Linnæus University
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Master's Thesis

Bridging the Digital Disparities in Sweden

A Discursive Analysis of Swedish Policy Reports on Digital Inclusion

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Abstract

This study investigates the construction of discourse on digital inclusion in Sweden by closely analyzing policy reports from various governmental entities responsible for the digitalization agenda spanning the years 2017 to 2023. The research forms a three-dimensional approach, which focuses on discursive motivations for bridging the digital divide, perceived access prerequisites for achieving this goal, and the primary target group for digital inclusion efforts within the policy discourse. Drawing upon van Dijk's Resources and Appropriation theory, the mezzo-scale analysis explores how properties of digital divides related to resource inequalities and adaptation were expressed within the discourse, forming the core framework of this thesis. Fairclough's critical discourse theory (CDA) guides the macro-scale analysis; however, the large-scale view, with a focus on power relations, is not the key framework in this study. Instead, they are drawn upon in the discussion section while evaluating the key findings.

The methodology employed combines CDA through close reading with exploratory text mining techniques from the Digital Humanities, revealing three key discursive motivations: 1) social participation, 2) democracy and social equality, and 3) economic prosperity. Material/physical and skills access are identified as primary prerequisites, with a particular focus on people with disabilities. A critical evaluation of these findings provides significant implications for future research on the digital divide, particularly with regards to Swedish policymaking.

Key words

Digital Divide, Policy Discourse Analysis, Text Analytics, Resources and Appropriation Theory, Digital Humanities.

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Nur Gültekin

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Table of Contents

List of Abbreviations

CDA: Critical discourse analysis

DH: Digital Humanities

DIGG: Myndigheten för digital förvaltning (The Swedish Agency for Digital Government)

ICT: Information and Communication Technologies

IoT: The Internet of Things

LAM: Libraries, Archives, Museums

MFD: Myndigheten för delaktighet (The Swedish Agency for Participation)

MTM: Myndigheten för tillgängliga medier (The Swedish Agency for Accessible Media)

PTS: Post- och telestyrelsen (The Swedish Post and Telecom Authority)

RA: Resources and Appropriation theory

t-SNE: T-distributed Stochastic Neighbor Embedding

1. Introduction

This study aims to investigate the discourse present in policy reports from five governmental entities in Sweden. In doing that it seeks to understand the proposed objectives in policy discourse regarding digital inequalities and inclusion issues in the country; thereby to shed light on how key factors of unequal access to information and communication technologies (ICTs) are being addressed in Swedish society and how the digital exclusion itself is primarily framed in the policy discourse which, from a poststructuralist critical theory perspective, impacts the social reality and forms future discourses (Foucault, 1972; Fairclough, 1992).

To do that, the study adopts a multi-method approach combining Critical Discourse Analysis (CDA) with Digital Humanities (DH) text mining methods. While doing that it forms a three-dimensional research approach with three research questions to unpack discursive patterns surrounding the reasons and methods of addressing digital inclusion in Sweden. This research iteratively examines discursive motivations, primary access prerequisites expressed in discourse, and focus groups mentioned in the discourse. The theoretical framework informing this iterative process is van Dijk's Resources and Appropriation theory (RA) (2005), which highlights dimensions of inequalities in resource distribution and access forms, proposing a sequential process for full digital participation through motivation, material, skills, and usage access. The analysis utilizes Fairclough's critical discourse theory, particularly his three-dimensional CDA approach, to scrutinize discourse and understand the meanings they convey within the societal context. The data source for the analysis comprises policy reports addressing digitalization agenda and digital inclusion issues from four Swedish governmental entities, namely the Post and Telecom Authority (PTS), Agency for Digital Government (DIGG), The Swedish Agency for Participation (MFD), and Swedish Agency for Accessible Media (MTM), along with the Digitalization Council (Digitaliseringsråd), all of which have been assigned the task of addressing digital development and inclusivity issues.

The motivation of this research lies within rapid digitalization in Sweden and the deepening disparities between the included and the excluded (van Dijk, 2005), and in the observation that research addressing it particularly through policy discourse analysis in Sweden is lacking. These information inequalities can be categorized into three aspects: connectivity, content, and human (Britz, 2004). The connectivity approach emphasizes the lack of access to information and communication technologies (ICTs), the content approach highlights the unavailability of quality information, and the human approach underscores the importance of skills, experience, and education in using information effectively.

Inequalities and disparities have been longstanding aspects of human life (Clark & Gorski, 2002; Yu, 2006, p. 237). However, with the rise of ICTs, a new term, the “digital divide”, emerged in the public discourse in the mid-1990s (Hoffman et. al., 2001; Yu, 2006, p. 236). This brought about a technological dimension to information gaps and broader socioeconomic disparities due to the rapid digitalization of societies. As a result, new forms of information gaps and social inclusion issues have surfaced at both local and global levels. On a most recent note, the COVID-19 pandemic has exacerbated the digital divide (Hawkins, 2021) and the importance of ICTs for participating in society, continuing education and work, and accessing institutions and healthcare services. Even everyday tasks

like buying groceries during lockdowns became reliant on digital technologies. Nevertheless, certain groups, such as seniors, individuals with disabilities, and migrants, encountered barriers that hindered their effective use of digital technologies in their everyday lives, which in turn exacerbated their disadvantage and amplified existing digital divides and inequalities (Kluzer & Rissola, 2009; Tsatsou, 2022).

As a result of this deepening divide, more research, programs, and policies are needed to address the underlying factors contributing to the problem. Research should not only focus on theoretical concepts of digital divides and inclusion issues but also investigate national-level factors that explain digital exclusion (Fuchs, 2009; Helsper, 2012; Ono & Zavodny, 2007; Helsper & Reisdorf, 2016). Effective policies and interventions must prioritize the most marginalized and hardest-to-reach groups, while addressing multiple factors contributing to digital exclusion (Helsper & Reisdorf, 2016, p. 1268). From a CDA perspective, understanding how these policies address these groups and broader societal issues becomes of significant importance. This is where this thesis comes into play with the analysis of policy reports concerning digital inclusion.

Bridging the digital divide proves challenging in a highly digitalized world where the distribution resources and opportunities are not equal due to varying mental and material capabilities among individuals in society (van Dijk, 2005). As society shifts from analogue to digital, requirements for acceptance and access to ICTs among individuals become higher. To catch up with the contemporary digital world and improve their social, economic, and cultural position in society, individuals need the necessary digital skills (van Dijk, 2005), which are becoming increasingly sophisticated and advanced (Sciadas, 2005, p. 301) and sought after in the labor market (van Dijk & Hacker, 2003). Any inequalities in accessing ICTs and acquiring these skills originate from what van Dijk refers to as 'personal and positional resources,' influencing the process of technology appropriation in a sequence comprising motivation, material access, skill development, and eventually usage access (van Dijk, 2005). Motivation is the primary prerequisite, categorized under the 'first-level digital divide' in previous studies, followed by the need to meet the complexity of ICTs; then obtain the material access and develop skills to use it, and eventually elevate those skills for improving one’s position and network in society (van Dijk, 2005).

Addressing these aspects of digital divides, as proposed by van Dijk, is critical in effecting real change within these disparities. Employing CDA becomes particularly valid in unpacking how these aspects were addressed in policy reports, considering the influential power of discourse in dialectically shaping and being shaped by social reality, especially when that discourse originates from policymakers within positions of power that can significantly impact political and social outcomes (Leipold et al., 2019, p. 452). As Hwang posits, “the relationship between a certain discourse type and an actual discursive event is quite conventional and thus predictable” (2006, p. 59). In this manner, discourses hold significant importance as they can influence perceptions, attitudes, and actions towards the realities within a society or societies. It was with this notion that the analysis has been guided by Fairclough’s approach in CDA.

In the analysis of rhetoric surrounding digital inclusion in Sweden, this thesis adopts a three-dimensional iterative approach to understanding motivations, focuses,

and perceptions towards digital inclusion in the country. Further details regarding this approach will be provided in the subsequent section of problem statement.

In conducting close reading analysis, Fairclough's CDA was employed, along with a research model developed by Hwang (2006), to carefully extract policy content properties such as policy problem, policy goal, policy means, and policy context. To augment the analysis and validate the results, qualitative discourse analysis methods were supplemented by exploratory text mining and analysis techniques from the field of Computer Science and Digital Humanities research methodologies. These techniques include concordance analysis, which has been particularly valuable in extracting contextual information regarding digital inclusion. Moreover, word embeddings, and visualizations through hierarchical clustering and t-SNE algorithms have been utilized. Both close reading and distant reading analyses have contributed significantly to the key findings of this research, offering meaningful insights, and serving as an exemplar for future studies in terms of the applicability of text mining within discourse analysis.

The subsequent chapters of this thesis will delve into the background, presenting relevant concepts and entities, followed by a review of previous research related to the topic. The theoretical framework will then be detailed, explaining the chosen theories and their background. The research methodology, combining both CDA with exploratory text mining techniques, will be outlined, including the selection criteria for analyzed reports. The data analysis section will transparently present the extraction of results through Hwang's research model, along with the outputs of the text mining phase. The findings will be comprehensively presented and partially discussed in the Findings section, addressing all three research questions. Drawing upon Fairclough's CDA in the Discussion section, the key findings will be further examined and critically reflected upon. While CDA's large-scale, hegemony, and power relations aspect does not serve as the core framework for this thesis's analysis and findings, it will be utilized to evaluate the key results, explore potential limitations, and reveal repercussions within the identified discourse. This approach aims to unveil implications for future research endeavours.

1.1 Concepts

Digital divide, known as 'digital klyfta' in Swedish, refers to the disparities in digital access and participation. It describes the divide between those who are actively engaged in the digital society and have access to its vast opportunities, and those who are excluded or have limited access. This divide contributes to societal inequalities, both locally and globally.

Digital inclusion, known as "digital inkludering" in Swedish, is a concept closely linked to digital participation and stands in direct contrast to digital exclusion. In the context of this thesis, digital inclusion refers to the state in which individuals possess all the necessary prerequisites to fully engage with digital technologies. It signifies that individuals have the motivation, skills, and resources needed to participate actively in the digital realm.

It is important to note that 'digital divide' and 'digital inclusion' are not being used as interchangeable terms in this thesis. The term 'digital divide' refers to a larger phenomenon, whereas 'digital inclusion' addresses problems within the digital divide that can be addressed and brought solutions to. That is, digital inclusion issues can

tackle specific challenges arising from digital divides, which in themselves are complex issues.

Digital participation, “digital delaktighet” in Swedish, refers to the active engagement of individuals in the digital realm. It is closely intertwined with the concept of digital inclusion. In the context of this thesis, digital participation is described and used in close semantic proximity to digital inclusion. It encompasses individuals' active involvement and use of digital technologies, demonstrating their ability to effectively navigate, utilize, and contribute to the digital sphere.

Concordance analysis is a text mining method applied in fields such as corpus linguistic and DH. Concordance refers to instances of a term appearing within a corpus. The process of concordance analysis entails searching for a key word or term within corpus data, resulting in a list showcasing occurrence of that term presented in the KWIC format (Key Word in Context) (Sinclair, 1991; Tribble, 2010, p. 13). The KWIC format visually presents the queried term within its corresponding 'Left' and 'Right' contexts. This way it facilitates the identification of the context and connotation in which the given term or word was constructed within the analyzed corpus. In this study, the tool used for concordance analysis was primarily the Sketch Engine software.

Word embedding is a low dimensional representation of high dimensional text data (Orange Data Mining, 2020), which involves projecting words onto a vector of numbers, determined by their proximity to each other in the text (similarity, co-occurrence, etc.). In this way, it achieves a condensed portrayal of high-dimensional text data.

T-distributed stochastic neighbor embedding (t-SNE) is a dimensionality reduction and visualization algorithm which represents data points of a high-dimensional data on a two-dimensional space based on their proximity in the original space (e.g., in text).

Hierarchical clustering is a technique used to group data points, such as words in a document, based on their similarity. The process involves measuring the distance between data points, according to which the smaller the distance between two points is, the greater their similarity is. These data points are then arranged in a dendrogram, which resembles a tree-like structure, with clusters and sub-subclusters formed based on their proximity and similarity within the dataset (Orange Data Mining, 2016).

Close reading refers to a qualitative analytical process in text wherein one interprets and analyzes specific details and passages within a text directly and methodologically to uncover layers of meaning (PARCC, 2011, p. 7; Boyles & Scherer, 2012, p. 90). This approach is aimed at revealing the deeper implications and messages conveyed. As discourse analysis incorporates close reading elements by comprehensively examining language use and context to discern intended messages and implications within a given discourse, the first phase of this study involving CDA was named as the close reading phase.

Distant reading is the process of studying particular texts by aggregating them through computational methods and mass data analysis. While close reading focuses on a canon of text, distant reading zooms out of that canon and focuses on themes, devices, genres and systems within collection of texts (Moretti, 2013, p. 48-49). Text mining techniques widely used in the field of Digital Humanities fall under distant reading.

1.2 Problem Statement

The issue of digital inequality has been increasingly gaining importance across the globe and in Sweden where access to digital technology is considered a key aspect of modern society. However, there is a lack of research focused on policy discourse about digital inequalities in Sweden. This is significant because discourse shapes and creates social reality, and affects policymaking whether by instigating change or fostering inertia across multiple levels; thus may result in policy outcomes (Leipold et. al., 2019, p. 452). The power of discourses lies in their ability to influence what is considered thinkable or unthinkable, defining the boundaries of policy options, and ultimately entailing policy outcomes (Keller & Poferl, 1998; Litfin, 1994; Hayer & Versteeg, 2005, p. 178). To effectively tackle digital divides and inequalities, it is crucial to address the underlying obstacles and produce policies and initiatives that address those issues in a way that concurs with reality. Particularly from the DH perspective, digital divides counter to the promotion of digitalizing cultural heritage and humanities research, as they risk leaving behind those who are lagging in the digitalization process. And yet, these issues, particularly from policy discourse perspectives within Swedish context, have been scarce in general and particularly in DH research. This study therefore seeks to bridge that gap and investigate the discourse around digital inequality in Sweden by integrating DH text mining methods and discourse analysis through close reading of policy reports. While doing that it adapts van Dijk's Appropriation and Resources (RA) theory as a fundamental concept and Fairclough's CDA as a macro-analysis approach. The objective is to gain insights into how governmental entities frame the issue and explore potential limitations and repercussions in current policy discourse. For this purpose, this research forms a comprehensive analysis with three-dimensional research in addressing ways in which digital inclusion was expressed on Swedish political discourse. The research questions constitute the why, how, and who dimension, and those dimensions are as follows.

1.2.1 Research Questions

1. What are the key discursive motivations behind addressing digital inclusion in the emerging policy discourse? In other words, *why is it important to address digital inclusion in Swedish policy discourse?*

2. Within the framework of van Dijk's Resources and Appropriation theory (motivational, material, skills, and usage access), what were or what was the primary access prerequisite for achieving full digital participation and inclusion within Swedish policy discourse? In other words, *how to achieve digital inclusion?*

3. Who constitutes the primary focus group in the policy discourse, and how are their needs addressed in terms of personal and positional resources, as conceptualized by van Dijk's theory? In other words, *who is the primary focus group when addressing digital inclusion?*

Throughout the thesis, the research questions will be addressed as RQ1, RQ2, and RQ3.

2. Background

2.1 Digital Divide

The term "digital divide" refers to social inequalities resulting from disparities in access to ICTs and their usage, which are driven by differences in socio-economic components such as income, education, and location (OECD, 2001). The digital divide can be classified into three levels: the first-level digital divide, arising from a lack of physical access to ICTs and broadband internet; the second-level digital divide, resulting from differences in usage caused by complex socioeconomic, cultural, and demographic factors such as age, gender, race, physical ability, income, skills, motivation, and education; and the third-level digital divide, resulting from uneven capacities to capitalize on access and use of ICTs and convert it into tangible outcomes such as improved job prospects and self-esteem (Mossberger et al., 2003; Warschauer, 2004; van Dijk, 2005; Vicente & López, 2011; van Deursen & van Dijk, 2014; Hilbert, 2016; Ragnedda & Gladkova, 2020).

The concept of "information have-nots," as the disadvantaged side of digital divides, was first introduced in a 1995 report by the National Telecommunications and Information Administration (NTIA) that highlighted the discrepancy between those who have access to new technologies and those who do not. The binary distinction between "information haves" and "have-nots" has been used to define the digital divide (DiMaggio & Hargittai, 2001), and early scholarly work were successful in predicting how lack of access to new technologies could negatively impact individuals' ability to find employment, obtain education, socialize, and access information (NTIA, 1995, p. 14; Hoffman & Novak, 1998, 1999; Benton, 1998; Strover, 1999; DiMaggio & Hargittai, 2001, p. 3).

Since the early 2000s, the digital divide has been recognized as a complex socioeconomic issue with cultural and economic impacts (van Dijk & Hacker, 2000; DiMaggio & Hargittai, 2001; van Dijk, 2002). It is sometimes viewed as an extension of Singer's (1970) notion of "international technological dualism," which highlights the divide between developed and developing nations and the significant disparity in the distribution of economic, scientific, and technological resources and advancements, perpetuating socioeconomic inequalities (James, 2003). At this point, a good framework to address digital divide is again van Dijk’s personal and positional framework in digital disparities. Personal resources are age, gender, race, physical ability/disability, income when positional resources are nation (in/from a developing or developed country), household (parent, married etc), regional (inner-outer city, rural-city). Divides resulted in particularly the positional divides such as nation can be linked to first-level divides (Keniston & Kumar, 2003; van Dijk, 2005; Mammen et al., 2022).

The digital divides are also often discussed from the perspectives of global south-north dualism, which refers to the disparities between the more developed and less developed regions of the world. The following subsection will briefly explain concepts of global north-south dualism. Understanding the variations in culture, socioeconomic status, and demographic factors may be essential in comprehending the root causes of digital divides and devising more effective strategies to address them.

1.2.1. North-South Dualism

The Global North and South dualism came into theoretical existence with Singer's "International Dualism" in 1970 and has been a framework for understanding global inequalities in economic, social, and technological contexts (Source). It is commonly viewed as the result of different levels of economic, political, and technological developments (Ragnedda & Muschert, 2013; Nieminen, 2016; Vartanova & Gladkova, 2019; Ragnedda & Gladkova, 2020), including media activities and technology developments perpetuated by the dominant actors of the Global North (Guillen and Suarez, 2005, p. 684; Mammen et al., 2020). In the case of the digital divide, it is often about the gap between those advantaged and included in global technological developments and those disadvantaged and excluded, resulting in an information-rich and information-poor divide (Britz, 2004; Ragnedda & Gladkova, 2020).

There are several approaches to address global south-north disparities in terms of global digital inequalities, including Dependency theory and world-system analysis. According to these theories, the Global North's developments and commercial relationships with the Global South often disadvantage the latter, resulting in a heavy reliance on developed nations for capital, technology, and information access (Mammen et al., 2022). This, as Mammen et al. (2022) state, perpetuates global inequality, further impoverishing peripheral countries.

Mammen et al. (2022) discuss how the COVID-19 pandemic has widened the gap between the Global North, comprising of Europe, North America, and parts of Asia, and the Global South, mainly Africa, Asia, and South America, with regards to digital technology access and high-speed internet connectivity. They elaborate that the pandemic has aggravated pre-existing personal and positional digital divides, both nationally and internationally. The Global North enjoys widespread access to digital technologies and high-speed internet connectivity, while the Global South is limited, which has adversely impacted their ability to make a quick transition towards a digital economy. As a result, the pandemic has magnified pre-existing rural-urban, gender, and regional digital divides in both developed and developing countries, further widening the gap between the North and South (Mammen et al., 2022).

Previous research has identified various geographic blocs with different digital divides, including highly developed countries, Arab and Middle Eastern nations, the emerging BRICS countries, and understudied regions like East and Central Asia, Latin America, and sub-Saharan Africa (Jaffrelot, 2009; Ragnedda and Gladkova, 2020). Among these regions, large parts of Africa, South Asia, and South America are addressed as the global south, with relatively limited access to ICTs (Mammen et al., 2022). Citizens of developing countries do not always have the same ICT access opportunities as those in the Global North, leading to strong forms of inequalities in terms of ICT use and other social, economic, and democratic opportunities (Ragnedda & Gladkova, 2020, p. 25).

When digitally disadvantaged individuals from the global south migrate to developed countries in the global north, questions may arise regarding their digital inclusion in the highly digitized new country. Thus, when dealing with digital inequalities and inclusion issues in Sweden and other developed countries, global north-south and world-system perspectives are relevant for addressing the needs of certain ethnic minorities and migrants.

2.2 Digital Agenda by the EU Parliament

In 2010, the European Commission launched a Digital Agenda of Europe, which aimed to deliver sustainable economic and social benefits from a digital single market based on fast and ultra-fast internet and interoperable applications. It proposed actions to eliminate regulatory barriers, facilitate electronic payments, and build customer trust to create a single market in the telecoms sector. The agenda also aimed to address rising cybercrime, insufficient investment in networks, and a lack of digital literacy and skills. The Digital Agenda was one of seven flagship initiatives of the Europe 2020 Strategy, aiming to spur innovation, economic growth, increase digital inclusion and access, and improvements in daily life for citizens and businesses (European Commission, 2010, pp. 3-7).

The European Union introduced a second digital agenda for Europe in 2020. This new digital agenda is intended to guide the EU's policies and initiatives over the next ten years, until 2030. It puts a significant emphasis on the transformative potential of digital technologies and underlines their essential role in driving economic growth and creating new markets. The second agenda also reflects the EU's ambition to remain at the forefront of technological advancements and uphold its geopolitical standing in the world. The EU, by implementing this agenda, intends to address several crucial challenges in the new digital society, such as enhancing digital skills and literacy, promoting innovation and entrepreneurship, ensuring cybersecurity, and fostering the development of a trusted and ethical digital environment (Ratcliff et al., 2022).

2.3 Socio-demographic digital inequalities in Sweden

It is important to recognize that digital inclusion is not limited to binary categorization of individuals as either users or non-users of digital technology, as per van Dijk's classification (2005). Rather, there are several categories of individuals who fall under the umbrella of digital exclusion, including intermittent users (who use ICTs sometimes but are not fully connected or participating in the digital world), dropouts (who have lost or have limited access to ICTs), evaders (who avoid using ICTs even though they possess them), and the truly unconnected (who have no access to ICTs whatsoever). These non-user categories are considered as motivational problems according to van Dijk's theory, and it is imperative to recognize these categories of ICT use or non-use when addressing issues of digital inclusion and inequality.

According to the 2022 report of The Swedish Internet Foundation (Internet-stiftelsen), internet usage in Sweden is widespread, with 94% of the population using it, and almost all of them using it daily. Mobile phone access to the internet is increasing, with 78% of the population accessing the internet via mobile phones, and 65% using it daily. The average weekly internet usage is 24 hours, and individuals between 16 to 25 years old spend nearly 40 hours a week online. However, 7% of the population, approximately 630,000 people, are still not using the internet, primarily among the elderly population, although the number of non-users among those between 66-75 years old has decreased significantly.

Furthermore, 71% of the population uses mobile BankID[1] daily, and e-identification is now almost universally used (Svenskarna och Internet, 2022).

Regarding internet usage patterns, younger age groups prioritize privacy protection, while older age groups are more limited by technical difficulties and feeling unsafe online. There are also gender differences in how individuals limit their internet use, with men more likely to avoid certain apps and completely refrain from using social media for privacy reasons. Moreover, targeted ads are a concern for internet users of all ages, with fears of personal data being sold to commercial and political forces.

With these statistics on internet use in mind, it is evident that in Sweden, digital inequalities are considered low due to the high use of ICTs in society. Nevertheless, the government has prioritized closing existing inequalities in the digital agenda for 2020 and assigned related governmental agencies and bodies a mission to work towards increasing digital inclusion in Sweden. The reports from these governmental agencies and bodies, which will be analyzed in this study, were generated under the umbrella of this agenda and mission.

2.4 The Digitalization and Digital Participation Strategies in Sweden

In 2017, the Swedish government adopted a governmental agenda and a digitization strategy named "For a Sustainable Digitized Sweden" (Regeringskansliet, 2017). This strategy has prioritized five target areas, namely: digital competence, digital security, digital innovation, digital management, and digital infrastructure.

The digitization strategy places strong emphasis on ensuring that all individuals, regardless of their gender, social status, age, or abilities, have equal access to and opportunities for engagement in the digital society. It is crucial to provide people with the resources they need to access digital information and services offered by the public sector, allowing them to have an equal participation within society. In order to do that, it is important to offer universally accessible and adaptable solutions that foster the ongoing enhancement of digital competencies and the necessary skills for full participation in society (Regeringskansliet, 2017; MTM, 2018, p. 12).

As part of the agenda for digital access and participation in Sweden, the government assigned digitalization and digital inclusion tasks to governmental agencies including the Post Telecom Authority (PTS), Agency for Digital Administration (DIGG), Agency for Participation (MFD), and Agency for Accessible Media (MTM). Furthermore, the government founded the Swedish National Digitalization Council (Digitaliseringsrådet) in the spring of 2017, as part of this agenda. The reports analyzed in this study come from these governmental entities.

2.4.1 The Digitalization Council (Digitaliseringsrådet)

The Swedish National Digitalization Council, established in the Spring of 2017, is a governmental body operating under the Ministry of Finance and the Minister of Digital Development. It comprises experts from academia, private and

[1] A digital identification system in Sweden.

public sectors, with the main goal of supporting and promoting the implementation of digitalization strategies in Sweden (Regeringskansliet, 2023; Digitaliseringsrådet, n.d.).

The council's purpose is to assist the government in implementing its digitalization policies by providing independent analysis, identifying challenges related to digital development, promoting digitalization aligned with strategic goals, and making recommendations to the government.

2.4.2 The Swedish Post and Telecom Authority (PTS)

The Swedish Post Telecom Authority (PTS) is a governmental agency under the Ministry of Finance in Sweden, and it oversees electronic communication and mail to ensure secure and accessible communication in Sweden. It aims to increase digital participation and has taken initiatives like *Bryt isoleringen* ("Break the isolation") during the pandemic to reduce social isolation and improve digital participation among the elderly. PTS also runs the *Innovation Contest* supporting innovative ideas to improve the lives of vulnerable groups, with 180 projects supported so far (PTS, n.d.). With these efforts, PTS has been instrumental in promoting digital inclusivity and access issues across Sweden, both through its government assignment and innovation competition program. Its efforts have been to help reduce social isolation and increase digital participation (PTS, n.d.).

2.4.3 The Swedish Agency for Participation (MFD)

The Swedish Agency for Participation (MFD) is a government agency operating under the Ministry of Health and Social Affairs in Sweden, with the primary goal of promoting the implementation of disability policy (SFS 2014:134; MFD, n.d.). Their focus lies in analyzing the needs and challenges related to digital inclusion for people with disabilities in Sweden. They work on developing and disseminating information about barriers to participation, supporting public-sector entities, and occasionally engaging with private actors as employers or producers of accessible products and services (MFD, n.d.). As one of the four governmental agencies in Sweden dedicated to facilitating full societal participation, enhancing digital inclusion, and ensuring equal living conditions, their actions and principles are guided by The UN Convention on the Rights of Persons with Disabilities (MFD, n.d.).

As part of their role in digitalization, they actively seek to influence and drive change at the societal level by providing guidance to government authorities, municipalities, and regions (MFD, n.d.). This is precisely why they are among the government agencies included in this research.

2.4.4 Agency for Digital Government (Digg)

Digg is a governmental agency under the Ministry of Finance tasked with contributing to Sweden's digitalization policy since 2017. Its key responsibilities include coordinating and supporting digitization efforts of administrative bodies (excluding certain agencies), managing the common digital infrastructure (e.g., e-identifications, secure digital shipments), and providing the basis for public administration digitization. Digg promotes open and data-driven innovation and ensures user needs are considered in digital service development. Collaboration with the public administration and various stakeholders is central to Digg's operations (Regeringkansliet, n.d.; DIGG, n.d.).

2.4.5 Swedish Agency for Accessible Media (MTM)

The Agency for Accessible Media, a governmental organization operating under the Swedish Ministry of Culture, is devoted to enhancing information and media accessibility in Sweden, focusing particularly on Audiobook and Braille Library services. This agency seeks to contribute to the government's digital agenda and is currently entrusted with several tasks related to digital inclusion in the realm of information and media with a particular focus on accessibility of daily newspapers and other media properties for people with function disabilities (Regeringen; n.d.; Ministry of Culture, 2020).

One of their primary responsibilities is the development of guidelines to ensure that media materials can be adapted and tailored to cater to the diverse needs of users in the modern media landscape. Additionally, they work towards facilitating access to news and social information for all users. In this pursuit, the agency analyzes development projects and offers guidelines to enhance the availability of news media, such as regional and municipal newspapers, by leveraging the newspaper grant (MTM, n.d.; Ministry of Culture, 2020).

In short, these governmental entities that constitute the subject matter of this study can be summarized as in the following table.

Table 1 *Summary of the governmental entities whose reports are analyzed in this study*.

Governmental Entity	Main Goal / Area of Work	Additional Information
Digitaliseringsråd	Digitalization strategy and policy development	Provides guidance and recommendations for digitalization stratregies.
MTM	Accessible media for individuals with disabilities	Focuses on making media and literature accessible to all.
MFD	Equal participation	Promotes citizen engagement and participation in public and private services.
DIGG	Digitalization of public administration	Supports digital transformation within public service.
PTS	Tele- and digital communications	Regulates and oversees telecommunications and digital services.

3. Previous Research

Digital inclusion and equality are considered crucial for social inclusion by Reisdorf and Rhinesmith (2020), who highlight best practices, strategies, and collaborations from various digital inclusion initiatives across Asia, Africa, Europe, and North and South America. They provide a toolkit for policymakers and practitioners working with digital inclusion, emphasizing the importance of their role in bridging digital divides. This approach is important because previous scholarly work on digital inclusion and divide issues has mainly focused on limitations and challenges (Helsper, 2008; Livingstone & Helsper, 2007; Reisdorf & Rhinesmith, 2020) rather than practical solutions and potential practices to reduce digital inequalities. As such, there has been an emerging need in research to shift from a deficit-based to an asset and practice-based approach in bridging digital inequalities (Reisdorf & Rhinesmith, 2020, p. 133).

Some researchers, such as Clark (2017), have focused on practical technology applications and affordances as a key to mitigating digital divide and inequalities, while others, like Moshe et al. (2017) and Singh (2017), have examined personal or positional characteristics of digital divide such as gender, class, status, income, and education. Some discovered that improvement of digital skills enhanced the occupational status and social position of migrant or minority groups (Lissitsa et al., 2017). Other scholarly work has dwelled on the role of libraries in bridging digital divide (Jaeger et al., 2012) and mitigating information poverty through policies and library practices (McKeown, 2016). Meanwhile, some scholars have sought answers to digital divide and inequalities from global economy perspectives both historically and discursively (Hwang, 2006), while others have focused more on policy perspectives (Starkey et al., 2016; Reisdorf & Rhinesmith, 2020) and explored implications of policy discourses on digital divide (Epstein et al., 2011).

In the context of Sweden, which is a highly digitized country, the issue of social exclusion rooted in digital incompetence among certain groups becomes increasingly important. As van Dijk (2005) argues, the more digital skills and competence are required for improving social position, the deeper the divide becomes. Therefore, digital divide and inclusion issues in Sweden and other similar developed countries in the *Global North* appear to be a popular topic in research. Some studies have explored digital divide from LAM[2] perspective, such as the role of libraries in facilitating digital inclusion among elderly (Casselden, 2022), immigrants and/or ethnic minorities (Vårheim et. al., 2020), and individuals with disabilities (Williamson et al., 2000). Helsper and Reisdorf (2016) compared non-users of the Internet in Sweden and Britain and observed that the "digital underclass" mainly comprises older, less educated, unemployed, and socially excluded individuals. The research emphasized the continued existence of primary digital divides and pointed out that a lack of motivation poses a significant barrier for non-users. Moreover, different policies are required to engage those disengaged, with national characteristics influencing the manifestation of digital divides at a micro-level (Buhr & Reiter, 2006; Helsper & Reisdorf, 2016; Granberg, 2019; Hwang, 2006).

Similar research studies exist on the topic of this master's dissertation. For example, in 2006 Joonho Hwang conducted a critical discourse analysis of policy

[2] Libraries, archives, and museums.

reports concerning the global digital divide. Hwang discovered that the discourse around the issue was not new, but rather a continuation of a modernistic discourse on technology and development established by dominant powers since World War II. In a 2019 master's thesis, Matilda Granberg conducted a discourse analysis of twelve Swedish library plans to explore how digital inclusion discourse was constructed within them, based on van Dijk's four sequential access inequalities. Granberg identified three main discourses: democratic, digitalization, and a discourse of exclusion and inclusion. She found that material and skills access to digital technology were perceived as the most significant factors for digital inclusion, while motivational and usage access were rarely mentioned.

Although these studies are similar, none have focused on policy discourse around issues of digital inclusion and inequalities in Sweden. As Reisdorf and Rhinesmith (2020) argued, practical solutions and a focus on policy perspectives may be necessary to bridge the digital divide and address inequalities. However, despite extensive research on digital inclusion and divides, there are still gaps in the literature that require further investigation on the topic of digital inclusion policy perspectives in Sweden. These gaps revealed the need to unpack how digital inclusion and inequalities were framed in policy documents in Sweden, as the political discourse in these documents has the potential to proactively shape social reality and "they have real affects" (Monkman & Hoffman, 2013, p. 68). Therefore, the aim of this master's dissertation is to fill this gap by analyzing policy discourse on issues of digital inclusion and inequalities in Sweden using the framework of three-dimensional critical discourse analysis and the criteria of Resources and Appropriation Theory, as proposed by van Dijk.

4. Theoretical Framework

This study employs two theoretical frameworks: Jan AGM van *Dijk's Resources and Appropriation* (RA) theory (2005) and Fairclough's *Three-dimensional Critical Discourse theory* (CDA). The technology appropriation framework investigates digital divides by attributing them to resource inequalities and obstacles in four sequential access prerequisites (van Dijk, 2005). This framework is adapted for evaluating how digital inequalities and their broader societal implications were addressed within policy reports. Fairclough's framework on the other hand aims to guide the close reading on the phrases and extraction of underlying meanings that the discourse entails; however, its large-scale power relations aspect does not constitute the core research. Instead, those aspects briefly drawn upon in the discussion section where key findings are evaluated and reflected upon. It becomes meaningful to understand societal meaning or repercussions of the identified manners and perceptions in the policy discourse towards those inequalities and societal implications. However, while recognizing the significance of power relations and societal impact in discourse, the extensive scale of analysis is left for future research.

4.1 Critical Discourse Theory (CDA)

The emergence of discourse analysis is attributed to the 'linguistic turn', which was brought about by the criticisms of positivism, the profound influence of structuralist and poststructuralist ideas, and the postmodernist challenges to epistemology (Burman, 1990; Gill, 1995; Parker, 1992; Potter, 1996a; Gill., 2000). This 'linguistic turn' can be traced back to Wittgenstein, who initially viewed language as a descriptive tool for representing the world. However, later, in his *Tractatus Logico-Philosophicus* (1921), he rejected this approach and expanded his perspective on language to include its use, which is described as the linguistic turn in discourse theories. According to his later approach and the concept of 'language games', language not only describes our social world but also carries meaning in our actions and activities. In other words, our actions and realities are connected to language and to our understanding of them (Mauws & Phillips, 1995, p. 325). Wittgenstein was particularly interested in the ways in which words are used rather than their descriptive function.

John L. Austin was another influential figure in the field of discourse analysis who emphasized that words have an active function in addition to being descriptive (Gill, 2000). Austin's theory of speech acts, which was later developed by John Searle, focuses on how words carry out actions and has been the foundation of ethnomethodological and conversation analysis approaches in discourse analysis. Scholars such as Garfinkel (1967), Sacks et al. (1974), Coulthard and Montgomery (1981), Heritage (1984), and Atkinson and Heritage (1984) have used this theory to examine the function and action elements of discourse instead of how discourse relates to the world (Gill, 2000). Ethnomethodologists and conversation analysts, such as Sacks, Garfinkel and Goffman study how discourse generates social order in everyday interactions (Goffman, 1964; Garfinkel, 1967; Schegloff & Sacks, 1973; Heritage, 2009, pp. 302 - 303). Those social orders can be related to ideology (Althusser, 1971) and hegemony (Gramsci, 1971), wherein discourse is means of molding amplifying power or social structures as hegemony and ideology, and 'power relations as hegemonic struggle' (Fairclough, 1992, p. 86).

Due to its origins in critiques of traditional social science, discourse analysis has a distinct epistemological basis known as social constructivism (Gill, 2000, p. 173). These perspectives are characterized by a critical attitude towards accepted knowledge, scepticism towards the belief that our observations of the world offer a clear understanding of its true nature, recognition that our common understanding of the world is historically and culturally relative, the idea that knowledge is socially constructed and determined by social processes, and a commitment to exploring the link between knowledge and actions/practices (Burr, 1995: Gill, 2000, p. 173).

Michel Foucault's ideas encompass poststructuralist concepts that emphasize the role of discourse in shaping reality. He extends the notion of discourse beyond linguistics and language to intertextuality and interdiscursivity with which texts and discourse build on each other and shape each other in complex ways (Foucault, 1972; Fairclough, 1992, p. 55). His approach is interested in socio-historical contexts, termed 'discursive practice or formulation' in his *Archaeological Knowledge* (Foucault, 1972, pp. 68-80). This formulation entails a dialectical relationship between language and social structures, where language conveys power relations and social realities both shape and are shaped by power relations.

Norman Fairclough, a pioneer of critical discourse analysis (CDA), draws upon Foucault's approach and further incorporates a linguistic aspect in his critical discourse theory. Fairclough posits that discursive formulation occurs in accordance with its time, place, and socio-historical context (Fairclough, 1992). Similar to Foucault's discourse formulation, this historical context is centered around power relations and how discourse expresses, constitutes, and legitimizes social inequality (Fairclough, 1992, p. 40).

Fairclough views discourse as a dynamic process of social interaction, wherein text emerges as a product of this interactive process (Fairclough, 1989, 1992a, 1995, 2001a). His critical discourse model integrates social constructivist ideas with linguistics, presenting a three-dimensional approach encompassing text, discourse, and context as three stages: Description, Interpretation, and Explanation. The text dimension involves the Description stage where linguistic material, such as text, speech, and images, is meticulously examined through textual properties such as grammar and vocabulary (Fairclough, 1989, p. 26). In the discourse dimension, which corresponds to the Interpretation stage, the relationship between text, interaction, and discourse is explored, through analysis of how text evolves as a result of the process of discourse generation and interpretation (pp. 26-27). This analysis also takes into account who produced the discourse and with what purpose. Simultaneously, the context dimension corresponds to the Explanation stage, wherein the societal impacts of discourse are examined, and the intricate interplay between interaction and social context is scrutinized, emphasizing how discourse both shapes and is shaped by social reality, practice, and power relations during its production and interpretation.

> Discourse is not produced without context and cannot be understood without taking context into consideration. Discourses are always connected to other discourses which were produced earlier, as well as those which are produced synchronically and subsequently. (Fairclough & Wodak, 1997, p. 277)

Expanding on the quotation by Fairclough and Wodak (1997, p. 277), discourse cannot be isolated from its context; understanding it requires delving into the deeper social, historical, economic, and cultural settings in which those

discourses were produced, as well as the preceding discourses that they build upon. In a world where discourse shapes reality, it not only reflects the present but also influences and shapes future discourses, creating a circular relationship between discourse and social reality.

In this context, meaningful conclusions cannot be drawn solely from the surface level of words, text, or discourses; a thorough analysis necessitates an exploration of the intricate connections with the wider socio-historical context. Discourses do not emerge in isolation but are linked to earlier as well as contemporary and subsequent discourses. They are part of an ongoing chain, influencing and being influenced by other discourses, amplifying existing social realities, and shaping social practices. This interconnected relationship between discourse and society underscores the significance of contextual understanding in comprehending the true meaning and implications of discourses. Therefore, any examination of discourse should consider the larger socio-cultural backdrop and the dialogic nature of discursive interactions, enabling a more comprehensive and insightful analysis.

This study recognizes the relevance of this approach in discourse analysis, especially when examining textual documents that shed light on the construction and evolution of discourse concerning digital divides and societal realities in Sweden. These documents are reports coming from governmental agencies and bodies tasked with analyzing socio-economic situations, digital inequalities, and digitalization issues in Sweden, and they play a crucial role in developing guidelines and recommendations for the Swedish government's digital agenda. From a three-dimensional CDA perspective, they are analyzed in this research as they embody and produce discourse surrounding digital divide issues, inclusion, exclusion, participation, and access. The discourse evolves and is shaped by interconnected texts, changes in text forms, and new systems of text distribution over time (Phillips & Hardy, 2002).

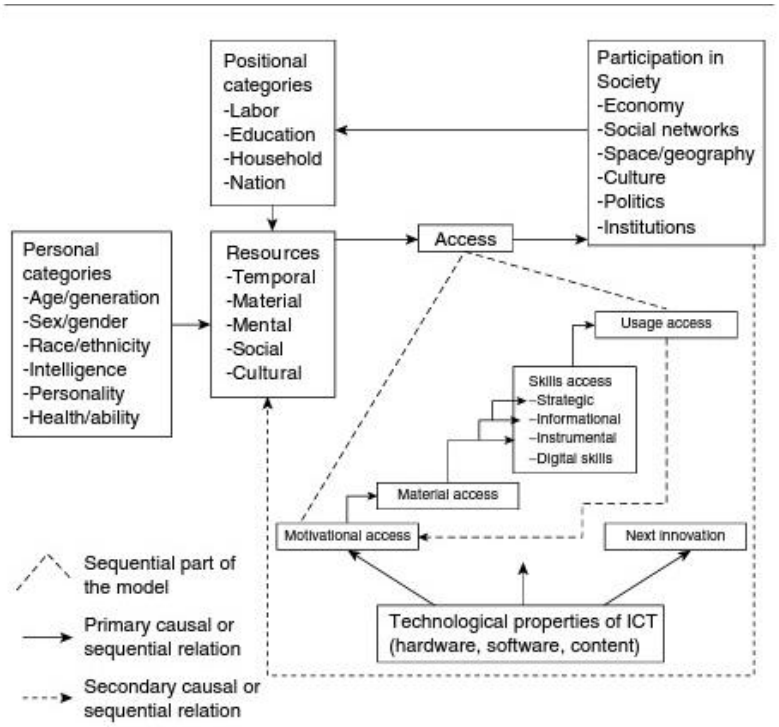
Furthermore, examining broader social and historical contexts, including technological innovations, economic crises, economic divides, and conflicts, becomes essential to understand social phenomena. By delving into these contexts, a deeper understanding emerges as to why certain vulnerable groups are more prone to being on the disadvantaged side of the digital divide in society. For instance, it would not be baseless to argue that the emergence and pervasiveness of ICTs in society have led to the concepts of digital participation and digital inclusion; their treatment within discourse influences the social practices arising from these issues. This underscores the interplay between social context and reality. In a world where we are reliant on information technologies for daily tasks, professions, education, etc., lacking access to them results in social exclusion and deprivation of social inclusion. Hence, comprehending the discourse around these terms and their emergence within the context of rapid digitalization is useful to understanding the reality of digital divides.

4.2 Resources and Appropriation Theory

Jan van Dijk's Resources and Appropriation theory (RA) (2005) constitutes the second theoretical framework of this study, aimed at understanding present discourse around digital inequalities in selected project documents. Van Dijk proposed four types of access inequalities, namely motivational, material, skills, and usage access

in his book *The Deepening Divide: Inequality in the Information Society* and supported them with inequalities on distribution of personal and positional resources.

Figure 1 *Resources and Appropriation Theory model with sequential access prerequisites and resources, by van Dijk, 2005, p. 24.*



Note. From *The Deepening Divide* (p. 24), by J. A. G. M. van Dijk, 2005, Sage Publications. Copyright © 2005 by Sage Publications, Inc. Reprinted with permission.

According to van Dijk's model, the distribution of resources, personal characteristics, and positional characteristics of individuals impact their ability to appropriate technology, as illustrated in Figure 1. Four prerequisites - motivation, material access, skills, and usage - are necessary for technology appropriation, and the presence or absence of these prerequisites, known as four kinds of sequential access, determines an individual's level of participation in society, and subsequently, their social inclusion or exclusion. van Dijk (2005) notes that digital inequalities can lead to exploitation and control of socially excluded and vulnerable groups in society (van Dijk, 2005, p. 12). Therefore, it is crucial to investigate the degree to which such issues are being addressed by discourse generators, given that discourse plays a significant role in shaping social reality, which is why this study is informed by Fairclough's CDA as a second theoretical basis.

van Dijk's model reveals those digital inequalities stem from personal and positional categorical inequalities, resulting in an uneven distribution of resources. Personal characteristics, such as age, gender, ethnicity, intelligence, personality, and health, as well as positional characteristics, like labor, education, household, and nation, shape the distribution of resources, impacting access to motivation, material, skills, and usage. This unequal access perpetuates societal disparities and exclusion,

forming the basis of the third research question examining representation of focus groups and personal and positional categories.

An important aspect of the theory is the observed political motivations behind addressing the digital divides and providing access for all in society. These motivations include driving technological progress, enhancing economic competition, providing equal distribution of resources and life changes (equal opportunities), and promoting participation or social inclusion. In the absence of digital inclusion and equal access to ICTs in society, these motivations are at stake; therefore, policymakers should address the digital divide.

van Dijk argues that digital divides are primarily a societal problem, and rejects technological determinism, which refers to the belief that technology alone drives and shapes social change and that it is the primary factor influencing how societies evolve. According to his RA theory, technology alone does not determine the digital divide. Instead, the underlying inequalities entailing digital divide is more about societal factors, such as access to education, economic resources, and social opportunities, rather than being solely determined by access to the technology.

He believes that the nature of new media and its integration into social environments shape and deepen existing digital divides as a new form of inequality (2005, p. 167). In our digital society, access to computers and their networks is becoming increasingly necessary to achieve a position in the information society. Therefore, as van Dijk argues, the digital divide is not just a technological issue but a social problem with educational, cultural, economic, and political ramifications. That is not to say that the theory rejects certain properties of technology and that technology access cannot mitigate or exacerbate inequalities. For example, some technological properties, such as complexity and cost, can hinder access and increase digital disparities, while others, like multifunctionality and broadband speed, can extend access and mitigate disparities.

RA theory as a whole informs all three research questions. In answering the second and third research questions, the analysis draws on van Dijk's four sequential access inequalities, namely motivational, material, skills, and usage access, along with the personal and positional resources in digital access. The first research question incorporates various aspects of the RA theory and the critical discourse theory, without singling out a specific aspect or model other than van Dijk's foreseight on the political motivations behind addressing digital divides.

In the following section, I provide a comprehensive overview of motivational access, emphasizing the crucial need to address it in public and private initiatives, research, and policymaking endeavors when addressing issues related to digital disparities and inclusion.

4.2.1 Motivational access

Motivational access is an important aspect of digital inclusion, which is sometimes overlooked in discussions of ICT adoption. Van Dijk (2005) highlights the significance of motivational barriers in achieving digital equality, proposing that "want-nots" rather than "have-nots" pose the primary obstacle to technology adoption. While physical access to ICTs is necessary, it does not automatically translate into actual usage and participation in the digital world, as shown by the prevalence of information want-nots among households lacking ICT access in a study conducted as part of UK national statistics in measuring digital exclusion (Serafino, 2019; Census 2021, 2019).

Van Dijk explains motivational barriers to digital equality as ‘have-nots’ versus ‘want-nots’. He argues that lack of interest and motivation, or "want-nots", are the primary obstacle to technology adoption in our societies (van Dijk, 2005, p. 27). That is, lack of interest and motivation, just like supported by the Census study in the UK (2019), often appears to be the main barrier in digital inclusion and equalities. In a 2019 study, van Dijk reinforces his notion of motivational access as a first and primary phase of access inequalities with the hypothesis that Internet attitude (motivation) is positively correlated with device opportunity, device diversity, peripheral diversity, and device maintenance; thus, digital participation (van Deursen & van Dijk, 2019).

When defining four kinds of access inequalities, that are motivational access, material access, skills access and usage access, van Dijk deems motivational access as the first factor in shaping adoption and use of Internet technologies (Reisdorf, 2017, p. 1), which implies that motivational access is a prerequisite for achieving material, skills, and usage access. At this point, it is also important to acknowledge that low-quality physical access can negatively affect the attitude toward using ICTs and acquiring skills (Gonzales, 2016; Reisdorf, 2017). Therefore, achieving digital inclusion requires a holistic approach that addresses all four kinds of access inequalities, with motivational access as the starting point for overcoming the other barriers.

Van Dijk uses two terms to elucidate the issues related to motivational access: *information want-nots* contra *information-have-nots*. Access inequalities cannot be considered in isolation from one another; rather, they are interrelated; that is also why it is not possible to draw a clear distinction between have-nots and want-nots since many individuals who lack access to information and communication technologies (ICTs) also have no interest in obtaining them (van Dijk, 2005, p. 28). As van Dijk posits, the underlying reasons for the presence or absence of ICTs are multidimensional and may be influenced by factors such as lack of interest, self-confidence, time, positive attitude (technophobia, computer anxiety, etc.), money, skills, and so on. Parameters such as lack of confidence, technophobia, computer anxiety, and lack of interest are particularly interesting in terms of attitude and will therefore be further elaborated upon in the following section.

4.2.1.1 Motivations and attitudes

The attitudes and motivations towards using ICTs are often considered as similar and closely related but separate concepts rather than a single entity, which the Technology Acceptance theory (TAM) supports (Davis, 1989). In this study, however, I have adopted the approach of van Dijk (2005), who considers attitudes and motivations as a single concept, and suggests that the notion of motivational access is primarily shaped by attitudes towards technology (Reisdorf, 2017; van Deursen & van Dijk, 2015, p. 3).

Individuals who are infrequent or non-users of ICTs may lack positive attitudes and motivation towards their use. This can be attributed to several factors such as lack of self-confidence, as they may find technologies too complex and difficult to use; lack of interest, as they may not see ICTs as useful or necessary; lack of acceptance, as they may lack perception of usefulness and of ease of use (Davis, 1989, Technology Acceptance Model); and technophobia, such as internet anxiety due to concerns about privacy and security (van Deursen & van Dijk, 2015).

Although these attitudes are significant factors contributing to the absence of ICTs, they are not the sole determinants. Other factors that negatively impact

motivation include lack of skills (skills access), complexity of technology usage (usage access, which can lead to lack of confidence), lack of financial resources (material access), and inadequate access to technology (Deursen & Dijk, 2015). Van Dijk proposes that the four access inequalities are interrelated, which is why they are considered "sequential" (van Deursen & van Dijk, 2015).

Technology Acceptance

The Technology Acceptance Model (TAM) was proposed by Fred D. Davis in 1989 and posits that the usage of an application depends on two factors: *perceived usefulness* and *perceived ease of use*. Users are more likely to adopt a technology if they perceive it as both useful and easy to use, which can result in digital exclusion due to lack of motivation. In addition to user attitudes and acceptance of technology, the TAM can also be applied to the concept of motivational access and the use and non-use of ICTs (Reisdorf, 2017). A study by Porter and Donthu's built upon the TAM by adding perceived access barriers as an additional belief variable and revealing the role of demographic variables such as age, education, income, and race, as external factors that influence individuals' attitudes and usage of the Internet within the framework of TAM. Their proposed model suggests that the TAM's belief variables are differently relevant to consumers with different demographic profiles (Porter & Donthu, 2006). The way to positively affect user attitude and their motivation for using technology is to encourage them by highlighting the personal, social and economic benefits of access to and use of ICTs. Positive attitude is a strong indicator of the use of internet and technologies, especially among regular and broad users (Reisdorf, 2017; Porter & Donthu, 2006).

4.2.2 Material access

The second factor contributing to access inequalities is material or physical access, which is crucial in acquiring skills and proficiency to utilize ICTs for social, economic, political, and cultural participation in society (van Dijk, 2005). This factor is referred to as the "first-level digital divide" in van Dijk's RA theory since it is a prerequisite for accessing ICTs and equal opportunities in the modern digital society.

He breaks down material access into *physical* and *conditional*, an important distinction that has been overlooked in much previous research where the terms material and physical have been used interchangeably. Physical access pertains to the possession of, or psychological ability for, ICTs like computers, software, applications, and smartphones. On the other hand, conditional access refers to having sufficient engagement with these technologies to obtain an account, such as usernames for software usage or membership for access to specific online content. Van Dijk observes that physical access alone is no longer sufficient, as conditional access has become increasingly vital for material access to ICTs. Thus, the requisites for material access have expanded beyond mere possession of digital technologies.

In van Dijk's book written in 2006, the world was not as digitized as it is today, and work and education opportunities were not as reliant on ICTs. However, with rapid digitization, advanced digital skills have become increasingly in demand in the labor market, and these skills may include proficiency in statistical programs, programming languages, or design tools. This has significant implications for equality in opportunities and living standards, as individuals lacking remarkable digital skills may face limitations in their daily tasks, academic pursuits, and

professional prospects. Material or physical access remains crucial for acquiring both basic and advanced ICT skills.

Despite a reduction in the divides related to elementary physical access to ICTs in developed countries (van Dijk, 2005, pp. 47-48), there are still segments of society known as *information have-nots*, who lack material access even today (van Deursen & van Dijk, 2015, p. 355). As access to ICTs is a matter of social inclusion, the first-level digital divide continues to be a significant problem that needs attention.

In today's context, where lack of material access due to economic deprivation is less of an issue in developed countries, the mental aspect, particularly motivation, has gained increasing importance, as previously anticipated by van Dijk (2005). Attitudes, whether negative or positive, can play a pivotal role in determining the possession of ICTs and IoT systems. Negative attitudes and perceived usability and usefulness, as explained in the Technology Acceptance Model (TAM), can be underlying reasons for access issues, such as concerns about system complexity or technophobia rooted in privacy, surveillance, or moral concerns, preventing individuals from obtaining such technologies and participating in the digital world. Conversely, positive attitudes and perceptions of usability and usefulness can motivate individuals to acquire and engage with these technologies (Davis, 1989; van Deursen et al., 2021, p. 5).

4.2.3 Skills access

Once motivation and material access to ICTs are in place, the third crucial parameter for harnessing ICTs and ensuring equitable digital opportunities in society is skills access. This entails acquiring the necessary competencies to use digital technologies and access digital opportunities (van Dijk, 2006, p. 88). Van Dijk identifies three dimensions within skills access: operational, informational, and strategic skills. Operational skills encompass fundamental competencies for managing hardware and software systems (van Dijk, 2006, p. 73). Informational skills refer to the ability to search, select, and process information using ICTs. Strategic skills involve leveraging one's information and operational skills to achieve specific economic, social, and cultural goals, ultimately enhancing one's social position (van Dijk, 2006, p. 73).

Operational skills are exemplified by the 'state of affairs,' which consists of seven standardized modules of the European computer driving license (ECDL) (van Dijk, 2006, p. 76). These modules cover various areas, including understanding information technology concepts, computer usage and file management, word processing, spreadsheets, databases, presentation skills, digital information retrieval, and communication skills. Although passing all seven modules of the 'computer driver's license' could enhance job applications at the time van Dijk wrote his book, it is essential to recognize that the demands of today's labor market call for higher digital skills.

The distribution of operational, informational, and strategic skills is increasingly unequal among individuals with varying levels of education, job types, and digital experiences. This inequality primarily relies on mental resources, such as intelligence, familiarity, and knowledge of ICT usage, rather than material resources (van Dijk, 2005). In today's digital landscape, the skills required to advance one's social status have become more sophisticated. Mere proficiency in creating a PowerPoint presentation may no longer suffice for desirable jobs that demand advanced digital skills. Consequently, individuals with lower levels of education or

limited intellectual abilities face increasing disadvantages, intensifying the digital divide (van Dijk, 2006, p. 88). The deepening of this divide accentuates the importance of addressing skills access disparities to ensure digital inclusion and equal opportunities for all.

4.2.4 Usage access

Usage access represents the final stage of fully appropriating ICTs and achieving digital and social participation (van Dijk, 2005, p. 95). Put simply, it involves having all the preceding prerequisites (i.e., motivational, material, and skills access), and utilizing ICTs at the level of enhancing one's position in society through labor and economic participation, intellectual engagement, entertainment, and cultural activities, among others. According to van Dijk's theory, usage access is defined by characteristics like complexity, cost, network effects, capacity, multifunctionality, approachability, conditional access, and information overload (van Dijk, 2005). However, in today's world, where information and opportunities are easily accessible via mobile phones, some aspects like multifunctionality and network effects have become less relevant. Nonetheless, issues like information overload and conditional access remain significant concerns. Conditional access, as a subcategory of material access, refers to individuals owning an ICT device but lacking the right or license to use specific software or not having created an online account to access information on particular websites.

Over time, van Dijk's theory and ideas on usage access have been further examined, redefined, and expanded by both Dijk himself and other researchers building on his work (van Deursen & van Dijk, 2014; van Deursen et al., 2019; van Dijk, 2005). According to these developments, usage access is not only about having access to digital technologies but also about the frequency of their use and the types of activities performed with them (van Deursen & van Dijk, 2014; van Deursen et al., 2019, p. 5). This aspect is crucial in achieving equal access and complete utilization of digital technologies, as usage access reflects an individual's capacity and autonomy in using digital tools for professional and intellectual growth, as well as for enhancing their societal role (van Dijk, 2005).

Van Dijk's theory categorizes the types of usage or purpose into seven categories: accessing, circulating, and utilizing information and news; professional, educational, or personal development; financial transactions; entertainment; social interaction; and gaming. Understanding these categories and their connection to social inequalities is important, as certain groups, like low-educated and low-income individuals, seem to use digital technologies more for entertainment and less for professional and educational development (van Deursen & van Dijk, 2014). This suggests that the types and frequency of usage may be intertwined with social inequality in a circular manner, where social inequality influences usage patterns that, in turn, reinforce inequality (van Dijk, 2005).

5. Research Methodology

The methodology employed in this research is a hybrid approach, combining close reading and exploratory text analysis using computational methods. The research consists of two segments. The first segment involves close reading of key documents that extensively cover issues of digital inclusion in Sweden and accurately represent the agency's discourse on the topic. These documents also provide recommendations or guidelines to the government, potentially influencing social reality through discourse.

The second segment complements the first with text analytics, primarily using concordance analysis, word clouds, and word embeddings and visualization of text with t-SNE and hierarchical clustering algorithms. It is important to note that both segments involved data entry and refinement through Microsoft Excel. The gathered semantic data was entered into a Microsoft Excel dataset in a way that would address the research questions and represent the semantic patterns in the corpus. The results were visualized and statistically represented in this study.

5.1 Selection Criteria

The selection criteria for documents in this study initially included textual material such as policy reports, directives, and articles that were relevant to the issues of digital inclusion and inequalities. The documents had to come from entities involved in Sweden involved in policy-making or policy-recommendations.

To address the research questions, the chosen documents had to be written between 2017 and 2023. This timeframe was selected because it spanned the COVID-19 pandemic, which underscored the importance of ICTs once more, particularly for vulnerable groups such as the elderly, people with disabilities, and certain migrant groups. Additionally, on May 18th, 2017, the government adopted a digitalization strategy and digital participation agenda, and tasked four governmental agencies - PTS, DIGG, MFD, and MTM - with providing guidelines for development of digitalization policies. It was also as part of these policies that in 2017 the Digitalization Council (Digitaliseringsrådet) was founded (Digitaliseringspolitik, n.d.). As a result, the later phase of the research focused solely on these specific governmental agencies and bodies, including the Digitalization Council, responsible for researching, analyzing digital accessibility and participation in society, and providing guidelines to the government.

Considering their specific role in developing policy-making guidelines for digitalization and digital inclusion, the documents originating from the aforementioned agencies were deemed to meet the selection criteria. These reports provide the state and government with analysis and guidelines for future directives and policy making regarding digitalization and digital inclusion. To ensure a balanced representation of discursive focuses (e.g., economic, technological, cultural, social, etc.) among these governmental entities, two reports were selected from each agency for analysis. Although the primary language of the documents will be Swedish, English reports conforming to the selection criteria will also be accepted. Throughout this thesis, the chosen reports will be referenced as R1, R2...R10.

5.2 Phase I: Close reading

In his 2006 doctoral thesis, Deconstructing the Discourse of the Global Digital Divide in the Age of Neo-liberal Global Economy, Joonho Hwang employed Flairclough's CDA and analytical method to examine a policy report on the global digital divide. Hwang constructed a theoretical model and conducted an examination of discursive patterns in the report, with a particular emphasis on four policy elements: policy context, policy means, policy problems, and policy goals. Throughout the analysis, Hwang investigated a range of linguistic features and discursive techniques, including the use of positive or negative language, metaphors, evaluative descriptors, inclusive or exclusive pronouns, verb types related to processes, nominalization, appeals to authority, and representations of differentiation or marginalization (Hwang, 2006, p. 66).

In the first phase of this study, the close reading of these key documents informs four discursive categories of policy content that were developed and employed by Hwang. However, these categories do not fully correspond to my research, as he analyzed policy discourse from a wider, global, and historical perspective on the digital divide. It also excludes the specific human factor, i.e., the focus groups that the discourse targeted, which my research question (RQ3) seeks to explore. Therefore, I appropriate Hwang's approach to my research with slight differences by incorporating the focus group factor.

The four policy content categories developed by Hwang, along with an additional category introduced in this research, are employed to examine how Swedish governmental bodies address issues of digital inclusion and inequality in their textual discourse. This analysis is conducted using this framework presented in **Table 3**.

Table 2. *Definitions of the four policy contents according to the model developed by J. Hwang (2006).*

Policy Contents	**Definitions**
Policy Problem	Societal problem that a policy is designed to redress
Policy means	Political agreement on a course of action (or inaction)
Policy goal	Pursed consequences that policy means to achieve
Policy context	Given social, political, and economic setting or environment

Note. From "Deconstructing the discourse of the global digital divide in the age of neo-liberal global economy", by J. Hwang, 2006, p. 113. https://etda.libraries.psu.edu/catalog/7363

Table 3. *Appropriated version of Hwang's policy content categories and definitions.*

Policy Contents	**Definitions**
Policy problem	Societal problem that a rhetoric is willing to redress

Policy goal	Pursed consequences that rhetoric means to achieve
Policy means	Perceived conditions or ways to achieve that goal
Policy context	Given social, political, and economic setting or environment
Focus group	Segments in society that rhetoric perceives as central to addressing the societal problem and achieving the policy goal

Note. Adapted from "Deconstructing the discourse of the global digital divide in the age of neo-liberal global economy", by J. Hwang, 2006, p. 113. *https://etda.libraries.psu.edu/catalog/7363*

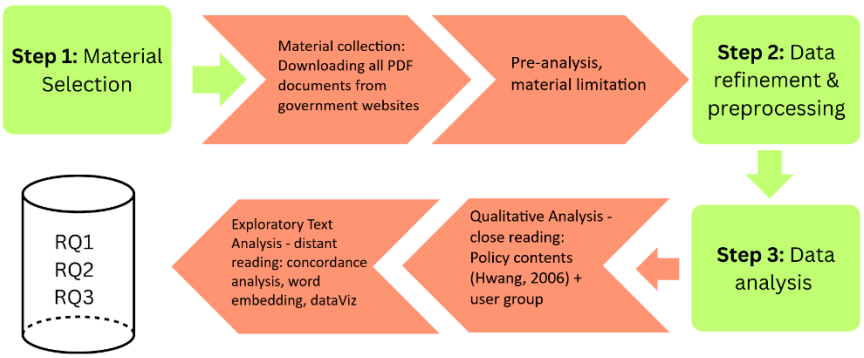
In the fifth category, an additional label, "focus group" has been introduced to investigate the specific target of discursive strategies and how they adapt to the diverse composition of marginalized communities in society. This category is used for answering the RQ3 on focus groups and resources aspect. However, it is important to acknowledge the prevailing social reality and practice of favoring certain groups over others, which may influence the identification of central and priority segments. Such prioritization is often justified based on societal needs. Nevertheless, we must be cautious about the potential consequences of neglecting the attention, awareness, and measures required to address the unique issues and requirements of underrepresented groups. While this critical aspect is not central to RQ3 or this study in general, it initiates a discussion in this paper and highlights the implications of neglecting the requirements of underrepresented groups.

5.3 Phase II: Distant reading

The second segment of my research methodology involves conducting text mining and analysis on the collection of reports. This method of text analysis includes concordance analysis, word embeddings and data visualizations with word clouds, hierarchical clustering and t-SNE projections. These tasks were performed using Orange Data Mining Tool and Sketch Engine software, as well as *Natural Language Processing*[3] for text preprocessing, and *Matplotlib*[4] library for visualizations in Python. The analysis covers the carefully selected ten reports that were analyzed in Phase 1, with the purpose of both enriching and validating the identified discursive patterns based on the frequency and co-occurrence of words, as well as the contexts in which they appear together.

[3] Natural Language Toolkit (n.d.). https://www.nltk.org/
[4] Matplotlib: Visualization with Python (n.d.). https://matplotlib.org/

Figure 2. *Flowchart of the research methodology.*



During the concordance analysis phase, both Python programming and the Sketch Engine software were employed for cross-checking and complementing each other, particularly when encountering technical issues. Subsequently, a dataset was created in Microsoft Excel, featuring the results of the concordance analysis. To facilitate further analysis, the results were statistically represented and integrated into this research.

In the data visualization phase, I leveraged both Python programming and the Orange data mining tool, which served as useful and time-efficient methods for understanding and interpreting the corpus data. Prior to visualization, the reports were consolidated into a single dataset and were preprocessed. The most frequently occurring words or word combinations were then represented through a word cloud and embedded based on their proximity using the "document embedding" algorithm. The results were then visualized using hierarchical clustering and t-SNE algorithms.

6. Data Analysis

In this chapter, the process and outputs of both the qualitative CDA and computational text analytics phases will be presented. The policy content (Hwang, 2006) will be shown in tables, accompanied by descriptions of the identified content. Each report's analysis will briefly touch upon the research questions, which seek to address 1) *the key discursive motivations behind addressing digital inclusion, 2) the primary access prerequisite for achieving full digital participation and inclusion through the lens of sequential access prerequisites from van Dijk's RA theory*, and 3) *the primary focus group and the extent to which their needs were addressed from categorical inequalities perspectives of van Dijk's RA theory* in the Swedish policy report discourse. The results will be further expanded upon in the Findings section. From the CDA outputs, a semantic dataset on Microsoft Excel will be created for a clearer representation of the discursive findings from the close reading phase. This is distinct from the text mining phase of this study with text mining and data visualization.

6.1 Critical Discourse Analysis (Phase I)

In this chapter, the primary phase of the research methodology will be undertaken, which involves close reading discourse analysis. During this process, the adapted policy content model of Hwang (2006), and the extracted discursive content will be presented in tables. The results obtained will be thoroughly examined and discussed in Chapter 7 where I will present and discuss the findings in detail.

Table 4. *Policy contents from Report 1, "From Digital Technology to Digitalization" by MFD (2019).*

Policy problem	Lack of skills and physical access, thus unequal access leading to digital exclusion
Policy goal	Social inclusion and social, institutional, economic participation, digital inclusion
Policy means	Digital technologies and digital social services
Policy context	Digitalization of services and digitization of society
Focus group	People with disabilities

Digital inclusion is a matter of social inclusion and full social participation (RQ1), skills and material access are primary obstacles for it (RQ2), and people with disabilities as focus group (RQ3).

N.B. There is an oversight on economically vulnerable groups.

Table 5. *Policy contents from Report 2, "Digital Technology as a Tool for Increased Participation and Inclusion" by MFD (2018).*

Policy problem	Slow digitization
Policy goal	Social inclusion and equality (in the digital society); equal material access
Policy means	Digital technology; collective digital strategy; innovation
Policy context	Digitalization of society
Focus group	People with disabilities

Digital inclusion is a matter of social inclusion and social equality (RQ1), and it is hindered by material access from the physical/functional viewpoint (RQ2), and people with disability as focus group (RQ3).

N.B. There is an oversight regarding material access from economic deprival viewpoint.

Table 6. *Policy contents from Report 3, "Accessible media in general and audio newspapers in particular" by MTM (2017).*

Policy problem	Flaws in external collaboration; Lack of material and skills access and lack of motivation among the visitors Technophobia
Policy goal	Equality in access to information and communication Connectivity Social, intellectual, and democratic participation reduced digital information divide
Policy means	Increased knowledge and access to media and information through libraries, hence increased skills and material(physical) access. (Increased participation in digital media; a mitigated digital divide
Policy context	Digitalisation in media and accessibility
Focus group	People with disabilities (reading disabilities in particular)

Digital inclusion is imperative for social, intellectual, and democratic participation (RQ1); however, it faces hindrances related to material access, skills access, and motivational access, particularly due to technophobia (RQ2). People with disabilities are the focus group (RQ3).

Table 7. *Policy contents from Report 4, "Inclusive Crisis and the Society Information" by MTM (2022).*

Policy problem	Information gap Lack of material (both conditional and physical) and skills access
Policy goal	Access equality for circulation of social and crisis information Bridge the information gap
Policy means	Digital information and text
Policy context	Information access equality
Focus group	People with migrant background ('multilingual people') and other groups with reading obstacles

Digital inclusion is imperative for enhancing institutional participation and reducing information gaps (RQ1); however, it faces obstacles due to the lack of material access and skills (RQ2). Migrants and people with reading disabilities are the focus groups (RQ3).

N. B. The reference to migrants as 'multilingual people' may risk overlooking some of the underlying socio-demographic and economic factors that these groups encounter in accessing ICTs, by minimizing it to language.

Table 8. *Policy contents from Report 5, "Digital Sweden 2021" by DIGG (2022).*

Policy problem	Inadequate digitalization Demographic development as a societal challenge
Policy goal	Open, secure, equal, and democratic society, Efficiency and quality in public service, Economic growth.
Policy means	Digital infrastructure and increased efficiency Digital competence (among society), digital excellence (more advanced skills) and digital leadership Innovation Digital participation)
Policy context	Digital society
Focus group	-

Digital inclusion is imperative for fostering social, institutional, democratic, and economic participation, as well as for creating an open, equal, and democratic

society and promoting economic growth (RQ1). It requires skills and usage access to achieve its full potential (RQ2). No focus group (RQ3).

N. B. The discourse identified here might risk undermining digital competence, overlooking economically and culturally marginalized groups, such as migrants, and missing the deepening digital disparities.

Table 9. *Policy contents from Report 6, "Digital Sweden 2022" by DIGG (2023).*

Policy problem	Motivation and technology acceptance Digital security Lack of skills
Policy goal	Economic and labor participation, thus social inclusion. Connectivity in Sweden Innovation and digital development of businesses A sustainable and vibrant democracy
Policy means	Digital competence and digital excellence (more than just basic competence) among the population. Digital innovation, digital integrity in businesses.
Policy context	Digital transformation of society and businesses
Focus group	Economically vulnerable groups

Digital inclusion fosters economic and labor participation, connectivity, democracy, innovation, and economic growth (business development) (RQ1). It is hindered by a lack of motivation (related to digital security & technology acceptance), skills and usage access (RQ2). Economically vulnerable groups (RQ3).

N. B. There is a need for further evaluation of digitally excluded groups as a heterogeneous population.

Table 10. *Policy contents from Report 7, "Socio-economic analysis – PTS procured telephony services for people with disabilities" by PTS (2021).*

Policy problem	Dissemination and marketing of the digital services Lack of motivation and awareness (on the digital services)
Policy goal	Societal improvement, social participation and connectivity Increase inclusion, independence and access for vulnerable groups, and improve quality of life. (All should have usage access)
Policy means	Usage access among the population Digital technologies and services offered by PTS (Bildtelefoni.net and Texttelefoni.se), Fast and well-functioning internet (digital infrastructure)

Policy context	Telecommunication and internet accessibility
Focus group	People with speech or other cognitive disabilities.

Digital inclusion is imperative for fostering social participation and connectivity, thereby contributing to socio-economic development (RQ1). It is hindered by a lack of motivation and awareness of digital services (RQ2). People with speech / cognitive disabilities.

N. B. Despite the title suggesting a 'socio-economic analysis,' the report appears to overlook both socio-economic and physical factors that hinder the use of ICTs.

Table 11. *Policy contents from Report 8, "Broadband for everyone – Measures for a fully connected Sweden" by PTS (2022).*

Policy problem	Outdated broadband strategy; flaws in connectivity (inefficiency in what van Dijk calls a "side factor": technological and infrastructural characteristics in access.
Policy goal	Connectivity and developed digital society (material access –more of a technological and infrastructure resources aspect)
Policy means	Broadband strategies Motivation
Policy context	Digitization in society
Focus group	-

Digital inclusion is imperative for promoting connectivity and achieving better digitalization, leading to a more developed digital society (RQ1). However, it faces hindrances related to technological and infrastructural factors (RQ2).

N. B. The report displays technological determinism, which might downplay the unequal distribution of resources as emphasized by van Dijk (2005).

Table 12. *Policy contents from Report 9, "Participation in a Digital Age" by The Digitalization Council (2019).*

Policy problem	Evolving digital involvement standards; lack of motivation and skills due to personal and positional factors (age, mental health, physical disability, ethnicity, etc.), and policy makers' limited understanding of user groups and their digital participation needs and challenges.

Policy goal	Sweden's social, economic, and democratic progress hinges on digital participation, enabling usage access. Enhanced social equality, economic participation, and democracy in Sweden, while preventing future societal divides.
Policy means	Technology, collective societal responsibility, leadership & management, digital infrastructure
Policy context	Digital age
Focus group	-

Digital inclusion serves as a means of fostering economic participation, social equality, and democracy (RQ1); however, it faces obstacles due to a lack of motivation and skills.

Table 13. *Policy contents from Report 10, "A Picture of Digital Competence" by The Digitalization Council (2018).*

Policy problem	• Digital divide with demographic and economic effects (labor shortage) • Lack of material and competence (sub-problem) • Inadequate governmental initiatives
Policy goal	Full digital participation in society *Alla måste med*! (All should participate!) Digital excellence among population for the labor market (Contribution to and participation in labor) - Gender equality in tech jobs, more women should have digital excellence. Migrants with digital skills should be integrated into labor
Policy means	• Advanced participation in digitally developing society (usage access) • user-centric innovation (technological and infrastructural resources) • Access to the internet and financial capability for that (Material access)
Policy context	Digitalization of society
Focus group	Economically vulnerable groups and migrants

Digital inclusion is a means of economic development and labor participation (RQ1); however, it is hindered by by lack of skills, material and usage access (RQ2 Economically vulnerable groups and migrants are the focus groups (RQ3).

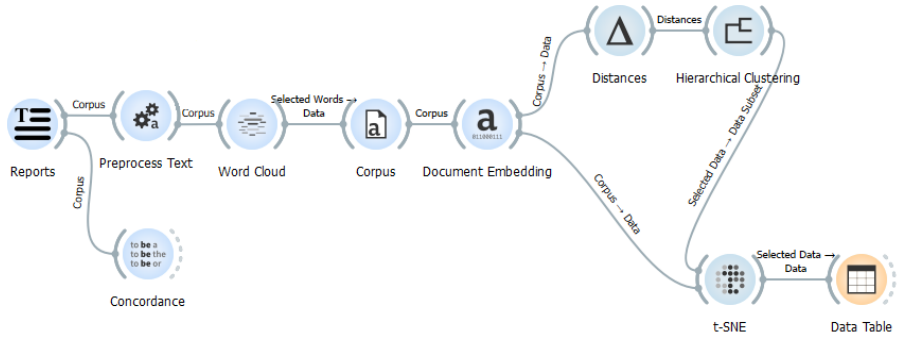
N. B. Although the overall policy goal is “full digital participation”, the discourse leaves out the importance of motivational access, focusing on the remaining three access inequalities.

6.2 Text-mining (Phase II)

In this phase, the reports were not analyzed individually through the lens of close reading. Rather, they were consolidated as a single corpus data and analyzed through exploratory text mining and data visualization practices. The objective was to extract thematic patterns from the consolidated reports, conduct an exploratory cross-checking of the close reading and identified discourses, and visually represent the recurring patterns. The tools used in this phase were Orange data mining software and Sketch Engine software as well as Python programming language. The actual processes included concordance analysis, word embeddings and visualizations through word cloud, t-SNE and hierarchical clustering. T-SNE and hierarchical clustering are not mere visualizations; they involve transforming the high-dimensional textual data into a two-dimensional vector space. During this transformation, they aim at preserving the proximities or similarities of the words within their original high-dimensional neighborhood and grouping them together based on those proximities. As a result, when examining the clusters, we can infer that closely clustered data points (words) are similar and proximate to each other for a particular reason.

The workflow in the distant reading phase was represented using Orange in Figure 3 below.

Figure 3. *Orange pipeline in text preprocessing, word cloud, and word embedding projections through hierarchical clustering and t-SNE models.*



The first widget is called 'Create Corpus,' which includes all 10 reports as separate documents. It is important to note that these reports were manually cleaned from repeating titles, tables of contents, etc., before being passed on to this widget. The next widget, text preprocessing, involved the removal of stopwords, special characters, and numbers, along with normalization and n-grams selection for this study. The corpus was normalized through lemmatization to prevent duplicates arising from different word forms (e.g., increase, increases; teach, taught, etc.). The n-gram range was set to be between 1 and 2, enabling the representation of keyword pairs (e.g., 'digital inclusion'). These preprocessing steps output a set of tokens that were filtered from unnecessary words or characters, which could prevent a fair representation of semantic patterns in the text. These tokens are then represented as

a word cloud, plotting frequently occurring words or word combinations based on their frequencies within the corpus.

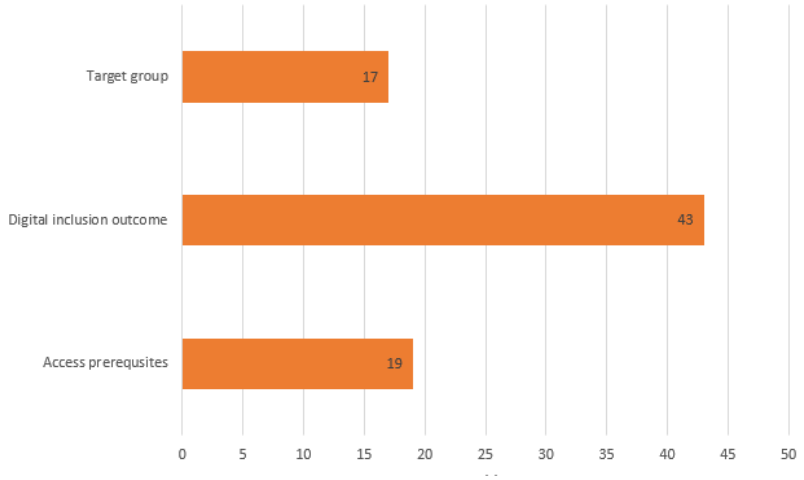
This word cloud output was fed into a 'corpus' widget in Orange, which enabled further processes such as word embedding, dimensionality reduction, and visualization. Within the corpus widget, the 'words' feature was selected, so that the words would be represented as documents by numerical vectors. Using the 'distances' matrix, word proximities were measured by constructing hierarchical clustering and a t-SNE projection. This combination enabled the creation of a semantic map based on the corpus data. The t-SNE and hierarchical clustering widgets were linked, so that the selected words from hierarchical clusters could be passed onto the t-SNE dimensionality reduction matrix and visualized. This way, it was easier to examine relevant word clusters.

6.2.1 Concordance Analysis

During the Phase I with discourse analysis, it was observed that the word combinations "digital exclusion" and "digital participation" conveyed the general notion of digital inclusion across these reports. The concordance analysis therefore focused on these three-word combinations: *digital inkludering* (digital inclusion), *digital utanförskap* (digital exclusion), and *digital delaktighet* (digital participation). In this phase, those keywords were searched through both Python programming and on the Sketch Engine software. However, since concordance analysis alone does not generate easily interpretable and concise visualizations, the contexts identified in the concordance indexes of the respective keywords were documented in a data-table within Microsoft Excel. Similarly, during Phase I's close reading, findings were recorded as data-tables and visualized. The results from both the close reading data and concordance analysis were comparatively analyzed, and to facilitate easier interpretation, they were presented in the form of bar charts and pie charts, which are showcased throughout the Findings section.

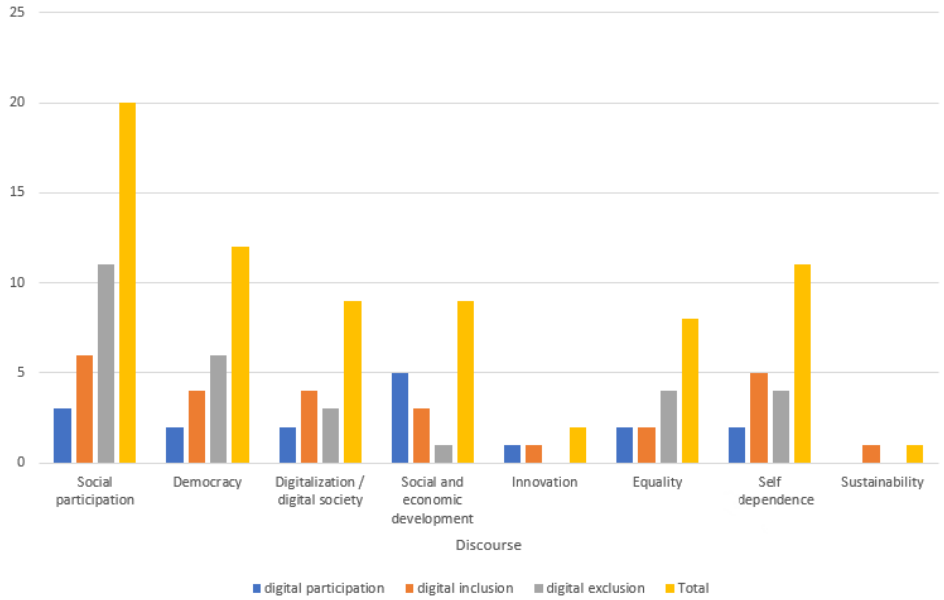
In this phase, the first step was to identify the count of concordance instances related to digital inclusion, exclusion, and participation, as well as determining how many of them were pertinent to this research. This assessment aimed to identify meaningful data for the study, as occurrences of these words could sometimes be found in the table of contents, or as duplicates and irrelevant content. To understand the relevance of the corpus data to the research questions, each of these instances was annotated in an Excel data-table based on its relevance to this research.

Figure 4. *Distribution of 133 contextual instances of 'digital inclusion', 'digital exclusion, and 'digital participation' in the concordance analysis, which identifies relevant contexts for this research.*



A total of 133 instances of the queried keywords were found in the corpus of combined policy reports. Out of these 133 concordance instances, 79 were deemed relevant to this research, focusing on the importance of digital inclusion (43 instances), prerequisites for full digital participation (19 instances), and the target group (17 instances), which is what the Figure 4 represents.

Figure 5. *Statistical representation of the identified motives behind the importance of digital inclusion in the Swedish policy reports between 2017-2022.*

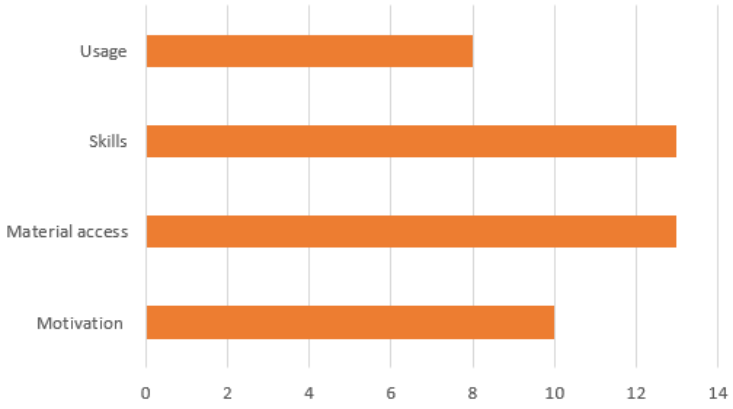


Among these relevant 79 concordance instances, social participation emerged as the primary theme within the context of digital inclusion, with a total of 20 occurrences as seen in Figure 5. This included economic, social (communication, entertainment, etc.), and institutional participation. Democracy closely followed with 12 instances. The promotion of self-dependence (autonomy) among vulnerable groups, particularly disabled individuals, emerged as the third most prevalent theme, occurring 11 times within the context of digital inclusion/exclusion/participation.

The subsequent discourse centers around the idea that active digital engagement and inclusion in society is a means of effective digital transformation within businesses, public services, and society as a whole (9 instances). This, in turn, contributes to socioeconomic development (9 instances), fosters social equality (8 instances), drives innovation (2 instances), and has positive implications for sustainability and the environment (1 instance) (See Figure 5).

Among these instances, the keywords related to digital inclusion revealed that skills and material access were the predominant access prerequisites at an equal importance, while motivation and usage access prerequisites held a comparatively lesser degree of importance (See Figure 6).

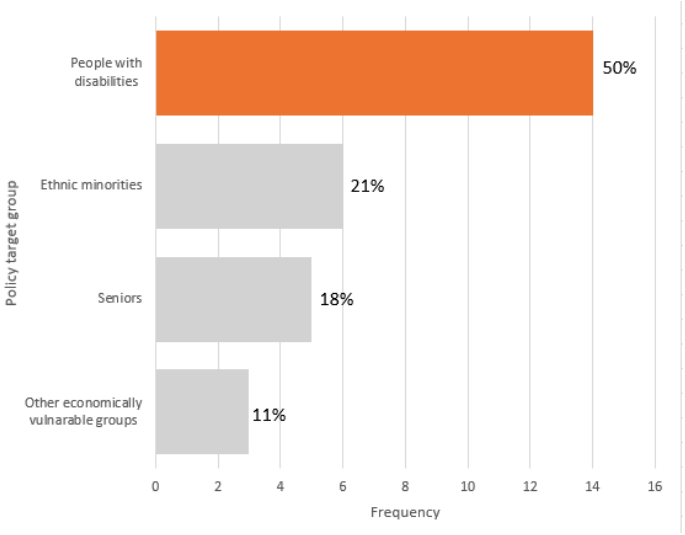
Figure 6 *Prerequisites for full digital participation within the concordance of digital inclusion, participation and exclusion.*



Moreover, people with disabilities were overwhelmingly the primary focus group within the discussions of digital inclusion, exclusion, and participation, accounting for 50% of the discourse. Ethnic minorities constituted 21%, while seniors comprised 18%, and other economically

vulnerable groups constituted 11% in the concordance index featuring focus groups (See Figure 7).

Figure 7. *Statistical representation of the policy target groups, which occurred in concordance with 'digital inclusion'.*



Conclusion

The main themes informing RQ1 are: social participation, democracy, equality, independence, socioeconomic development, digitalization, innovation, and sustainability, in descending order of importance (See Figure 5). Addressing RQ3, skills and material access appeared to be the primary prerequisites for digital inclusion, followed by motivation and usage access (see Figure 6). As to the RQ3, people with function disabilities, are the main target group. They are followed by ethnic minorities, and seniors by large margin (see Figure 7).

6.2.2 Data Visualization

The data visualization step included a word cloud representation of the corpus, along with t-SNE projection and hierarchical clustering using the Orange data mining software. Python's Matplotlib was also utilized for cross-checking the results. For instance, I generated a succinct word cloud using Python in which the Swedish stopwords were removed, and words were lemmatized with the 'snowball stemmer,' which is a stemmer relatively more compatible with the Swedish language; however, it is not perfect. Some words were erroneously reduced to a form that is not the word's core and do not make sense (see the code in Appendix). Apart from that, it is possible to observe a similar result with the word cloud generated in Orange software – they are more or less consistent.

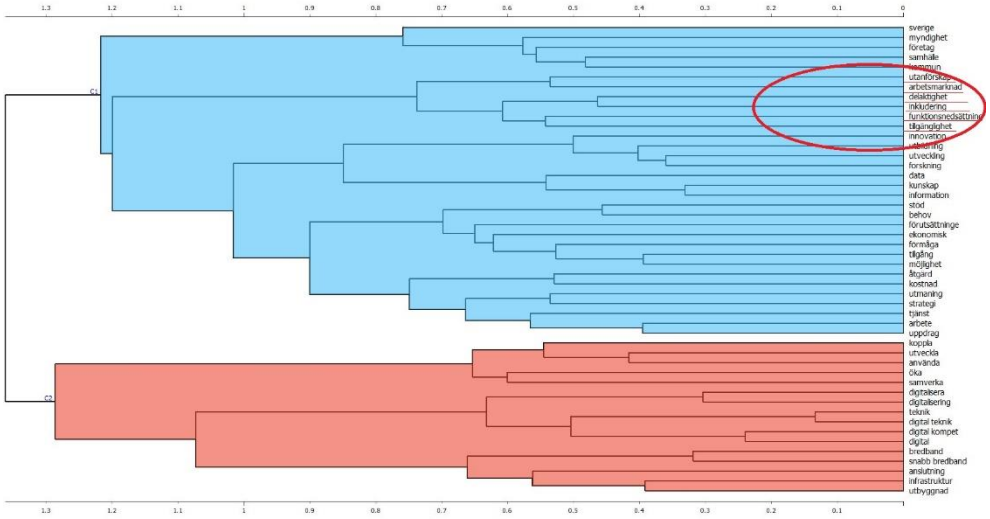
Figure 8. *Word cloud generated with Python.*

Figure 9. *Word cloud visualization with Orange.*

Note. See Appendix 2: Swedish word list for the word list and their English translations.

Both word clouds on Figure 8 and Figure 9 display a representation of the content across the corpus of consolidated policy reports. The results were obtained after normalizing the text data, which involved eliminating overrepresented report titles found in footnotes, reference lists, and the table of contents within the reports. While the visualization itself does not offer conclusive evidence, it serves as a semantic snapshot of the corpus and highlights emerging semantic patterns by showcasing the tokens occurring in the text, which are ranked according to their frequencies. Accordingly, terms such as *behov* (need), *tjänst* (service), *digital*, *öka* (increase), *digital competence*, *utveckling* (development), *samhälle* (society), *bredband* (broadband), *kostnad* (cost), *möjligheter* (opportunities), *information*, *kunskap* (knowledge) and *infrastructure* appear among the most frequently encountered tokens in the corpus.

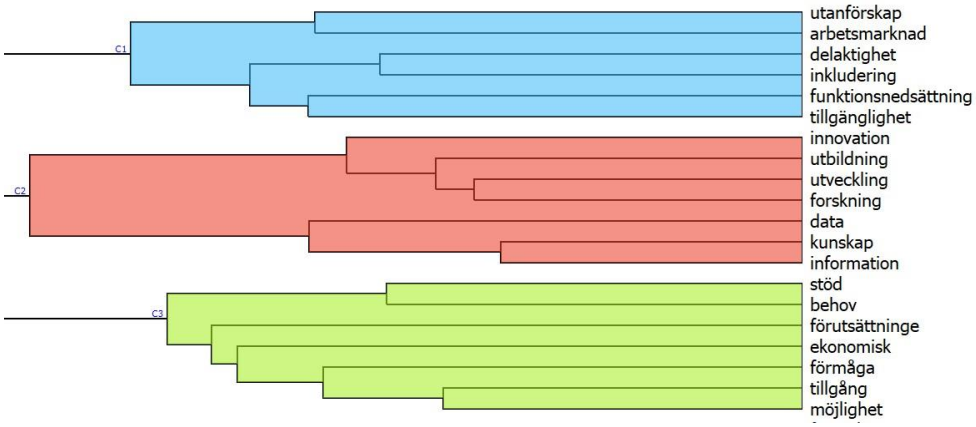
Figure 10. *Hierarchical clustering visualization with the Orange Data Mining Tool.*



Note. Main clusters in the hierarchical clustering of the most frequently occurring and relevant words in the word cloud from the previous visualization step. See Appendix 2: Swedish word list for the Swedish word list.

The word cluster consists of two main clusters marked as red and blue. When we delve into the smaller clusters and zoom into the circled area, we observe that the term *inkludering* (inclusion) is clustered with terms such as *delaktighet* (participation), *utansförskap* (exclusion), *funktionsnedsättning* (disability), *arbetsmarknad* (labor market), and *tillgänglighet* (accessibility) (see Figure 11). Within this smaller cluster, we notice that accessibility and disability exhibit a close proximity, indicating a frequent co-occurrence within the reports. Similarly, exclusion, inclusion, and participation are tightly connected and appear closer to the labor market. While this representation may not be entirely precise, it aligns with our findings from the close reading phase. It corroborates the significance of economic and labor participation as crucial factors for social participation in Swedish society, within the context of digital inclusion and accessibility. The focus group that stood out the most in the close reading phase was individuals with disabilities and the physical access challenges they face, which is also represented in this cluster.

Figure 11. *Subclusters in the hierarchical clustering – Proximity of the cluster containing the term 'inclusion' with the words found in other clusters.*



Other words found in the neighboring sub-clusters also hold significant meaning in terms of the discourse presented in the reports and the findings derived from close reading. Cluster 2, closely connected to Cluster 1, comprises terms like *innovation*, *utbildning* (education), *utveckling* (development), *forskning* (research), *data*, *kunskap* (knowledge), and *information*. The subsequent cluster, Cluster 3, shares close proximity with Cluster 2 and includes terms such as *behov* (need), *förutsättning* (prerequisite), *ekonomisk* (economic), *förmåga* (competence), *tillgång* (access), and *möjlighet* (opportunity). Notably, many of these terms represent the personal and positional resources outlined in van Dijk's theory of full access to ICTs. Their close association with the term *prerequisite* might suggest a pattern in the dataset that education, knowledge, competence, access, and economic resources are indeed prerequisites for individuals to achieve complete digital participation (van Dijk, 2005).

In order to interpret the clusters and examine word similarities and proximity, I undertook several data visualization techniques to create semantic maps. One of those techniques was the t-SNE dimensionality reduction model, which represents the data points (e.g., words) on a two-dimensional scale, and while doing that it maintains their original neighborhoods in the source space (such as text) as accurately as possible.

Figure 12. *t-SNE clustering of the most frequently occurring words in the reports.*

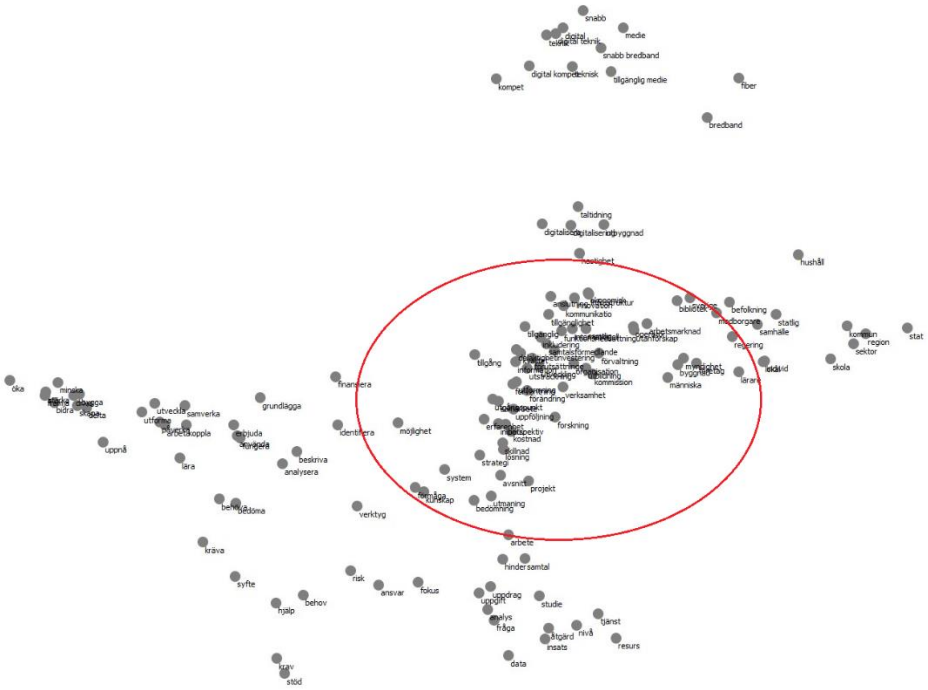
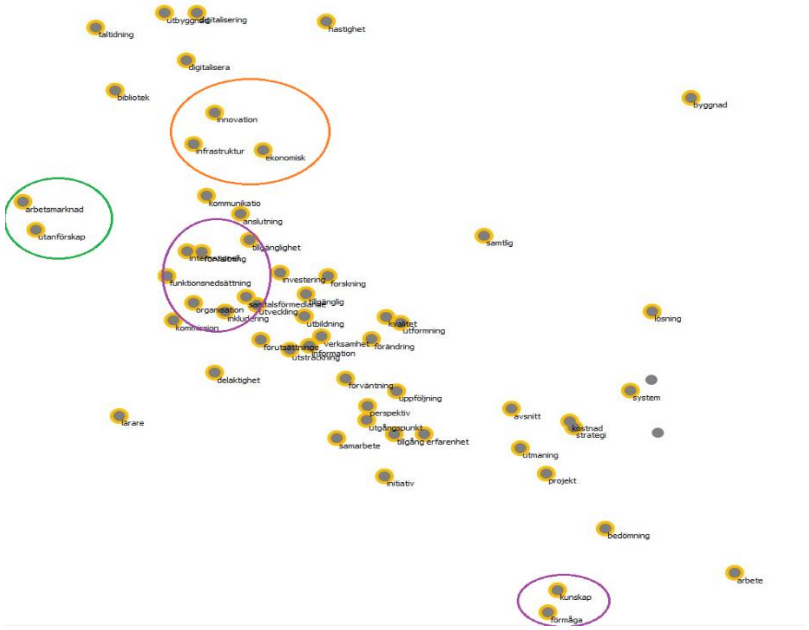


Figure 13. *The translation-added and zoomed-in view of the most concentrated word cluster*.



The t-SNE projection reveals a prominent cluster in which words such as *economic*, *communication*, *inclusion*, *tillgänglighet* (accessibility), *investering* (investment), *delaktighet* (participation), *kosntad* (cost), *arbetsmarknad* (labor market), and *utanförskap* (exclusion) are positioned in close proximity to each other in the main cluster. It should be noted that, within this cluster, ‘labor market’ and ‘exclusion’ are located very closely together, distinct from the other data points in the cluster (annotated in green circle). A similar situation can be observed in the ‘innovation-infrastructure-economic’ proximity, which is circled in orange. ‘Accessibility’ and ‘function disability’ are closely grouped, followed by ‘inclusion’, ‘development’, ‘participation’, ‘investment’, ‘connection’, and so on (annotated in blue circle). 'Skills' and 'knowledge' are also in close proximity to each other and are positioned a bit further away from the other nodes within this primary cluster (annotated in purple circle).

The visualization output from the data analysis section, with both Hierarchical Clustering and t-SNE, reinforces the consistency between the findings from the close reading discourse analysis phase and the concordance analysis section of the exploratory text-mining phase. Both projections reinforce the notion that the labor participation is of importance in the context of digital inclusion, contributing to both individual equality and social participation, as well as socioeconomic development. Function disability and groups with disabilities emerge as the primary target audience when addressing digital access and inclusion. Finally, ‘skills’ factor was the emerging access prerequisite for digital participation and inclusion.

Conclusion

The word cloud representations were observed to provide partial support for certain aspects of the findings derived from the close reading phase and the preceding steps of the distant reading (text mining) phase (i.e., concordance analysis); however, it is not entirely conclusive on its own. Its most significant output was the word ‘kompetens’ which represents skills and, in a way, validates the prior close reading findings indicating skills access to be, together with material access, the most primary prerequisites (RQ2). The text vectorization with word embeddings through Hierarchical Clustering revealed two main word clusters, which were distinguished as red and blue, with a focus on the term ‘inclusion’. Within the sub-clusters, close associations were observed between inclusion and terms such as participation, exclusion, disability, labor market, and accessibility. This is supportive of the findings from the close reading phase, as it highlights the significance of economic and labor participation for social inclusion and digital accessibility in Swedish society (RQ1). The primary focus group that stood out in the close reading phase was people with disabilities, which is also represented in the word cluster analysis (RQ3).

The t-SNE dimensionality reduction model further supported these findings, with words related to economic, communication, inclusion, accessibility, investment, participation, labor market, and exclusion positioned closely together. The visualization output reinforced the importance of labor participation for digital inclusion, individual equality, and socioeconomic development (RQ1). Moreover, it represented people with disabilities as a focus group (RQ3). Regarding RQ2, skills were identified as a primary prerequisite for digital participation and inclusion. The consistency between the close reading phase and the exploratory text-mining phase strengthens the overall findings and provides a comprehensive understanding of the discourse surrounding digital inclusion.

7. Findings

This chapter presents the findings of this multifaceted research based on a careful examination of 10 policy reports from Sweden. The following sub-chapters address the research questions on 1) the key discursive motivations towards addressing digital inclusion in the analyzed policy reports, 2) the technology appropriation prerequisite(s) in focus for achieving digital inclusion, and 3) the primary focus group in the policy discourse and how their needs are addressed in terms of personal and positional resources. By integrating insights from CDA and drawing on the key findings, potential limitations and positive implications in the discourse surrounding digital inclusion are explored, opening avenues for future research. It is important to emphasize that while these limitations and ethical considerations are essential aspects, they are not the primary findings of this research but rather valuable conclusions that arise from addressing the three research questions.

The research findings uncover three key points. Firstly, discursive motivations are constructed within the key themes of social participation, democracy & social equality, and socio-economic development. Secondly, material and skill access emerge as the primary prerequisites for digital participation and the realization of these intertwined motivations. Lastly, the focus group primarily comprises individuals with disabilities.

In the subsequent sub-chapter, RQ1 is addressed by drawing on findings from all parameters of Hwang's *Policy Contents* model (2006), with particular emphasis on the 'policy goal' parameter. The findings are equally informed and enriched by the outputs of the concordance analysis, and parts of word embeddings and visualizations (t-SNE and Hierarchical Clustering) from the distant reading phase.

7.1 Key Discourses on Digital Inclusion

Through both the qualitative close reading and exploratory text analysis methods applied to the 10 policy reports, three key discursive motivations of digital inclusion were found: 1) social participation, 2) democracy and social equality, and 3) socio-economic development. Although Figure 14 depicts a total of eight themes, only three were identified as key motivations based on their dominance across the corpus after careful analysis of the reports through CDA. Several of these themes were identified as sub-themes nested within these key discursive motivations. For instance, within social participation, there are sub-themes related to economic, social, and labor participation. Democracy and social equality entail discussions on autonomy and self-determination. Socio-economic development includes discourses on digitalization and innovation.

Figure 14. *Statistical representation of the discursive motivations around digital inclusion in the analyzed policy reports.*

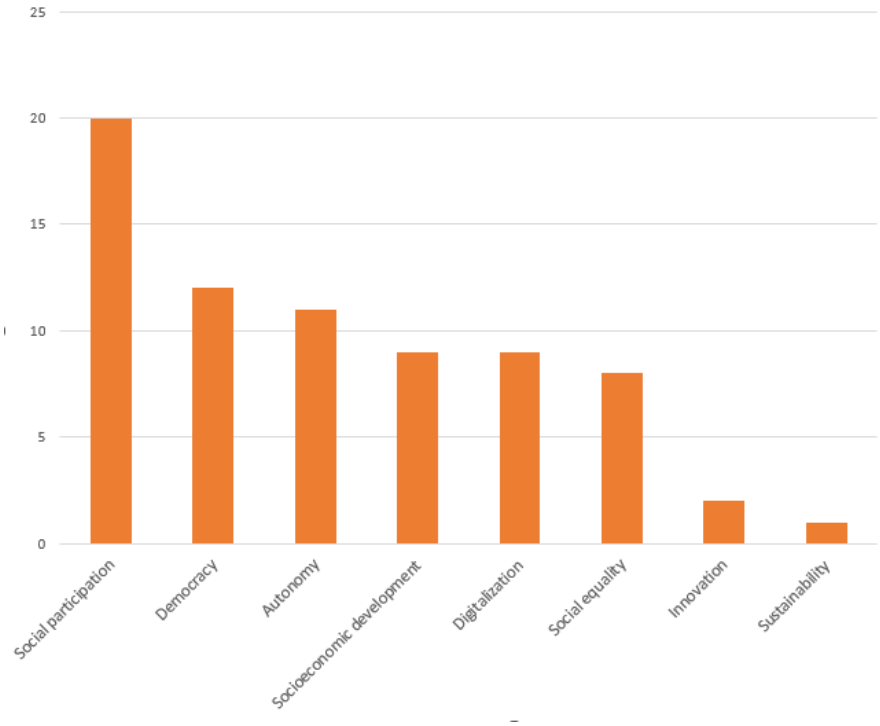
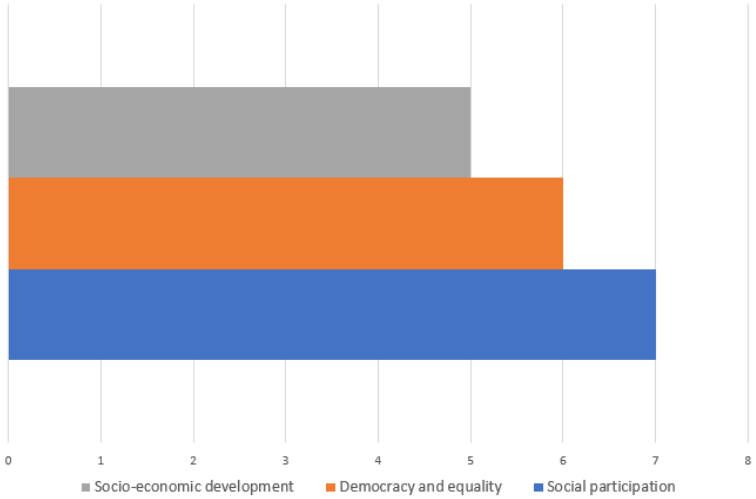


Figure 15. *Main discursive themes around digital inclusion in the Swedish policy reports between 2017-2022 (Concordance analysis results).*



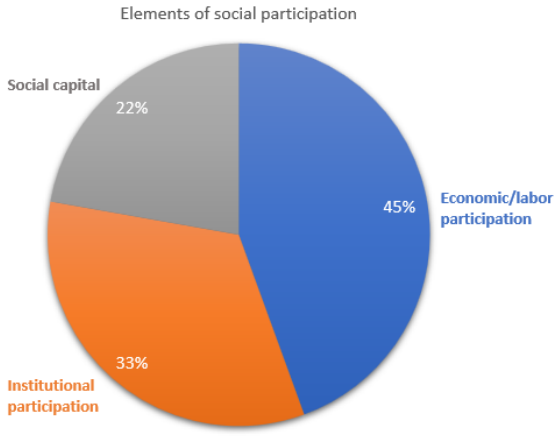
It is important to highlight the interconnection between these factors. The reports reveal that increased social participation leads to enhanced connectivity and digitalization, thereby a more open and democratic society. In turn, a digitally

connected society, where individuals possess digital skills and actively participate in the labor market that tends to demand digital proficiency, becomes a breeding ground for innovation and technological advancements. As a consequence, such a society experiences social and economic prosperity.

7.1.1 Social Participation

Van Dijk incorporated the concept of social inclusion or exclusion within the broader framework of societal participation. He identified social participation as encapsulating labor, education, politics, culture, social relationships, as well as in spatial arrangements (such as public transport and parking lots), and in institutions like citizenship, social security, and health provisions (institutional participation) (van Dijk, 2005, p. 23). This approach facilitated the classification of emerging characteristics of social participation in these policy reports. Both the qualitative and the exploratory analysis revealed across the corpus that digital inclusion primarily was a means to achieve social participation and inclusion. The dimensions of social participation are social (relationships, networking, communication), economic (labor and financial), and institutional (circulation of public information, democratic participation, access to public information, using public services online etc).
In reports that aim for full social participation, the concept is addressed through these dimensions, and it is not that social participation is solely about 'economic participation' in one report and 'social relationships' in another. Instead, these dimensions are interconnected and mutually influencing each other within these reports. However, when sharing the results of the analysis, I chose to present them through these three dimensions.

Figure 16 *Pie chart representation of the identified elements of social participation within the corpus –output of the close reading phase.*



7.1.1.1 Economic

Economic aspect of social participation appears to dominate the discourse around social participation aspect of digital inclusion in the analyzed corpus of Swedish policy reports, shown in Figure 16. This finding is supported both by the close reading phase and by the exploratory text analytics phase. According to the

prevalent discourse on social participation, economic aspect of digital inclusion at substantial level stems from this fact: individuals need to be digitally connected and possess the necessary digital skills to participate in the labor market, achieve equal opportunities with the rest and contribute to the economy of the country. Among the reports analyzed in this study, six addressed economic participation as a means to achieve social inclusion; and vice versa. That is, economic participation is both a means of achieving digital inclusion and an outcome of it. Three of these reports aimed for full social participation, consisting of not only economic participation but also institutional and social interaction. Therefore, their focus was intertwined, dwelling on multiple dimensions of social participation.

Furthermore, a substantial portion of the exploratory text analytics phase, which includes word cloud, concordance analysis and visualizations through Hierarchical Clustering and t-SNE, reaffirmed the qualitative finding and illustrated economic/labor participation as a prevailing theme in the corpus related to social participation and digital inclusion. In the statistical representations (Figure 16) derived from the concordance analysis of the text mining phase, institutional and social/cultural participation closely followed labor participation.

In line with van Dijk's observations in his 2005 book, the skills required for the labor market are evolving with technological advancements and societal changes. R5 and R6 from DIGG, along with R10 from the Digitalization Council, specifically addressed the concept of 'digital excellence' and its relevance to labor participation and, consequently, economic participation. These reports emphasized that possessing basic digital skills alone is insufficient in the labor market and for full participation in the digital society, given the increasing demand for digital excellence and literacy. Therefore, digital inclusion in the context of labor and economic participation goes beyond basic digital skills; it necessitates what van Dijk refers to as 'usage access' in his theory. Usage access implies that individuals, after acquiring motivational, material, and skills access, must efficiently process information and utilize technology in an advanced manner to enhance their position in society.

The discourse found within these reports makes it clear that economic participation is both a pivotal factor in achieving full social participation and an outcome of it. Moreover, it becomes evident through the identified discourse, particularly around economic/labor participation, that digital inclusion at the level of usage access is of paramount importance for attaining full social participation and nourishing the overall development of a digital society.

7.1.1.2 Institutional

Van Dijk (2005, p. 176) defined institutional participation in terms of digital public services provided by welfare states. These services, which are now being implemented in developing countries as well, cover government services, healthcare, and social insurances. In his book, van Dijk anticipated the emergence of today's digital identification services for banking, social benefits, government services, healthcare and so on. For example, the Swedish online identification service, BankID, is not accessible to all due to various reasons, and it is predominantly mentioned in these reports when discussing institutional participation.

Institutional participation was the second highest form of social participation in the identified discourse, both in close reading and in distant reading analyses. More specifically, R1, R2, R4, and R5 address institutional participation

as a means of achieving full social participation and inclusion in Sweden. R4, published by the Agency for Accessible Media (MTM), specifically focuses on institutional participation through providing access to social and crisis information for vulnerable groups with speech or reading disabilities, as well as language barriers (e.g., migrants). The concordance analysis, and data visualizations all reveal a similar pattern, pointing to institutional participation through improved digitalized welfare services and increased digital participation in society. Both analyses highlight the significance of access limitations to public services and the barriers that hinder institutional participation, which act as substantial obstacles preventing individuals from attaining full social participation. It should also be noted that economic and labor participation cannot be realized without institutional participation (e.g., online banking, identification etc.), and in certain cases, social interaction and entertainment participation are also dependent on institutional participation (e.g., spatial arrangements, cultural events requiring online identification). In that sense, these three dimensions are intertwined in attaining full social participation, and eventually digital inclusion.

7.1.1.3 Social Interaction

The social interaction or engagement aspect of general social or societal participation involves activities such as leisure time pursuits, gaming, networking, communication, participation in cultural events, exploring virtual museums and so on. Van Dijk identifies this aspect as a form of *social and capital*, emphasizing the significance of social relationships and engagement in cultural and leisure activities (van Dijk, 2005, p. 172). Among the reports analyzed, R3 and R7 exhibited a distinct discourse highlighting the importance of this type of social participation. The other reports primarily focused on the economic and institutional dimensions of social participation, as shown in Figure 16 and validated by the exploratory text analytics results, which similarly indicate that cultural and entertainment-related social participation were less emphasized compared to other aspects of social participation.

7.1.2 Democracy and Social Equality

The increasing disparities in digital access and engagement are widely recognized as a threat to democratic and equal society in the analyzed reports. According to van Dijk, these disparities in social and information inequalities undermine democratic participation by reducing it to a superficial exercise of periodic elections, where citizens' active engagement through information circulation, communication, media access, and impact on decision-making processes is sidelined while the decision-making power is concentrated in the hands of an exclusive 'information elite' (2005, p. 180).

Both exploratory text analysis and qualitative CDA revealed democracy to be the second prominent discourse in terms of the bigger societal role of digital inclusion. Out of the 10 reports analyzed, reports R3, R5, R6, and R9 constructed discourse around digital inclusion as a means to promote democracy in Sweden; similarly in the concordance analysis democracy was the second most frequently concurring term with digital inclusion, participation and exclusion.

> Everyone should be able to participate in community life. As each individuals gains increased knowledge and enjoys good conditions for exchanging opinions, discussing common matters, and managing their everyday lives,

> democracy is strengthened and developed. Access to information and knowledge is a crucial prerequisite for this. (MTM, 2017, p. 5)

The above-quoted expression is from R3, and it conveys the idea that digital inclusion is a matter of social inclusion and communication, which in turn caters for the expression of opinions and the circulation of ideas and information, thereby fosters democratic participation in society. Similarly, R5, R6, and R7 view digital inclusion as a means to foster democratic and economic participation through social inclusion, connectivity, and full digital engagement. The overall rhetoric highlights the significance of individuals' level of digital involvement for full digital participation and social inclusion.

Through the analysis of these reports, it becomes evident that democracy and social equality are closely intertwined in the context of social inclusion. Individuals' equal participation in society is inherently connected to democracy, as stated by van Dijk. Democracy is not solely about casting votes periodically; it also embodies the expression of opinions, access to and circulation of information, idea sharing, and influencing decision-making processes (2005). This sentiment is reflected in the aforementioned quote from R3, as the exchange of opinions, discussion of common matters, and management of everyday lives contribute to a stronger democracy (MTM, 2017, p. 5). Managing everyday lives, as it seems to be implied across the reports, includes civic engagement through e-government, online banking, or e-health services; thus "institutional participation" in van Dijk's theory (2005, p. 176) emerges not only as a matter of social participation but also as one of the aspects of democratic engagement in Sweden within the underlying discourse presented in the reports.

Similar associations are made in other reports as well. R5 and R6 connect digital inclusion or digital participation with democracy through communication, transpar-ency, and engagement between citizens and those in, or representative of, power (DIGG, 2021; DIGG, 2022). In other words, digital equality and inclusion lead to increased involvement of civil society, companies, and individuals in decision-making, policy processes, and co-creation (Digg, 2021, p. 9). Furthermore, digital inclusion across the areas of competence, connectivity, digital business, and digital administration is crucial for achieving sustainable and vibrant democracy (Digg, 2022, p. 7). Ultimately, equal digital participation manifests social equality, transparency, connectivity, and active community involvement, thereby fostering a better community life and a sustainable, robust democracy.

7.1.2.1 Autonomy

The concept of autonomy, which refers to individuals being independent in their social engagement and daily tasks, as well as having self-determination to make their own free decisions without relying on others, emerged as a highly frequent theme in both the qualitative and exploratory analyses of the reports. In the concordance ana-lysis of the text mining phase (Phase II), *självständighet* (autonomy) stood as the third prominent theme in the context of digital inclusion, following democracy. When examined more closely in the qualitative analysis phase, the discourse on autonomy pre-dominantly fit into the 'policy means' parameter of my qualitative research model, and it was associated with a broader democratic and equality context, where individuals should have equal opportunities to express themselves and participate in society. To achieve this, autonomy is a prerequisite, enabling vulnerable groups, particularly disabled individuals, to handle basic daily tasks independently, rather than constantly needing support from others.

This discursive pattern is particularly evident in the context of disabled individuals as a focus group.

In 4 out of 10 reports, autonomy was framed as a prerequisite for an equal digital society. In *Digital Sweden 2022* (R6) by DIGG, one of the reports analyzed in this study, the main principles of the Berlin Declaration that Sweden signed in 2020 was quoted and endorsed which Sweden signed in 2020, were quoted and reflected upon. That quotation alone provides a comprehensive representation of the significance of autonomy within the context of a democratic and socially equal society across the reports analyzed, and of how all three key discursive themes were intertwined in the context of digital inclusion:

> Validitet och respekt för grundläggande rättigheter och demokratiska värderingar den digitala sfären (*Validity and respect for fundamental rights and democratic values in the digital sphere*);
>
> Socialt deltagande och digital inkludering i skapande av den digitala världen (*Social participation and digital inclusion in shaping the digital world*);
>
> Självbestämmande och digital kompetens, som möjliggör för medborgare att delta i den digitala sfären (*Self-determination and digital competence, enabling citizens to actively engage in the digital sphere*);
>
> Tillit och säkerhet i offentliga interaktioner och som möjliggöra för alla att röra sig säkert och tryggt i den digitala världen (*Trust and security in public interactions, ensuring that everyone can navigate the digital world safely and securely*);
>
> Digital suveränitet och interoperabiltet, som nycklar för att säkerställa att medborgare och offentlig förvaltning kan utföra beslut och vara självbestämmande i den digitala världen (*Digital sovereignty and interoperability, keys to empowering citizens and public administration to make informed decisions and exercise self-determination in the digital world*);
>
> Människocentrerade system och innovativa teknologier inom offentlig sector (*Human-centered systems and innovative technologies in the public sector*);
>
> Ett motståndskraftigt och hållbart samhälle (*A resilient and sustainable society*). (Digg, 2022, p. 10)

From the extract, it is possible to see the fundamental values around digital inclusion. That it is a question of fundamental rights, liberties, and democracy. Social participation plays a crucial role in shaping the digital world and society as a whole, but it requires individuals to feel safe when navigating in the digital world. The importance of autonomy in the context of digital inclusion is that it grants individuals the opportunity for self-determination, freeing them from constant dependency on others. By being autonomous, we they gain the freedom to exchange and access ideas and information, as well as carry out our own tasks, thereby ultimately contributing to a more democratic, equal, connected, and sustainable society.

7.1.3 Socio Economic Development

The qualitative analysis highlighted socio-economic development as the fourth prominent term and third primary discourse concerning the broader societal implications of digital inclusion (i.e., discursive motivation). It encapsulates the

notion that economic growth achieved through the sustainable distribution of public and private services, cost reduction in service provision, and the fostering of innovation and business development, leveraging high digital competence and societal engagement, along with extensive digitalization.

Throughout the text mining phase, these themes consistently emerged. Word clouds displayed key terms such as digitalization, development, labor market, and innovation, which strongly correlated with the sub-themes of socio-economic development. The word embedding and vectorization of text through hierarchical clustering and t-SNE also confirmed these findings by revealing the proximity of certain words, like *innovation* and *development*. The concordance analysis further substantiated these conclusions from the close reading phase. It consistently demonstrated that socio-economic development is closely linked to rapid and extensive digitalization, improved connectivity and sustainability through enhanced infrastructure, and the fostering of innovation and business development.

When examined more closely from the discourse analysis viewpoint, certain discourses framed digital inclusion and digital literacy in the population as an imperative for achieving socioeconomic development, reducing government costs, and ensuring sustainable resource distribution. The emphasis was on driving innovation and business growth in the country, reflecting a market incentives and economic perspective rather than the ethical imperatives of social participation and equality perspectives (van Dijk, 2005) in those specific discursive patterns. For example, R1 contained an expression saying that ‘everyone must participate’ (*Alla måste med!*) and contribute to the labor market and digital society (The Digitalization Council, 2018, p. 7). However, a critical and constructivist analysis of the discourse reveals an underlying collective viewpoint with economic and market incentives, framing people's digital participation more as a contribution to economic growth rather than an individualistic perspective of their own empowerment. The rhetoric implies a ‘responsibility’ for individuals to possess digital competence and contribute to the economy. Similarly, gender equality and migrant integration into the labor market are mentioned in the same report, but these also appear to be framed with a focus on market incentives and economic goals (see **Table 13**)

Nevertheless, it is not to say that this economic perspective with some oversight of socioeconomic and individualistic perspectives and inequalities, was a dominant discourse in the reports. The overall findings present a more balanced approach, with the ethical perspective of social participation, democracy, and equality outweighing the seconomy-focused viewpoint. In fact, the discursive patterns of socio-economic motivation, in themselves, highlighted ethical imperatives of social participation, democracy, and equality, with the underlying notion that social and economic developments aim to improve people's lives and strengthen a democratic and equal society. An example is the following quote from R9.

7.1.3.1 Digitalization

Digital inclusion serves as a driving force for the efficient digitalization of government institutions, municipalities, public services, and businesses, thereby contributing to socio-economic development. This notion emerged as one of the key themes during the exploratory text mining analysis, as depicted in Figure 14. However, in the discourse analysis conducted during the close reading phase, digitalization was primarily discussed within the context of social and economic development, and not as a separate theme. The discourse on digitalization goes beyond mere connectivity and digital engagement; it highlights the importance of

digital inclusion in society, with advanced skills, motivation, material access, and usage access in members of society. In digital inclusion discourse, there are implications about a reciprocal relationship between a society's digital competence, full digital participation, and the extent of digitalization in institutions, businesses, and the society as a whole. Access to technological infrastructures, such as broadband and digital services, plays a critical role in fostering digital inclusion, as supported in the text-mining phase of this study. By addressing digital inclusion comprehensively, societies can propel digitization efforts, leading to broader socio-economic development and progress.

In the close reading phase, certain reports approached digitization from a market and administrative standpoint, rather than putting their social implications in focus (DIGG, 2022; DIGG, 2023; PTS, 2021; PTS, 2022). While business and state aspects are important in digital transformation, it is essential to acknowledge that digitization is a collective responsibility that involves society as a whole and individuals themselves, which was also expressed at length in R9 (Nordqvist, 2019). Mere digitization of services does not guarantee universal access and inclusion. The issue of digital marginalization cannot be solely addressed through technological determinism or market incentives. Instead, it requires a deeper examination of socio-demographic factors that contribute to the digital divide and marginalization of certain groups (van Dijk, 2005). By understanding and addressing these underlying factors, we can work towards a more equitable and digitally inclusive society.

> If different groups are already in a digital exclusion, it will be more difficult to introduce digital services in municipalities and regions. Instead, special solutions will be required to meet the needs of individuals, which also affects the municipality's costs. (MFD, 2019, p. 11)

The quotation above is an example and it implies that digital exclusion and lack of competence have a significant impact on the digitalization process and can result in increased costs for municipalities. When certain groups are already excluded from the digital realm, the introduction of digital services becomes more challenging. It necessitates the implementation of specialized solutions to cater to the unique needs of these individuals, consequently affecting the municipality's budget and overall economy. Therefore, digital inclusion emerges as a crucial determinant of successful digitalization, making it a key parameter for economic considerations.

7.1.3.2 Innovation

Van Dijk initially categorized this motivation as 'technology development', but it appears to be closely associated with the concept of innovation. The prevalent discourse in the reports, evident through both DA and text analytics practices, emphasizes that innovation is a powerful driver for policymakers and other stakeholders to address digital inclusion and bridge the digital disparities. A digitally competent society fosters greater innovation, leading to enhanced economic growth. As discussed in detail in the main chapter on Social and Economic Development, certain aspects of the discourse highlight the significance of digital inclusion from a market and economy incentives perspective.

> […] Digitalisering är också viktiga verktyg för att förverkliga de förvaltningspolitiska målen och för att bidra till innovation i samhället […].

(*Digitization is also an important tool to realize those administrative policy goals and to contribute to innovation in society*). (DIGG, 2022, p. 59)

This direct quotation from R5 may not explicitly provide an example discourse correlating 'digital inclusion and innovation,' but it effectively demonstrates the interconnectedness of the identified sub-motivations under the third key discursive motivation 'socio-economic development.' These sub-motivations, 'digitalization,' 'innovation,' and 'sustainability,' build on each other and mutually foster socio-economic development. Ensuring digital inclusion in society, where nobody lags behind, leads to more effective digitalization, greater innovation, and a sustainable society with equitable resource distribution. Digital inclusion and digitalization thus mutually influence each other. Reports emphasize that innovation is both a means and a goal of digital inclusion policies, with enhanced digital literacy and inclusivity fostering economic and social prosperity. The reciprocal nature of this relationship is evident in various reports, where high digital literacy and inclusivity drive innovation, while innovation, in turn, helps bridge digital disparities through new ideas and technologies that enhance accessibility (DIGG, 2022; DIGG, 2023). This connection is evident in the outputs of the text mining phase, as visible in Figure 11 and Figure 12, where innovation is closely associated with accessibility, development, inclusion, economic growth, and infrastructure.

In some discourse, such as in R2 and R5, innovation is perceived as a means for people to lead better lives and participate socially, among other things, rather than solely an outcome. On the other hand, in R6 (DIGG, 2022), innovation is depicted as a means for economic growth, which itself serves as both a sub-goal of digital inclusion and an outcome. Across the examined reports, the focus sometimes centers on individuals and their improved equality and quality of life, while at other times, it revolves around economic growth and market development, with digital inclusion and competence seen as the means to achieve those goals.

In general, in terms of both qualitative close reading and exploratory distant reading analyses, the discourse on digital inclusion and innovation appears to suggest that a digitally literate and inclusive society fosters innovation through active labor market participation, meeting technological demands, and contributing to sustainable industrialization. In turn, innovation fuels digital inclusion, creating a mutually reinforcing relationship between the two.

7.1.3.3 Sustainability

Sustainability is a recurring theme in both CDA and text mining analyses. During the discourse analysis phase, it was identified as a sub-theme within the context of socio-economic growth. This is because, as explained in the preceding sections, the third key discursive motivation identified in this study, 'socio-economic development,' primarily relies on the interconnection of digitalization, innovation, and sustainability. These three factors mutually influence each other, and ultimately cater for digital inclusion, a more developed digital society, and economic growth.

Based on the findings from close reading and distant reading, specifically through constructive analysis of the eye-catching discourse in R5, R6, and R8, we can briefly explain it this way: Digital inclusion entails accessibility to the digital

landscape for everyone, which in turn fosters efficient digitization of services. This approach allows for the cost-effective distribution of resources and services in society, promoting reusability and sustainability for the public and private services. For example, in a society where most services are digitalized, but certain groups still rely on analog alternatives, the cost of maintaining both systems become higher in terms of financial and human resources.

One example can be the healthcare system, which was also referred to in some of the analyzed reports. Providing digital healthcare for simple procedures like inquiries or receipt renewals may be essential in order to maximize efficient distribution of services. However, if some individuals cannot access these digital services, it leads to additional costs in both human effort and financial resources, as analog alternatives need to be then offered. Ensuring digital inclusion helps society benefit from streamlined and cost-effective services, contributing to economic growth, innovation, and business integrity.

> […] I Sverige har vi bland annat uttryckt att digitaliseringen ska bidra till att förenkla för medborgarna, bidra till klimatomställningen och till att skapa högre resurseffektivitet […]. (*In Sweden, we have expressed, among other things, that digitization should contribute to making it easier for the citizens, contribute to the climate change and to create higher resource efficiency*). (DIGG, 2022, p. 59)

The sustainability aspect was also framed from an environmental perspective, as in the quotation above from R5. The rhetoric here urges on the environmental implications of digitalization and, ultimately, digital inclusion. Thus, it highlights the significance of not only achieving a sustainable society in terms of access to and distribution of resources and services but also ensuring environmental sustainability through higher resource efficiency. However, the exact ways in which digitalization and digital inclusion contribute to environmental aspects and sustainability remain uncertain.

7.2 Prerequisites for Digital Participation in Swedish Policies

This chapter addresses the second research question on how the Swedish governmental initiatives on digital inclusion tackled the prerequisites for technology appropriation and full digital participation, with reference to the perspective of the four sequential access inequalities through the lens of van Dijk's RA theory (2005).

Figure 17. *Concordance analysis results on access prerequisites identified in the discourse across the policy reports.*

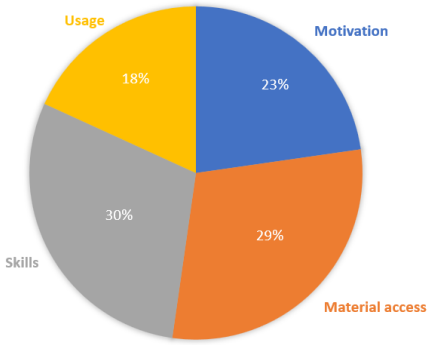
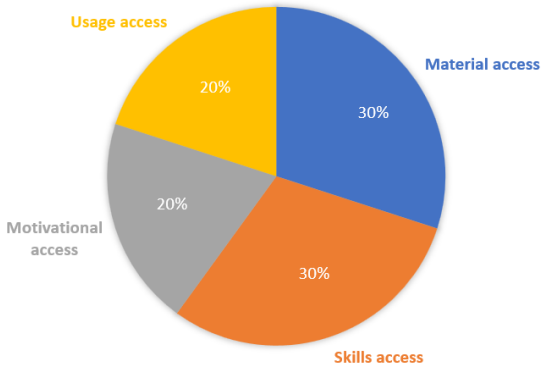


Figure 18 *Close reading results on discursive patterns on access prerequisites for digital participation and inclusion.*



Both qualitative and exploratory analyses yield consistent results in terms of framing access prerequisites in the identified discourse. The primary prerequisites perceived as the main barriers to full digital participation and inclusion are material access and skills access, which are equally dominant, followed by motivational access and usage access.

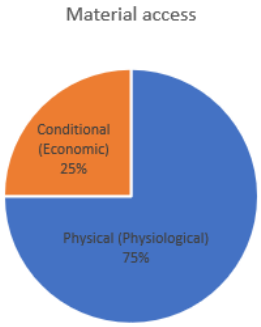
In the close reading phase, material access and skills access factors equally dominate 60% of the discourse on technology appropriation and digital participation prerequisites, while motivational access and usage access account for 40% with an equal share (20% each) (see Figure 18).

The concordance analysis from Phase II, which serves as a robust text mining technique for identifying discursive contexts related to digital inclusion, validated the qualitative findings, with material and skills access being the most prominent prerequisites (See Figure 17). Although this phase with text mining slightly reduces the representation of usage access compared to that in the close

reading analysis, the dominance of material and skills access and the overall distribution of the four access prerequisites remain consistent.

Other techniques from Phase II such as the word cloud (Figure 8 & Figure 9) and Hierarchical and t-SNE clusterings (Figure 11 & Figure 13) highlighted skills access as a central theme, closely related to labor participation and digital inclusion within the main cluster including themes of digital inclusion and participation. However, it is important to acknowledge that while these exploratory text mining techniques provide supportive evidence, they may not always offer scientifically reliable or conclusive outcomes in a qualitative, interpretational discourse analysis research.

Figure 19 *Pie chart distribution of material access dichotomies, namely conditional material access and physical material access (van Dijk, 2005, p. 48).*



7.2.1 Material and Skills as Primary Category

The findings from this study reveal that material access and skill access are the primary categories or prerequisites for achieving digital participation and inclusion in Swedish society. Material access is predominantly linked to physical access, particularly in the context of function variations, rather than solely based on economic deprieval (as illustrated in Figure 23).

The overall rhetoric portrays Sweden as a digitally developed country with high digital competence among the population and strong material access (economic/conditional). While this is supported by data (The Swedish Internet Foundation, 2022) it does not negate the fact that certain groups in Sweden face economic constraints hindering their access to ICTs. In fact, Sweden went from the ranking 1st and 2nd in the years 2019 and 2020 (European Commission, n.d.; Digg, 2023, p. 21) to 4th in 2022 rankings in the EU Commission's Digital Economy and Society Index (European Commission, n.d.), and this can be due to many reasons including sociodemographic and economic changes in society. Thus, it is not sufficient to assume that we have overcome digital society's issues and digital divides without addressing them in-depth. In reality, there is a risk of regression even for digitally developed countries. As the exclusion of certain groups from society deepens, particularly when the majority enjoys easy access to ICTs in all aspects of life, it becomes imperative to draw attention to the needs and constraints faced by these marginalized groups. Only by doing so can we work towards bridging existing divides and fostering a truly inclusive digital landscape.

Skills access is the other equally important prerequisite for achieving full digital participation and digital inclusion in society in the analysis results of the Swedish policy reports. The discourse consistently highlights the role of digital competencies both as basic operational skills and as information retrieval skills, knowledge, and aptitudes required for engaging in digital technologies effectively. Skills access is closely intertwined with material access and is a precursor to usage access, collectively forming the foundation for digital inclusion.

7.2.2 Motivation and Usage as Secondary Category

While van Dijk's theory suggests motivational access as a primary factor for achieving digital participation, the discourse in the analyzed policy reports deviates from this perspective. The changing societal landscape, particularly the ubiquitous use of ICTs, might have transformed the motivation for digital participation. In the current digitized society, digital participation is less optional and more a fundamental necessity for social inclusion. Consequently, lack of motivation to engage with digital technologies is not as pronounced as it was when possessing computers and engaging with the digital world used to be relatively more 'optional' when only 6.7 out of 100 people on the planet used the Internet in 2000 (Ram & Hall, 2022, p. 506).

The motivational factor was more expressed from the seniors focus group and age related factors viewpoint. It was associated with technophobia, perceived lack of usefulness, ease of use (TAM, 1986), as well as a fear of technology, that leads to reluctance towards adopting these technologies. This focus group is among the least mentioned in the discourse, which was surprising for the priori hypothesis that seniors would be one of the focus due to the overall digital agenda and when one looks at digital inclusion related projects and initiatives in public and private sectors. Therefore, it appears that the lack of emphasis on motivational access is parallel with representation of seniors in the discourse.

Usage access is least expressed in the policy reports, and its quantity of emphasis is comparable to motivational access. However, qualitative analysis of the discourse framing usage access reveals its significant complementary role in full digital participation, particularly in individuals' economic and labor participation in the country. The discourse refers to "digital excellence," implying that individuals must possess more advanced skills than just basic ICT usage. These skills are essential for today's highly demanding labor market, innovation, economic growth, and the overall digital transformation of society.

The discourse bringing up usage access was more associated with economically vulnerable groups such as migrants or other low income communities, or groups lagging behind due to gender gaps, educational gaps etc. R5, R6, and R10 addressed usage access as ‘digital excellence’ with R5 and R6 draw upon the general population with economic and digital vulnerability, and R10 draw upon migrants and women in addressing usage access.

On a critical note, the oversight on usage access may entail interesting discussions. Drawing on van Dijk's insights, he aptly argues, "As the digital divide shifts from concerns over motivational and physical access to skills and usage access, it deepens" (van Dijk, 2005, p. 217). This deepening divide arises due to the increasing complexity and sophistication of the skills and usage practices required to advance one's position in society. Consequently, a widening disparity emerges

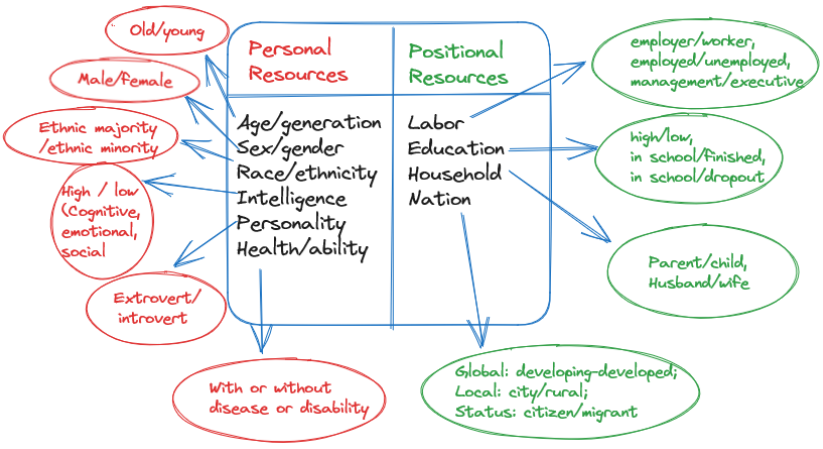
between individuals possessing such skills and those who remain economically and digitally marginalized. Unfortunately, these crucial aspects on usage, along with the motivational element, was not among the main focus policy discourse that aimed to foster successful digitalization and digital inclusion in Sweden.

The fact that motivational issues do not construct a primary importance in the policy discourse may have drawbacks in terms of policy outcome', thereby social practice, The lack of motivation was mostly associated with the senior citizens, while simultaneously overlooking the motivational factors among economically and culturally vulnerable groups, such as migrants. Instead, these vulnerable groups' digital participation and proficiency have been framed predominantly from a technological determinism standpoint. Van Dijk, however, challenges technological determinism and advocates for addressing the deeper socioeconomic, demographic, cultural, and global factors contributing to digital disparities. He underscores the need to move beyond a singular focus on material and technological aspects, recognizing that mere access to ICTs alone cannot solve the underlying issues (2005). It was also observed that the inclusion of migrant and economically vulnerable groups was addressed more from technological and market considerations viewpoint rather than empowering of these individuals.

7.3 Focus Group Perspectives and Resources

This chapter shares the findings of the third and final research question concerning the representation of focus groups and the extent to which their needs were addressed in accordance with the personal and positional resources proposed by van Dijk (2005). Additionally, potential positive or negative connotations, their repercussions, and discourse limitations are briefly identified for further exploration in future research. While not the primary focus, these aspects emerged when addressing the RQ3.

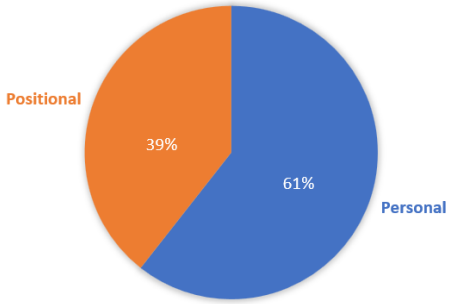
Figure 20 *Illustration of personal and positional resources, adapted from "The Deepening Divide: Inequality in the Information Society", by J.A.G.M. Dijk, 2005.*



Note. The tool used for illustration is *Excalidraw*. Adapted from *The Deepening Divide: Inequality in the Information Society* (p. 24), by J. A. G. M. van Dijk, 2005, Sage Publications. Copyright © 2005 by Sage Publications, Inc. Adapted with permission.

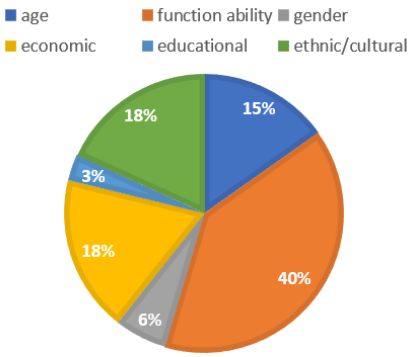
In the larger picture, these personal and positional categories impact temporal resources (time and opportunity to spend time on different activities), material resources (income and all kinds of property and access to services), mental resources (knowledge, social and technical skills), social resources (positions in social relationships) and cultural resources (status, residency, and all kinds of cultural credentials) (van Dijk, 2005, p. 20).

Figure 21 *Distribution of personal and positional resources in the analyzed reports.*



As Figure 21 depicts, in the discourse regarding digital inclusion, personal categories (age, gender, function ability, ethnicity etc) were dominant categories that limit or enhance digital equalities. The distribution were shown in Figure 22 below.

Figure 22 *Pie chart distribution of discourse around personal and positional factors in digital exclusion*.

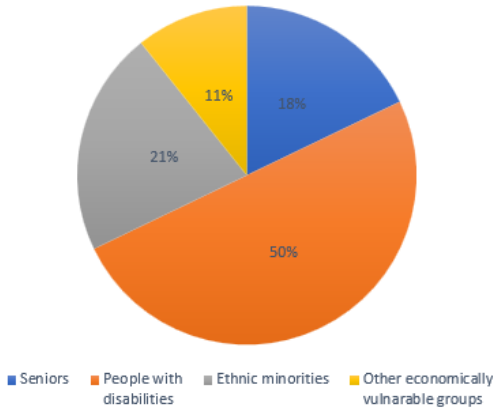


The pie chart does not feature the intellectual and personality categories due to the absence of any discourse pertaining to these aspects in the analyzed reports. Intellectual aspects were only mentioned in relation to cognitive disabilities without specific emphasis on differences in intelligence levels among individuals. Similarly, the personality category was not featured in the digital inclusion discourse.

Regarding positional resources, the discourse only matched the nation and education categories, leaving out labor and household. This is possibly because these resources are closely interconnected. In the policy reports, materiality-related inequalities were primarily expressed as economic factors. For instance, a low-income household with several unemployed family members falls into the economic category. Similarly, education and intelligence can influence labor opportunities and living locations (e.g., residing in high- or low-income neighborhoods).

For that reason, the model of personal and positional resources proposed by van Dijk has been adapted to reflect the contemporary socioeconomic and demographic context of the analyzed reports. In conjunction with these adapted resources, it has been observed that function ability as a personal resource and people with disabilities as a focus group emerged as dominant themes in the discourse with regards to the third research question of this study. The findings will be further expounded upon below.

Figure 23 *Pie chart distribution of focus groups across the analyzed reports.*



Function ability emerged as the dominant category, representing 50% of the reports when addressing personal and positional resources related to access and digital inclusion in Sweden, and it corresponds to health/ability in van Dijk's theory (2005) under personal resources. To conduct a fair analysis, it is essential to acknowledge that the Swedish government's agenda on digitalization and inclusion focused primarily on people with disabilities, following senior citizens. As a result, the majority of reports from governmental agencies emphasized the needs and participation of people with disabilities.

Within the discourse dwelling upon this focus group, they were predominantly referred to as people with *functionnedsättning* (disability) or *funktionshinder* (function hindrance). However, it was also common for the terms disability or hindrance to be avoided, with phrases such as *funktionsvariation* (function variety) (MTM, 2017, p. 15; DIGG, 2022, p. 47; The Digitalization Council, 2019, p. 10) or *funktionsförmåga* (functional capacity) (The Digitalization Council, 2019) being used instead. This discursive pattern may indicate that a negative and derogatory undertone was associated with 'disability,' and which led to its avoidance. It also suggests that people with function variations or disabilities are addressed as a heterogeneous group with diverse needs and function abilities, rather than as a uniform group with similar needs and issues. Their access prerequisite was predominantly mentioned as material access from the physical/physiological viewpoint rather than economic/conditional.

Among the different types of disabilities, cognitive disabilities were the most emphasized in the focus group discourse within the analyzed reports. Phrases such as *kognitiva svårigheter* (cognitive difficulties) (PTS, 2019; MTM, 2017) and *kognitivanedsättningar* (cognitive disabilities) were used when referring to these disabilities (MFD, 2019; MFD, 2018; PTS, 2021; MTM, 2022). Specific limitations related to intellectual resources, such as *svårförstått tal* (difficulty to understand speech), *minnessvårigheter* (memory difficulties), and *kognitiva svårigheter*

(cognitive difficulties), were expressed as potential barriers to digital technology participation (PTS, 2021, p. 18). However, intellectual factors beyond cognitive disability were not mentioned. For instance, the intelligence factor, outlined by van Dijk as part of personal resources for digital access, was only framed from the perspective of cognitive disability. As a result, individual differences in intelligence, such as varying intelligence levels and types which could impact digital disparities, were overlooked.

The remaining focus was distributed as ethnic minorities (21%), seniors (18%), and non-specified economically vulnerable groups (11%). Figure 22 illustrates the distribution of the remaining personal categories after function ability, with ethnic and cultural factors accounting for 18%, economic factors for 18%, age-related factors for 15%, and gender and educational factors representing the lowest percentages at 6% and 3% respectively. The term 'migrants' appeared only once, in R9, which was written in the name of The Digitalization Council from an academic perspective with theoretical input from van Dijk (Nordqvist, 2019, p. 30).

> (…) Det behövs forskning om olika grupper, till exempel nyanlända och migranter samt människor med olika funktionsvariationer (*Research is needed on different groups, for example new arrivals and migrants as well as people with different functional variations.*). (Nordqvist, 2019, p. 30)

The extract from R9 points out that underlying needs and issues of migrants and people with disabilities should be researched. The choice of word ‘new arrivals’ and ‘migrants’ as two separate terms refer to different migrant groups; some are new, some have been residing in Sweden for a while, yet are digitally excluded. As seen in this example as well, the second prominent focus group, ethnic minorities, was framed in various discursive ways, such as *flerspråkiga* (multilingual), *utländsfödda* (foreign-born), *nyanlända* (newly-arrival), and *nationella minoriteter* (national minorities) (Digitaliseringsrådet, 2018; Nordqvist, 2019; MTM, 2022). The above-given extract is a distinct example where the word *migrant* was used.

The distinction between the ethnic minorities in Sweden lies in the terms used to refer to them. The groups recognized as national minorities, such as Jews, Roma people, indigenous Sami people, Swedish Finns, and Tornedals, are supposed to possess distinct religious, linguistic, traditional, or cultural identities and historical ties with Sweden, and should be driven by a strong desire to preserve their identity (Om nationella minoriteter, 2023), in order to be granted this specific status under Sweden's commitments to international conventions (Regeringen, n.d.)

On the other hand, people with a migrant background are not eligible for the same status. They are often labeled as 'newcomers,' in the reports, pertaining to their lack of historical and long-term ties with Sweden. The term 'migrant' is seldom used to address these groups, and instead, they are referred to as 'multilingual' or groups whose mother tongue is not Swedish.

The discourse used by policymakers and other influential figures have the potential to shape social reality, as the CDA perspectives outlines (Leipold et al., 2019). However, when they address social phenomena and the needs of specific groups without delving into the underlying societal and global complexities, it can lead to certain repercussions. For example, when addressing digital inclusion for people with migrant backgrounds, if the rhetoric minimizes their needs to mere 'language' as 'multilingual groups' or reduces it to their unfamiliarity with Sweden and lack of certain properties,' it may fail to fully address the imperatives of making

these individuals digitally included and equal members of society. A comprehensive approach that considers their unique challenges and backgrounds is essential to achieve genuine digital inclusion and social equality. In the policy discourse, the prerequisite for digital integration and full digital participation of these groups was primarily expressed as material access, overlooking the importance of skills and motivational aspects that the migrants and other ethnic/cultural minorities may need.

In the reports R5, R6, and R10, the concept of usage access was expressed through the term 'digital excellence,' with a specific focus in R10 on the involvement of migrants in the labor market. Their treatment of digital excellence corresponded to van Dijk's definition of usage access, which refers to individuals possessing advanced operational, informational, and strategic digital skills and applying them in various aspects of social life, including career, academics, culture, social interactions, entertainment, and spatial navigation (van Dijk, 2005).

Within the context of the given reports, the emphasis on digital excellence was particularly pronounced in relation to labor and economic participation. The objective was to equip digitally excluded groups, such as 'newcomers,' with the necessary advanced skills to meet the labor market's requirements, actively participate in society, and contribute to Sweden's socio-economic development. The reports advocated for a higher level of digital engagement, highlighting the importance of acquiring and applying these advanced digital skills in different spheres of life to foster greater inclusion and socio-economic integration (van Dijk, 2005).

7.4 Conclusion and Reflection

The fact that this study has a comprehensive approach with three different dimensions (RQ1, RQ2, RQ3) while examining the way digital inclusion was framed in the Swedish policy context is that all these three dimensions interconnect and build on each other, as also envisioned by van Dijk’s RA theory. That interconnectedness has shown itself both with key discursive motivation findings which appear to have a dialectical relationship, and within the correlation between access requisites and focus groups.

Because, interestingly, certain access prerequisites appeared more prominent within distinct focus groups in policy discourse. For instance, Material access is primarily associated with individuals with disabilities, while skills access is relevant across all focus groups, with slightly higher representation among migrants. Motivation access is linked to seniors, and usage access is prominent among migrants, thus ranking them first, second (material and skill having equal representation), third, and fourth in the policy discourse. Consequently, access prerequisites are addressed based on particular personal categories and focus groups – function disabilities require physical accessibility, economic material access concerns migrants, usage access concerns migrants, and motivation access concerns age-related issues (seniors) due to technology anxiety, unfamiliarity, and lack of desire.

According to van Dijk's sequential access prerequisites, motivational access takes precedence as it is essential for obtaining ICTs in the first place. However, the lack of motivation and its implications, along with underlying inequality factors, have been overlooked in the prevailing policy discourse. Motivational access gaps may affect all "excluded" groups, such as individuals with disabilities and migrants. As the presence of ICTs becomes less of an issue in households, access inequalities arising from motivational access may gain new significance.

Usage access, on the other hand, has been the least addressed, despite its significant implications in a digital world where ICTs play a crucial role in daily life. The need for individuals to enhance their skills to improve their position in society makes this aspect increasingly important, leading to new forms of division (van Dijk, 2015). The framing of usage access from the migrants' perspective, particularly in their participation in the economy and labor through "digital excellence," warrants further examination and discussion in both the present study's Discussion section and future research.

It is important to pause here and clarify that "migrants" is a general term, and not all migrants are economically vulnerable; perhaps not even the majority of them. The context in the migrants and their digital participation issues were addressed in the reports were more economic and skills perspective, and it was more the migrants with the economic vulnerability or adaptation issues with cultural factors that were framed in the reports.

The upcoming Discussion chapter incorporates Critical Discourse Analysis (CDA) and relevant concepts from van Dijk's 'Deepening Divide' to thoroughly assess and interpret the obtained results. By integrating these analytical approaches, I aim to draw critical conclusions and engage in ethical reflections, shedding light on the identified discourse's limitations and potential repercussions. Although the primary focus and key findings of this research lie elsewhere, the ethical and CDA perspectives offer compelling and noteworthy insights derived from some of the key findings, ultimately pointing towards future implications.

8. Discussion

In line with the research questions that explore the *why*, *how*, and *who* dimensions, pertaining to the identification of discursive motivations towards addressing digital inclusion, prioritized access prerequisites according to van Dijk (2005), and the scrutiny of focus groups and the extent to which their needs were addressed, the incorporation of CDA into the findings leads to intriguing conclusions.

Firstly, a crucial takeaway from the three findings lies in their interconnected relationship, mutually seeking to construct a common 'social good' . Notably, digitalization, bolstered by robust digital infrastructure, innovation, and 'effective digital leadership within authoritative circles', along with active digital engagement through both digital competence and digital excellence among members of society, serves as means of addressing societal needs for equal social participation, inclusivity, an open and secure democratic society, increased operational efficiency in public and private sectors; thus economic growth. This way, digital inclusion stands inextricably linked to the pursuit of social equity, democratic ideals, and economic progress. At this point, I would like to remind the reader that this ‘social good’ in question is only found through the analysis in this research that only scratches the surface, and it does not tap the larger structural and political aspects that could be scrutinized through the lens of critical discourse theory (CDA).

When we employ CDA, we may unlock a deeper understanding and various drawbacks lying under the above-mentioned digitalization properties (i.e., innovation, economic boost, business integrity, etc.). CDA acknowledges the intricate relationship between discourse, social structures, and historical or cultural context, recognizing that discourse both shapes and is shaped by social practices. Within this framework, discourse entails deeper realities as it is constructing and perpetuating power relations, influencing how the world, people, and identities are portrayed (Gölbaşı, 2017, p. 8).

In all three aspects of this research pertaining to rhetoric towards digital inclusion, institutional focus surfaces a prevalent discursive characteristic observed, which Fairclough’s approach would view from a hegemony perspective within the 'order of discourse' (1995); thus, the underlying intention appears to be maintaining the status quo. As such, municipalities, regions, governments, and businesses are driven to achieve successful digital transformation, where social participation, social equality, and socioeconomic prosperity are seen as crucial steps toward this goal. The discourse often revolves around concepts like social capital, economic participation, and institutional involvement, all aimed at improving the quality of life for marginalized groups, particularly individuals with disabilities, which indeed constructs ‘social good’ in that sense. However, there are discursive implications that the ultimate focus lies in formulating a successful government-driven digitalization strategy. While digital inclusion and social equality appear to be essential aspects, they may actually be perceived as means to a facilitate policy implementation and fulfilling the government's agenda.

According to Fairclough, discursive characteristics are intentional choices involving both inclusion and exclusion mechanisms that serve the interests of the speakers (Gölbaşı, 2017, p. 8). Considering Fairclough's three-dimensional perspective encompassing text, discourse, and social reality, the speakers' interests primarily revolve around political and economic success within discourse, which may have real-life repercussions on social structures that the future research can

explore. The extent to which wider societal problems and the underlying factors behind the exclusion of marginalized groups are addressed in discourse, especially in the context of policy-making that directly impacts social outcomes, holds great importance in bridging divides and effecting change.

For instance, when discussing economically vulnerable migrants, certain terms, such as 'migrant' (*sv*. invandrare), were avoided, and alternative expressions like 'newcomers,' 'new arrivals,' 'multilinguals,' 'born-abroad' and 'those whose mother tongue is not Swedish' were used instead. While this linguistic choice may be driven by a desire to avoid words with negative connotations, it raises important considerations. Terms like 'multilinguals' and 'those whose mother tongue is not Swedish' may risk oversimplifying the needs and challenges faced by these groups, reducing their issues to merely language-related in the context of digital divides and exclusion. Similarly, referring to them as 'new arrivals' may downplay the inequalities and exclusions they experience, attributing their difficulties to mere unfamiliarity or material deprivation (e.g., lack of financial resources or access to necessary digital tools), without fully addressing the imperatives of ensuring their digital inclusion and equal participation in society. From a CDA perspective, these attempts at discourse engineering, while aiming to avoid negative connotations, could inadvertently perpetuate existing social constructs and exclusions faced by these individuals by not thoroughly addressing their complex realities. Such discursive choices should be made with careful societal considerations in mind, as discourses bear on each other over time, continually shaping social practices.

Taking a step back to examine the 'discursive engineering' applied to addressing migrants, a similar discursive approach was observed in the context of people with disabilities, who were referred to as 'people with function variety' or 'people with varying function capacity.' On a positive note, this appears to be a discursive choice aimed at avoiding derogatory connotations associated with terms like 'disability' or 'hindrance' and promoting inclusivity. This linguistic shift may positively contribute to shaping future discourse and social practices, as Foucault argued that the designation of 'mental illness' was defined and shaped by the language and statements used to name, describe, and explain it (1972; Fairclough, 1995, p. 41). However, in this shift of word use and discourse, the deeper implications of these choices should be carefully considered in terms of how they convey and construct reality, particularly concerning addressing the specific conditions and needs of vulnerable groups.

Findings from Research Questions 2 (RQ2) and 3 (RQ3) reveal further discursive implications. The prerequisites for digital participation were primarily expressed in terms of material access with a physiological focus, as the focus group consisted of people with disabilities. However, other factors such as lack of motivation and skills due to mental resources like intelligence and knowledge were not adequately addressed. Motivation itself can be influenced by a myriad of underlying factors, including historical gender inequality, limited education, restricted economic opportunities, cultural disparities, geopolitical imbalances, and poverty. As van Dijk asserted (2005), motivation is indeed the primary factor for achieving full digital participation. In the Swedish policy discourse, however, lack of motivation was commonly associated only with seniors, warranting consideration across all focus groups, especially for certain migrants who might encounter additional barriers due to world-system structures and imbalanced geopolitical relations, along with other reasons rooted in ethnic majority or minority positions in obtaining motivational access and full participation (van Dijk, 2005, p. 39). Given the socially formative power of discourse (Fairclough, 1992), a comprehensive

approach that takes into account the heterogeneous needs and backgrounds of marginalized groups and the social structures that affect them is essential to genuinely bring about change and bridge digital disparities and inequalities.

On an additional note, the prevailing rhetoric that Sweden is one of the best in terms of digitalization and access to ICTs might explain the underrepresentation of material access dimensions. Despite the declining significance of material access due to widespread possession of ICTs, economic and conditional access disparities persist (van Deursen & van Dijk, 2005). As such, preliminary literature supports the notion that elementary material is becoming less essential, with greater importance placed on conditional and economic factors (van Deursen & van Dijk, 2005; van Dijk, 2019). Simultaneously, attitudes and motivation, along with material aspects, remain crucial (e.g., Gonzales, 2016; Hargittai & Kim, 2010; Napoli & Obar, 2014; Reisdorf & Groselj, 2017; van Deursen & van Dijk, 2019, p. 369). And yet, the policy discourse constructed around categorical inequalities and access dimensions did not fully comply with the findings of the contemporary research on digital divides, nor did they adequately address categorical inequalities such as gender and ethnicity which continually seem to be ‘the most-observed personal categories affecting Internet access’ (Scheerder et al., 2017; van Deursen & van Dijk, 2005, p. 359).

Returning to CDA framework and the earlier mentioned discursive motivations of 'social good,' the notion of hegemony may further lead the discussion on the key findings. According to Fairclough, hegemony is a form that seeks consent rather than dominance over subordinate classes through concessions and ideological means (Fairclough, 1995, p. 92). In this regard, ethical motivations for social good, such as 'social participation,' 'democracy and equality,' and socioeconomic prosperity, are presented as means to achieve the hegemonic goal of 'being successful' as a government and gaining the 'consent' of members of society.

The 'how' and 'who' dimensions (RQ2 and RQ3) of this research also reveal a hegemonic/institutional focus in discourse, similar to the 'what' dimension discussed earlier in this chapter regarding discursive motivations. The concept of usage access, defined as the final step of fully participating in the digital realm (van Dijk, 2005), appears to be represented as 'digital excellence' in identified discourse in R5, R6, and R10. It is presented as a means for institutional good rather than social good when critically examined through CDA. R10, in particular, addressed usage access as a prerequisite for migrants' involvement in the labor market, with the notion that these groups should secure high-skilled jobs, actively participate in society, and contribute to Sweden's socio-economic development, for which possessing usage access is considered essential.

> Förmåga och möjlighet att bidra till och delta i det digitala samhället (…) (*Capability and opportunity to contribute to and take part in the digital society*) (Digitaliseringsrådet, 2018, p. 7)

The above-given line is an often-appearing rhetoric. On the surface, it may seem to be an expression with the indication of individual empowerment and social good but considering that CDA looks at how texts or sentences work within a sociocultural context (Fairclough, 1995, p.7), it is possible to argue that the rhetoric conveys the hegemonic discursive strategy with the focus being on these individuals' contribution to the institution rather than individual empowerment. On the positive side, the word 'opportunity' was brought next to 'capacity,' indicating

that individuals must have both skills, capacity, and material & motivational prerequisites/opportunities to contribute to society and be a participant. It is a focus on 'social good' in the discourse.

We acknowledge that digital participation is not solely rooted in economic wherewithal or marginalization (Thompson et al., 2014, p.38), which underscores the complexity of factors influencing inclusivity in the digital realm. However, an overemphasis on hegemonic and institutional aspects, coupled with a reliance on technological determinism—suggesting that widespread access to broadband internet, rapid digitalization, connectivity, and the ubiquitous possession of ICTs in households will automatically resolve digital inequality—may not effectively address the digital divides present in Sweden; thus, it may *not* inspire 'social good'. The prevailing discourse often revolves around the perspective of government, businesses, and the economy, emphasizing the importance of individuals possessing strong digital skills to participate in the labor market and contribute to economic growth. This perspective suggests that such participation will lead to greater innovation, economic prosperity, and a successful political agenda. Furthermore, there is a belief that access and participation inequalities can be resolved through digitalization and technological innovation (technological determinism).

For example, R5 puts forth the idea that digital platforms and shared data facilitate increased civil society, company, and individual participation, fostering co-creation, transparency, and stronger democracy. The discourse champions robust digital infrastructure, innovation, and leadership as vital support for societal needs, striving for equal participation, inclusivity, and economic growth, thereby emphasizing the critical role of digital inclusion in achieving social equality and a democratic society. Then, the underlying notion becomes that "the more digitized we are, the better individuals and communities participate in the digital society." While this argument may be considered valid to a certain extent, it runs the risk of perpetuating the existing status quo (Gölbaşı, 2017) by overlooking certain groups that are adversely affected by rapid digitalization, without addressing their specific inequalities and socio-economic challenges.

> A common opinion among policy-makers is that the digital divide problem is solved when a country's Internet connection rate reaches saturation. However, scholars of the second-level digital divide have concluded that the divides in Internet skills and type of use continue to expand even after physical access is universal. (van Deursen & van Dijk, 2019, p. 369)

As Deursen and van Dijk clearly asserted in the above quote, technology (thus increased digitalization in the Swedish policy context) does not automatically entail the inclusion of individuals lacking basic digital skills, nor does it necessarily boost motivation and confidence among those who have never used digital services before and now find themselves in the excluded side of the digital society. Furthermore, it may not automatically persuade those who intentionally avoid digital technologies or those who are *truly disconnected* (van Dijk, 2005, pp. 35). Moreover, the discourse may not fully consider individuals who are socially disempowered and lack material resources, perpetuating the digital divides and leaving them marginalized. Despite Sweden's relatively lower material gap compared to many developing countries, some people still face socio-economic and demographic obstacles that hinder their access to digital technologies.

Consequently, the digital divides continue to deepen, even if they are not visibly "increasing" (van Dijk, 2005).

Viewed through the lens of van Dijk (2005) and Fairclough's CDA, the key findings of this study posit that the prevailing institutional and technological focus, as well as the insufficient attention given to the needs of focus groups, reveal opportunities for improvement in policy discourse in Sweden, particularly within the agencies and bodies that generate this discourse. By adopting a more comprehensive approach that accounts for the complex realities and varied backgrounds of marginalized groups and acknowledges the broader societal implications, policymakers can better address the existing digital divides and work towards more inclusive and equitable digital participation for all.

As a final comment, it is essential to clarify that the critical discussions do not blame the speakers in the analyzed reports. As mentioned in Chapter 7.1.3., the overall rhetoric in the analyzed reports is rather balanced, presenting the political and institutional agenda of bridging digital disparities and achieving success in digitalization policies through both ethical motivations of social good, providing equality, and strengthening democracy, as well as socio-economic prosperity. However, critical discourse analysis delves beyond the surface; its interpretational dimension with Fairclough's model reveals underlying connotations or significant societal implications beneath the delivered rhetoric or word usage. Despite this balanced approach with social good and democratic and economic incentives, the prevailing discursive pattern stems from an authority and power perspective, targeting 'hegemonies within particular organizations' (Fairclough, 1992, pp. 9-10). This can also be viewed through Fairclough's definition of technologizing discourse, wherein the goal is to maintain and prolong the current form of things, or status quo, through public institutions or attempts to engineer future discursive practices (Fairclough, 1995; Gölbaşı, 2017, p.5). Therefore, it becomes crucial to delve deeper into the meanings, perceptions, and word usage conveyed by influential entities that possess the capacity to instigate change, shape policies, and directly impact societal progress. The analyzed policy reports from designated governmental agencies and bodies in Sweden, entrusted with the responsibility of formulating digital inclusion and digitalization policies, hold particular importance in this discourse analysis.

8.1 Shortcomings / Limitations

One of the primary limitations in this study was the outdated nature of van Dijk's RA theory as it dates back to 2005. Since then, the digital landscape has undergone significant changes, with ICTs becoming an integral part of our day-to-day lives. Some of van Dijk's arguments, like the limited need for digital engagement in a capitalist economy from the political motivations perspective (van Dijk, 2005, p. 165), do not comply with the current context. Apart from that, the inequalities arising from unequal distribution of resources and appropriation gaps remain valid (van Deursen & van Dijk, 2019). His foresight on the political discursive motivations in terms of addressing digital divides, such as social participation, economic growth, and ethical imperatives like equality and democracy, were interestingly consistent with the findings of this study. He accurately anticipated many developments, for example, the ubiquity of e-welfare and other e-government services (van Dijk, 2005, p. 176).

Another drawback was the combination of close reading discourse analysis and computational text analysis methods, which required considerable time and

computational resources, presented challenges and potential drawbacks. While text mining techniques were used as complementary, validating tools, their reliability for discourse analysis remains questionable. For instance, certain concepts like innovation and economic growth were prominently identified in close reading but did not frequently co-occur in the concordance analysis. The study acknowledged that distant reading analysis could provide valuable insights but cautioned against solely relying on it for a comprehensive or definitive approach to discourse analysis.

Lastly, and perhaps the most significant limitation and shortcoming in this study was that the potential of poststructuralist ideas from CDA to reveal intriguing results related to power relations and systematic flaws, on a large scale discourse beyond the mezzo scale motivations, remained untapped. The analysis mainly focused on surface-level discourses, with limited exploration of hegemonic themes and socio-political implications. While certain dominant rhetoric, like "Sweden must be the best in digitalization, and people should contribute," emerged conspicuously, these aspects were only briefly discussed in the findings and reflections. The inability to conduct more in-depth discursive analysis arose from the challenge of handling vast textual data from diverse entities with distinct orientations and agendas, thereby proving difficult for in-depth CDA.

8.2 Digital Humanities Aspect

Integrating a multi-method approach, this study has undertaken a comprehensive exploration by merging CDA with text-mining and exemplified the essence of DH research. Combining discourse analysis and 'computer-assisted content analysis,' as termed by Bennett (2015), not only presents a compelling avenue for exploration but also mitigates the limitations inherent in each individual method (Bennett, 2015, p. 985). While discourse analysis holds an interpretive nature, concerns arose within this study regarding potential oversights or erroneous conclusions. In this context, text-mining techniques functioned as supplementary tools. They facilitated the identification of intricate patterns that might have eluded CDA, while also corroborating and bolstering the themes identified through close reading. The combination of computational text analysis techniques and discourse analysis offers a valuable means to delve into matters where power and discourse intersect, which have consistently captivated interpretivists (Bennett, 2015, p. 997). This combination aptly enables the detection and validation of gaps in discourse, uncovering subjects that remain unaddressed or have faded from discussion (Bennett, 2015, p. 997). This study stands as an example to the potential of this approach.

Furthermore, the research assumes that the digital divide is a pressing concern within the realm of DH. The promotion and pervasiveness of digital technologies often come at the expense of those who lack access, perpetuating inequalities in societies at the digital forefront (Vassilakopoulou & Hustad, 2021). As we transition from analog to digital across various spheres of life, certain segments of society continue to lag behind, posing implications for nearly all disciplines. This is of particular concern for the field of DH, which inherently promotes digitalization with its focus on digital arts, cultural heritage, and digital humanistic research. The impact of disparities in "cultural capital," a concept articulated by van Dijk (2005), cannot be ignored—certain social groups face unequal access to cultural resources like libraries, museums, and archives.

Lastly, it has been observed that no previous study within the realm of DH has initiated a discourse analysis on policy reports on digital inclusion, while integrating

both close reading and computational text mining methods. This study has sought to bridge this gap and, in doing so, not only addressed its primary research objectives but also sought to experimentally merge computational DH methods with an intensive 'close reading' approach involving discourse analysis. The interdisciplinary and multidisciplinary nature of DH may lend importance to this endeavor, potentially benefiting future DH students, practitioners, and professionals.

9. Conclusion

This study sought to investigate key discursive motivations towards digital inclusion, perceived and prioritized access prerequisites, and the role of focus groups and resources in 10 carefully selected policy reports from various Swedish governmental agencies and bodies tasked with promoting digitalization policies. The motivation stemmed from the realization that while issues concerning the digital divide and digital exclusion hold significant implications for numerous disciplines, Swedish discursive patterns on the digital divide remained largely unexplored, particularly within the field of DH. To structure the research and arrive at concise findings out of such comprehensive study, a set of three-dimensional research questions have been formulated around ‘why’, ‘how’ and ‘who’. In the analysis, empirical data has been subjected to both close reading with discourse analysis and distant reading with DH text mining techniques, while simultaneously being informed by the theoretical framework of van Dijk's technology appropriation theory (2005) and partly drawing from Fairclough's critical discourse approach.

The findings shed light on an interconnected discourse across the three dimensions addressed by the research questions. Three key discursive motivations for pursuing digital inclusion were identified: 'social participation,' 'democracy and social equality,' and 'socioeconomic development.' The primary prerequisites identified to achieve digital inclusion were physical access and skill development, among the five sequential access categories proposed by van Dijk (motivational, material, skills, and usage) (2005). The focus group analysis revealed a particular emphasis on people with disabilities and functional abilities as the primary personal category addressed, while categories such as age, gender, and ethnicity received comparatively less attention. The potential implications of this bias were briefly explored through Fairclough’s CDA, which raised questions about prevailing institutional and hegemonic focus over social good. However, its application was limited to the discussion and future implications section.

While the study's key findings revealed discursive delivery of digital inclusion in Sweden, the additional reflections in the Discussion section through CDA revealed an overemphasis on institutional/hegemonic priorities over social good. The limitations in addressing the needs of marginalized groups were evident, particularly in focus groups, personal categories, and access prerequisites aspects. Addressing digital divides often included ‘technological determism’ rather than societal focus. Further research could explore how these discursive motivations or oversight on excluded groups, their needs as well as on underlying social structures perpetuate the status quo and affect social outcome. While the study briefly touched upon ethical aspects and societal repercussions through the CDA perspective, its primary analysis and findings relied on the mezzo-scale discursive patterns with Resources and Appropriation theory, without delving into the power relations aspects of CDA.

Source material

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Appendix 1: Code block (Python)

Code block 1. *Imported Python libraries and resources.*

```
import re
import nltk
from nltk.tokenize import word_tokenize
from nltk.stem import SnowballStemmer
from nltk.util import ngrams
from nltk.text import ConcordanceIndex  # Import ConcordanceIndex
from wordcloud import WordCloud
import matplotlib.pyplot as plt

# Load NLTK resources for Swedish
nltk.download('punkt')
```

Code block 2. *Text preprocessing with Swedish stopwords removal, word tokenizing, normalization by lemmatizing and generating n-grams.*

```
# Initializing stemmer for Swedish
stemmer = SnowballStemmer("swedish")

# Read the Swedish stopwords from a file
stopwords_file_path =
r'C:\Users\NurGu\PycharmProjects\report_scraping\assignmen\stopwords'
with open(stopwords_file_path, 'r', encoding='utf-8') as stopwords_file:
    swedish_stopwords = set(stopwords_file.read().splitlines())

# Reading the text file
text_file_path =
r'C:\Users\NurGu\PycharmProjects\report_scraping\assignmen\text'
with open(text_file_path, 'r', encoding='utf-8') as file:
    text = file.read()

# Tokenizing the text
tokens = word_tokenize(text)

# Removing stopwords and lemmatizing
filtered_tokens = [stemmer.stem(token) for token in tokens if
token.lower() not in swedish_stopwords]

# Generating n-grams up to 2 words
n_grams = []
for n in range(1, 3):
    n_grams.extend(ngrams(filtered_tokens, n))
```

```
# Frequency count of n-grams
freq_dist = nltk.FreqDist(n_grams)
```

Code block 3. *Word cloud visualizations with top 50 words in the corpus.*

```
# Generating a word cloud with the most frequent 50 words
wordcloud_data = {word: count for word, count in freq_dist.items() if
count > 1}  # Adjust the threshold as needed

# Preparing the data for WordCloud
wordcloud_text = ' '.join([' '.join(gram) for gram, count in
wordcloud_data.items()])

# Generate the word cloud
wordcloud = WordCloud(width=800, height=400, background_color='white',
max_words=50).generate(wordcloud_text)

# Display the word cloud
plt.figure(figsize=(10, 5))
plt.imshow(wordcloud, interpolation='bilinear')
plt.axis('off')
plt.show()
```

Code block 4. *Concordance analysis with KWIC (left and right contexts) for the three keywords 'digital inkludering' (digital inclusion), 'digital utanförskap' (digital exclusion), and 'digital delaktighet' (digital participation). Writing the concordance index as an output file.*

```
# Concordance Analysis
target_keywords = ["digital inkludering", "digital delaktighet", "digital
utanförskap"]

# Tokenize the text again for concordance analysis
text_tokens = word_tokenize(text)

# Create a ConcordanceIndex
concordance_idx = ConcordanceIndex(text_tokens)

# Perform concordance analysis for each keyword
context_window = 10  # Number of words in each context

output_file_path =
r'C:\Users\NurGu\PycharmProjects\report_scraping\assignmen\concordance_ou
tput.txt'  # My desired output path

with open(output_file_path, 'w', encoding='utf-8') as output_file:
    for keyword in target_keywords:
```

```
        output_file.write(f"Concordance for '{keyword}':\n")

        # Tokenizing the keyword
        keyword_tokens = word_tokenize(keyword)

        # Finding offsets for the first token in the keyword
        first_keyword_token_offsets =
concordance_idx.offsets(keyword_tokens[0])

        # Collecting offsets for the complete multiword keyword
        keyword_offsets = []
        for offset in first_keyword_token_offsets:
            if all(text_tokens[offset + i] == keyword_tokens[i] for i in
range(len(keyword_tokens))):
                keyword_offsets.append(offset)

        # Sorting and removing duplicates
        keyword_offsets = sorted(set(keyword_offsets))

        # Writing the concordance lines to the output file
        for line in keyword_offsets:
            left_context = ' '.join(text_tokens[line -
context_window:line])
            keyword = ' '.join(text_tokens[line:line +
len(keyword_tokens)])
            right_context = ' '.join(
                text_tokens[line + len(keyword_tokens):line +
len(keyword_tokens) + context_window])
            output_file.write(f"{left_context} << {keyword} >>
{right_context}\n\n")

print("Concordance results written as an output file!")
```

Appendix 2: Swedish word list

Table 14 *Swedish words appearing in the visualization outputs, i.e., word cloud, t-SNE and hierarchical clusters.*

Swedish	English
Anslutning	Connection
Använda	To use
Användare	User
Arbeta	Work
Arbetsmarknad	Labor market
Behov	Need
Bibliotek	Library
Bidra	Contribute
Bredband	Broadband
Delaktighet	Participation

Digitalisering	Digitalization
Företag	Company; business
Förmåga	Skills; capacity
Forskning	Research
Förutsättning	Prerequisite
Förvaltning	Administration
Funktionnedsättning	Function disability
Hushåll	Household
Infrastruktur	Infrastructure
Inkludering	Inclusion
Invandrare	Immigrant
Klyfta	Divide
Kommun	Municipality
Kompetens	Competence
Kostnad	Cost
Kunskap	Knowledge
Möglighet	Opportunity
Nyanlända	Newcomers
Öka	Increase
Område	Area
Regering	Government
Samhälle	Society
Samverka	Cooperate
Stöd	Support
Sverige	Sweden
Teknik	Technology
Tillgång	Access
Tillgänglig	Accessible
Tillgänglighet	Accessibility
Tjänst	Service
Uppdrag	Assignment; task
Utanförskap	Exclusion
Utbildning	Education
Utmaning	Challenge
Utveckling	Development
Veksamhet	Business; organization
Myndighet	Authority