	Linked Data; Web of Data; Semantic Web; Data Sharing; Data Exploration
A007	Steering towards happiness in The Netherlands	Boelhouwer & van Campen, (2013)	Social indicators research	7	Happiness; Subjective Well-being; National Policy; Community Care; Education; Mental Health Care
A008	Looking for friends, fans, and followers? Social media use in public and nonprofit human services	Campbell et al., (2014)	Public Administration Review	76	Social Media Adoption and Use; Public and Non-profit Human Services; Barriers to Social Media
A009	The utilization of e-government services: citizen trust, innovation and acceptance factors	Carter et al., (2005)	Information systems journal	1939	E-Government; Adoption; Citizen Trust; Technology Acceptance Model; Diffusion of Innovation Theory
A010	Open innovation: The new imperative for creating and profiting from technology	Chesbrough , (2006)	Harvard Business Press.	18728	Open Innovation; Closed Innovation; Strategies and Tactics; Managing Intellectual Property
A011	The era of open innovation. Managing innovation and change	Chesbrough , (2006)	MIT Sloan Management Review	4324	Open Innovation; Closed Innovation; Funding, Generating, and Commercialising Innovation
A012	Applying Open Innovation Strategies to eGovernment for Better Public Services	Christos et al., (2015)	IGI Global eBooks (pp. 703–727)	9	Open Innovation Strategies; E-Government; Public Services; Citizen-driven Participatory
A013	The introduction of e-Government in Korea: development journey, outcomes and future	Chung, (2015)	Gestion et management public	7	E-Government; Korea; Development Journey

A014	Language and communication at work: Discourse, narrativity, and organizing	Cooren et al., (2014)	Oxford University Press	23	Language; Communicative Practices; Organisations; Human Cognition
A015	Government innovation through social media	Criado et al., (2013)	Government Information Quarterly	299	Social Media; E-Government; Twitter; Facebook; Web 2.0; Innovation; Digital Government; Government 2.0
A016	Implementation team responsiveness and user evaluation of customer relationship management: A quasi-experimental design study of social exchange theory	Gefen & Ridings, (2002)	Journal of management information systems	380	Customer Relationship Management; Enterprise Resource Planning, Social Exchange Theory
A017	Building collaborative digital government systems	Dawes & Pardo, (2002)	Advances in digital government. Springer	197	Interorganizational Collaboration; Intergovernmental Collaborations; Integrated Services; Integrated Systems; Partnerships
A018	Social media monitoring	Fensel et al., (2012)	Semantic Technology Institute, Innsbruck	14	Social Media Monitoring; Use of SMM; Social Media Channels
A019	Bricolage and invisible innovation in public service innovation	Fuglsang, (2010)	Journal of Innovation Economics Management	176	Services; Innovation; Public Sector
A020	Focus of attention at work: Construct definition and empirical validation	Gardner et al., (1989)	Journal of Occupational Psychology	92	Attention; Focus of Attention; Human Cognition; Work Environment

A021	Open government and (linked)(open)(government)(data)	Geiger & Von Lucke, (2012)	JeDEM-eJournal of eDemocracy and open Government	74	Open Data, Open Government Data, Linked Data, Linked Open Government Data, Open Government, Transparency, Participation, Collaboration, Cooperation
A022	Language in mind: Advances in the study of language and thought	Gentner et al., (2003)	MIT press	535	Language; Communication; Attention; Human Cognition; Perception
A023	Being smart: Emerging technologies and innovation in the public sector.	Gil-Garcia et al., (2014)	Government Information Quarterly	121	Smart Government; Smart Cities; Smart Governance; Governance Infrastructure; Emergent Technologies; Innovation
A024	Conceptualizing smartness in government: An integrative and multi-dimensional view	Gil-Garcia et al., (2016)	Government Information Quarterly	91	Smart Government; Smart City; Sustainability; Openness; Effectiveness; Efficiency; Innovation; Creativeness; Information Technologies; Data; Evidence-based Decision Making
A025	Towards a smart State? Inter-agency collaboration, information integration, and beyond	Gil-Garcia, (2012)	Information Polity	112	Smart State; Electronic Government; Information Integration; Smart Government; Virtual State; Collaboration; Government 2.0; Government 3.0; Information Sharing; Smart City; Service Integration

A026	Do transparent government agencies strengthen trust?	Grimmelikhuijsen, (2009)	Information Polity	80	Trust; Electronic Government; Government Websites; Internet; Policy Information
A027	Transparency, participation, and accountability practices in open government: A comparative study	Harrison, & Sayogo, (2014)	Government Information Quarterly	108	Budget Transparency; Participation; Accountability; Budget Disclosure; Open Government; Open Government Partnership; Fiscal Affairs
A028	Innovation in governance and public services: Past and present	Hartley, (2005)	Public money and management	979	Innovation; Public Sector Services; Policy; Practice and Research
A029	Not all events are attended equally: Toward a middle-range theory of industry attention to external events	Hoffman & Ocasio, (2001)	Organization science	567	Attention; Public Attention; Events Critical Triggers; External Events; Industry Attention
A030	Smart government key initiative overview	Howard, (2013)	Gartner	9	Smart Government; Opportunities and Challenges; Services; Social Change
A031	Linked data is merely more data	Jain et al., (2010)	AAAI Spring Symposium Series	183	Linked Open Data; Web of Data; Problems Linked Open Data Cloud
A032	The principles of psychology	James, (1890)	Henry Holt and Company / Read Books Ltd.	42785	Psychology; Functions of the Brain; Brain-Activity; Automaton-Theory; Mind-Stuff Theory; Stream of Thought; Consciousness; Attention; Conception; Discrimination and Comparison; Association; Perception; Memory;

					Sensation; Imagination; Reasoning; Production of Movement; Instinct; Emotions; Will; Hypnotism; Effects of Experience
A033	The influence of the PSI directive on open government data: An overview of recent developments	Janssen, (2011)	Government Information Quarterly	255	Open Government Data; PSI Directive; Freedom of Information; Re-use of Data
A034	Benefits, adoption barriers and myths of open data and open government	Janssen, (2012)	Information systems management	1028	Systems Theory; Institutional Theory; Adoption; Diffusion; Open Data; Open Government; Governance; Transformation
A035	The role of meetings in the social practice of strategy	Jarzabkowski, & Seidl, (2008)	Organization studies	355	Strategy-as-Practice; Strategy Meetings; University, Strategy Episodes, Strategizing.
A036	Open innovation in the public sector: A research agenda.	Kankanhalli et al., (2017)	Government Information Quarterly	31	Open Innovation; Public Sector; IT Facilitators of Innovation
A037	Users of the world, unite! The challenges and opportunities of Social Media	Kaplan & Haenlein, (2010)	Business horizons	14778	Social Media; User Generated Content; Web 2.0; Social Networking Sites; Virtual Worlds
A038	Open innovation in the public sector of leading countries	Lee et al., (2012)	Management decision	228	Open Innovation; Public Sector; Government; Cross-country Survey; Citizen-sourcing

A039	Wellsprings of knowledge	Leonard, (1995)	Harvard Business School Press	7145	Building Innovation; Sustaining Innovation; Knowledge; Problem Solving; Core Technological Capabilities; Experimenting; Prototyping; Learning from the Market
A040	Fostering User Engagement: Rhetorical Devices for Applause Generation Learnt from TED Talks	Liu et al., (2017)	Eleventh International AAAI Conference on Web and Social Media	1	Perception; Attention; Delivering Public Discourse; TED Talks; Rhetorical Devices; Applause Elicitation
A041	Promoting open innovation in the public sector through social media monitoring	Loukis et al., (2017)	Government Information Quarterly	36	Open Innovation; Public Sector; Social Media Monitoring; Government; External Knowledge; Diffusion of Innovation Theory; Political Perspective; Crowd-sourcing Perspective
A042	Open government: connecting vision and voice	Meijer et al., (2012)	International review of administrative sciences	297	Open Government; Participation; Transparency
A043	Government 2.0: Key challenges to its realization	Meijer et al., (2012)	Radboud Repository of the Radboud University, Nijmegen	75	Government 2.0; Leadership; Incentives; Trust
A044	Smart government, citizen participation and open data	Mellouli et al., (2014)	Information Polity	53	Smart Government; Citizen Participation; Open Data
A045	Implementing open innovation in the public sector:	Mergel, & Desouza, (2013)	Public administration review	162	Open Innovation; Open Government; Public Sector;

	The case of Challenge. gov				Challenge.gov; Crowdsourcing
A046	The social media innovation challenge in the public sector	Mergel, (2012)	Information Polity	138	Social Networking, Social Media, ICT Adoption
A047	Building holistic evidence for social media impact	Mergel, (2017)	Public Administration Review	13	Social Media Measurement; Audiences Engagement; Social Media Data; Social Media Platforms; Evidence-based Decision Making
A048	Connecting citizens and local governments? Social media and interactivity in major US cities	Mossberger et al., (2013)	Government Information Quarterly	261	Social Media; Civic Engagement; Open Government
A049	Smart city as urban innovation: Focusing on management, policy, and context	Nam, & Pardo, (2011)	Proceedings of the 5th international conference on theory and practice of electronic governance	456	Smart City; Public Sector Innovation; Urban Innovation; Sociotechnical Perspective
A050	The changing face of a city government: A case study of Philly311	Nam, & Pardo, (2014)	Government Information Quarterly	64	Non-Emergency Contact Service; 311; Customer Service Centre; Smart City; Smart Government; E-Government
A051	Towards an attention-based view of the firm	Ocasio, (1997)	Strategic management journal	2802	Firm Behaviour; Attention-based View; Attention of Decision-Makers

A052	Communication and attention dynamics: An attention-based view of strategic change	Ocasio et al., (2018)	Strategic Management Journal	13	Attention-based View; Organizational Attention; Strategic Decision Making; Communication Channels; Strategic Change; Communication Practices; Rhetorical Tactics; Behavioral Strategy
A053	Social media use in local government: Linkage of technology, task, and organizational context	Oliveira, & Welch, (2013)	Government Information Quarterly	190	Social Media; Web 2.0; E-Government; Technology; Technology–Task Coupling; Socio-Technical System Theory; Local Government
A054	Harvesting Big Data in social science: A methodological approach for collecting online user-generated content.	Olmedilla et al., (2016)	Computer Standards & Interfaces	18	Big Data; User-Generated Content; E-Social Science; Computing; Data Gathering
A055	Social media and tacit knowledge sharing: Developing a conceptual model.	Panahi et al., (2012)	World academy of science, engineering and technology	172	Tacit Knowledge; Knowledge Sharing; Social Media; Web 2.0; Implicit Knowledge
A056	Interorganizational information integration: A key enabler for digital government	Pardo, & Tayi, (2007)	Government Information Quarterly	183	Interorganizational Information Integration; Digital Government; E-Government; Information and Communications Technologies (ICTs); Government Challenges
A057	Smart governance in the context of smart cities: A literature review	Pereira et al., (2018)	Information Polity	5	Smart Governance; E-Government; Smart City Governance; E-Governance; Smart

					Government; Collaborative Governance
A058	An innovative, open, interoperable citizen engagement cloud platform for smart government and users' interaction	Recupero et al., (2016)	Journal of the Knowledge Economy	16	Smart City; Smart Governance; Linked Open Data; Citizen Engagement; Cloud Computing
A059	Attentional triangulation: Learning from unexpected rare crises	Rerup, (2009)	Organization Science	228	Organizational Learning; Attention; Rare Events; Weak Cues; Design; Multilevel Research
A060	Open data for democracy: Developing a theoretical framework for open data use	Ruijer et al., (2017)	Government Information Quarterly	37	Democracy; Open Government Data; Open Data Platform
A061	Adoption of the linked data best practices in different topical domains	Schmachtenberg et al., (2014)	International Semantic Web Conference. Springer	349	Linked Open Data; Web of Linked Data; Best Practices
A062	Smart governance: A roadmap for research and practice	Scholl & Scholl, (2014)	IConference 2014 Proceedings	104	Electronic Government; Smart Government; Smart Governance; Open Government; Transparency; Participation; Smart City; Smart Grids; Electric Mobility; Ubiquitous High-Speed Connectivity; Open Data; Big Data; Security and Safety; Administrative Modernization

A063	Soft data and public policy: can social media offer alternatives to official statistics in urban policymaking?	Severo et al., (2016)	Policy & Internet	16	Twitter; Urban Policy; Decision Making; Big Data; City; ESPON; Soft Data
A064	Linked open government data: Lessons from data. gov. uk	Shadbolt et al., (2012)	IEEE Intelligent Systems	253	Linked Data; Open Data; Public Sector Information (Psi)
A065	The impact of innovation and smart government on happiness: Proposing conceptual framework	Shamsi et al., (2018)	Intl. J. Manage. Hum. Sci	7	Smart Government; E-Government; Happiness; Innovations
A066	Social media for openness and accountability in the public sector: Cases in the Greek context	Stamati et al., (2015)	Government Information Quarterly	85	Social Media; Openness; Accountability; Affordances; Design; Strategies; National Policy
A067	The wisdom of crowds: Why the many are smarter than the few and how collective wisdom shapes business.	Surowiecki, (2004)	Economies, Societies and Nations	288	Crowdsourcing; Problem Solving; Fostering Innovation; Wise Decisions; Perception of the Future; Psychology; Behavioral Economics; Artificial Intelligence; Military History; Politics
A068	BPM and BPMN as Integrating Concepts in eGovernment-The Swiss eGovernment BPM Ecosystem	Walser & Schaffroth, (2011)	International Conference on Subject-Oriented Business Process Management	8	BPM; BPMN; Business Architecture; Enterprise Architecture; New Public Management; Public Services; Service Distribution;

					Service Production; Process Chains
A069	Developing vocabulary through purposeful, strategic conversations	Wasik, & Iannone-Campbell, (2012)	The Reading Teacher	54	Oral Language; Discussion; Expressive Language; Language Acquisition; Language Development; Strategies; Methods; Materials; Instructional Strategies; Teaching Strategies; Vocabulary; Affixes; Early Childhood
A070	Human cognition in its social context	Wyer, & Srull, (1986)	Psychological review	981	Human Cognitive System; Prior Knowledge; Social Cognition; Input and Output Variables; Social Information Processing; Social Judgments; Affective Reactions; Memory; Behavioral; Decision Making
A071	Innovation in government services: The case of open data	Yang, & Kankanhalli, (2013)	International Working Conference on Transfer and Diffusion of IT	45	Open Data; E-Government; Open Innovation; Open Government Data
A072	What do we know about social media in tourism? A review	Zeng, & Gerritsen, (2014)	Tourism management perspectives	395	Impact; Literature Review; Research Agenda; Social Media; Tourism Marketing