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Acceptance factors influencing the willingness of multiple eID usage in Sweden

An analysis of factors influencing acceptance and adoption of alternative eID solutions to BankID in Sweden

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Factors influencing the willingness of multiple eID usage in Sweden: An analysis of factors influencing acceptance and adoption of alternative eID solutions to BankID in Sweden

SWEDISH TITEL: Faktorer som påverkar viljan att använda flera eID i Sverige:

En analys om acceptansfaktorer och viljan att använda alternativa eID-lösningar till BankID på den svenska marknaden

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SUMMARY / ABSTRACT (Max. 200 words):

This study aimed to examine the factors that influence the Swedish people's willingness to adopt multiple eID services. Utilizing the Unified Theory of Acceptance and Use of Technology (UTAUT) as a foundational framework, we combined insights from previous research to design our survey, which received 300 responses divided into several age categories. This quantitative approach allowed for a broad generalization about the Swedish population more accurately. A statistical analysis was performed using the R programming language to interpret the data. The findings reveal that ease of use and significant perceived benefits are the primary drivers of willingness to adopt multiple eID services. Additionally, the well-established position of BankID demonstrates a high trust level and wide availability, setting a high standard that new eID services may struggle to meet. These findings underline the challenging market for new eID-services in Sweden and highlights the important role of innovation, trust, availability, and service efficiency in influencing user willingness to adopt multiple eID. Insights derived from this study enhance and contribute to our understanding of the factors that contribute to the acceptance and increased willingness to adopt such technologies.

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1 Introduction

The introductory section begins with a background on the topic of the essay, and is then followed by a description of the problem area. This section continues by addressing the research question and the purpose of this study. Finally, this section is finished by the studies delimitations.

1.1 Background

According to Husz (2018) the history of identity documents such as fingerprints, which can be traced back to colonial and wartime administrations and crime control, shows the historical importance of identification of human beings. Furthermore, being able to personally identify an individual has also been emphasized in other contexts throughout history, for example in the purpose of a post-mortem, where not only the cause of death is important to determine but also the identity of the person. Other contexts where the examination of one's identity has been, and still is, important, are those regarding examinations of statistics, finance, insurance and legality. (Borsay et al., 2024).

Today, when a Swedish citizen wants to identify, request parental or sickness benefits through the Swedish Social Insurance Agency website, they have to identify through BankID or other means of accepted electronic identification. This way of online identification is further used for day-to-day payments but also for online contacts with public authorities, healthcare systems, to mention a few (Husz, 2018). This demonstrates the tight coupling and dependency between electronic identification services and the Swedish society. Gartner (2023) claims how today's modern society is becoming more digitized and the importance of digital identity becomes even more fundamental. This trend can be seen by looking at the amount of users BankID has, which amounted to 8.5 million users in 2024 (BankID, n.d). This further highlights how dependent our society is on digital infrastructure, and the impact electronic identification services have on Swedish society. The importance of offering a safe, trustworthy way of identifying yourself online can be seen, not only, from the amount of BankID users but through the eIDAS-regulation as well, which aims to facilitate secure electronic transactions across EU member states. Its purpose is to enhance trust in electronic identification transactions by providing a stable and secure process. This will allow users to carry out activities like online banking, filing taxes, and signing documents electronically, easier and safer. Member states are required to have the infrastructure to recognize and accept eIDs from other EU countries (European Union, 2023). Ensuring the security and simplicity of our online identities and transactions is important, especially when considered at the European level, highlighting the need for these digital interactions to be as reliable and straightforward as our offline ones. This shows the importance of supplying a trustworthy and secure service to the public.

Previous studies have noted that adoption of e-government services depended on the overall satisfaction of consumers. One of the most notable obstacles for user adoption was the lack of confidentiality and trust (Rodrigues et al., 2016). Trust as a factor, for acceptance, was further emphasized in the study conducted by Tsap et al (2020). In addition, this study found that

multiple eID-services to be beneficial and effective for a stable, functioning electronic infrastructure.

Even though Sweden has competitive eID-services within the industry, there is a gap between the actors in the market. The 2024 annual report, Freja eID Group AB disclosed significant user growth, with figures rising from 791,000 users to just below one million by the end of 2023 (Freja eID Group AB, 2023). Despite this increase, Freja eID remains considerably behind BankID in terms of market reach within the eID sector. BankID has a vast majority with over 8.5 million users, corresponding to 99.4% coverage among ages 18 to 67 (BankID, 2024). The difference in user numbers between BankID and Freja eID indicates a challenge in the adoption of Freja eID as an alternative electronic identification service. This suggests that there might be barriers or lack of incentive for users to switch from BankID to Freja eID. In order to understand this gap, user-acceptance, which is the acceptance a user has for new technology, needs to be analyzed. Venkatesh et al. (2003) developed the Unified Theory of Acceptance and Use of Technology Model (UTAUT) to understand the factors influencing the acceptance and use of technology. This model, widely applied to analyze acceptance of information systems (Khechine, Lakhal & Ndjambou, 2016), will also aid in identifying key elements that secondary eID-systems should incorporate to enhance their acceptance.

To contribute to the field of informatics, this thesis will research Swedish Citizens and their use of eID-services. This will be done through quantitative research in the form of a survey, which will be designed using the UTAUT and findings of previous research.

1.2 Problem Statement

Digital infrastructure is becoming more exposed as we progress into a fully digital world, and we are becoming more dependent on it. This highlights several concerns about privacy, security and what potential risks it could have on the society as a whole. With a growing amount of cyberattacks, a diversified asset of systems can reduce the risk of highly damaging attacks (*Centrum för cybersäkerhet*, 2022). The Swedish government institute *Finansinspektionen* highlights these issues and proposes several improvements within the electronic identification industry (*Finansinspektionen*, 2022). Some of the proposed improvements are characterized by more intensive supervision, and some proposals point out that socially important infrastructure needs to accept multiple digital identification systems (*Finansinspektionen*, 2022). The need for several digital identification systems are further strengthened by the large amounts of identification being done solely through BankID. In 2021 the identification service reached, on average, 17 million identification-requests per day, which amounts to almost 200 requests per second (*BankID*, n.d). Previous technical problems with BankID have resulted in downtimes of several hours, which can have a serious consequence on society and infrastructure. Agency For Digital Government (2022) believes that it is not unlikely that some important digital services entirely stop working if an eID system such as BankID would shut down. Therefore, the need to diversify these services and encourage users to identify with more than one identification system could be considered necessary, consequently researching the acceptance of multiple electronic identification services in the Swedish people becomes highly relevant.

In order to bring light to previous research conducted on the acceptance and risks of eID, as well as, the impact it can have on society, we looked at research by Halperin & Backhouse (2012) who categorize the risks associated with electronic identity (eID) systems into information, economic, and socio-political risks. Information risks include data integrity, availability, and confidentiality concerns, such as inaccurate data leading to losses and unauthorized access to personal information. Economic risks highlight the potential financial burden on individuals and the possibility of inefficient use of public funds. Socio-political risks involve fears of surveillance and misuse of data by government entities, contributing to mistrust in the authorities managing these systems. The study emphasizes the need for transparency and strong security measures to build trust and acceptance of eID systems among users.

While conducting a comprehensive search of academic databases for this thesis, a notable knowledge gap was identified regarding the acceptance of multiple eID-services in Sweden. Current literature primarily addresses the acceptance of individual eID-services. However, studies focusing on the simultaneous adoption of multiple, similar eID-services are noticeably less. This gap highlights an opportunity for our research to explore and provide insights into the challenges users face when adopting a broader range of eID-services. Our investigation aims to fill this gap by identifying factors and potential barriers influencing the willingness to accept multiple eID-services.

1.3 Research question

What acceptance-factors among Swedish eID users influence their willingness to adopt *multiple* electronic identification services?

1.4 Purpose

This research aims, through a survey, to assess the public's readiness and acceptance to adopt multiple eID-services beyond the widely used BankID, with a specific focus on the willingness towards adopting a secondary service such as Freja eID. The survey will examine factors influencing the acceptance and willingness of multiple eID-services and identify potential barriers to the adoption of another eID-service.

1.5 Delimitations

This paper will analyze acceptance of multiple electronic identification systems, with a main focus on the Swedish eID systems BankID and Freja eID, however will not exclusively limit to these. Furthermore, this paper will not be discussing or explaining the technical aspect of the aforementioned services. The scope of this research will not extend beyond the Swedish market.

2 Literature Review

This thesis's literature review starts with a definition of the central concept, eID, followed by an exploration of the European eIDAS Regulation. Thereafter, the chapter proceeds to review previous literature before delving into the explanation of the central theoretical framework, UTAUT.

2.1 Electronic identification (eID) and electronic identity

A document published by The European Commission (n.d) defines electronic identities (eIDs) as digital options of which individuals can prove their true identity electronically, in order to gain access to various platforms. This definition is in contrast with national identity cards, which are physical documents controlled by national authorities for specific purposes, such as passports for international travel, or driver's licenses for verifying the right to drive motor vehicles. While there may be some overlap between these concepts, they are distinguished by their distinct purposes and the authorities responsible for distribution. The absence of eID systems would severely limit access to more complex digital infrastructures, such as tax declaration systems, downgrading users to only accessing generic information (European Commission, n.d). Such reasons, as access to important services with full trust and privacy, no matter the location or device, motivates that electronic identification is one of the most important trends for modern online applications according to Sharif et al. (2022). Beyond the authenticity of a user, further information can be held with electronic identities in terms of access levels, enabling restrictions to only authorized resources (Sharif et al., 2022). This underscores the importance of eIDs in enabling access, especially to digital e-government services. The availability and broad acceptance of multiple access points are important for preventing the disruption of such services in the event of eID system unavailability (European Commission, n.d).

To meet the challenges highlighted by the European Commission, the evolution and widespread adoption of eID systems become important. As society grows to require more digital infrastructure, the demand for robust, secure, and user-friendly eID systems becomes further valuable, reflecting the important role these systems play in facilitating secure and efficient access to digital services. A study by Axelsson and Melin (2012) underscore this point, highlighting how usability and security are not only technical requirements but foundational to building trust in eID systems among users. The study puts a further emphasis on that a lack of trust in citizen attitudes towards the eID systems may create a lack of trust in public e-systems and other electronic systems provided by the government (Axelsson & Melin, 2012).

2.2 eIDAS Regulation

The eIDAS regulation by the European Union, is designed to simplify and enable cross-border transactions (European Union, 2023). Its core objective is to enable the mutual use of national eID systems among EU countries and enhance trust, which is essential for the digital society. This regulation is grounded in the belief that trust is needed for encouraging citizens and businesses to engage in digital transactions, as quoted from the EU: “Without TRUST, citizens and businesses are reluctant to engage in digital transactions.” (European Union, 2019), this remains a strong belief.

Furthermore, eIDAS encourages all member states to acknowledge and trust one another’s eID schemes and trust services. This mutual recognition aims to minimize the risk of money laundering and combat digital fraud (European Union, 2023). By establishing a shared network, eIDAS utilize the integration of national eID systems, allowing for their seamless use across EU borders. This interconnected approach not only supports secure and efficient electronic interactions but also significantly contributes to the digital growth within the European Union (European Union, 2023), further highlighting the importance of security and trust in order to encourage user acceptance. The impact the eIDAS regulation had on digital growth can be seen through the shift in the development of online transactions and its ability to increase the credibility of electronic communications within the European Union (Gregušová et al., 2022).

A clear demonstration of eIDAS effectiveness can be seen through its implementation in a number of national contexts. In Italy, the regulation has greatly increased the adoption of eID and e-government services demonstrating how eIDAS enables secure and efficient access to government services (Pöhn et al., 2021). In Estonia, eIDAS has been key in achieving wide public acceptance and use of digital identities. The success factors which closely relate to UTAUT, include the system ease of use, its functionality, and emphasis on user security and privacy, all these factors are important for building trust and encouraging users to engage with digital services (Pöhn et al., 2021).

2.3 Acceptance and success for eID

2.3.1 User Acceptance and eID: Concepts and Challenges in Adoption

After a descriptive text of the terms “user acceptance” and “acceptance”, a review of previous literature will follow. Starting with the term “user acceptance”, a quote of Dillon (2001) will be shown. The quote goes as follows: “User acceptance can be defined as the demonstrable willingness within a user group to employ information technology for the tasks it is designed to support” (Dillon, 2001, p.2). He also places a strong emphasis on the value in understanding the factors influencing the adoption of technology. Continuing, Cambridge Dictionary (2024) defines acceptance as “general agreement that something is satisfactory or right, ...” and Collins Dictionary (2024) defines it as “the act of accepting or the state of being accepted or acceptable”. When terms such as “user acceptance” and “acceptance” are used throughout this essay, this compiled definition of acceptance should be taken into account.

Understanding these definitions of “user acceptance” and “acceptance” becomes important as we examine the digitalization of society, which has changed how identities are verified within both the public and private sectors, with eID serving as a cornerstone of digital infrastructure around the world. Estimates suggest the economic benefits of successful eID implementations could amount to 3-4% of a country’s GDP (Walke et al., 2023). Walke et al. (2023) presents an in-depth exploration of what makes a digital eID successful, focusing particularly on Germany. Their study highlights the significant variance in the success of digital identity systems across the EU. Despite the important role digital identities play in modern society, the low adoption rate of eID solutions in Germany compared to other EU countries poses challenges and questions regarding the terms of their integration success. For instance, only around 7% of German citizens have utilized the eID service, while Estonia showed up to 66% eID usage. Such usage gaps are addressed by the eIDAS regulation from the EU, which aims to create a unified platform to which EU countries can connect their national eID systems (Walke et al., 2023).

2.3.2 Public-Private Sector

The findings underline the obstacles and driving forces behind successful eID solutions. A link between the public and private sectors, coupled with competition, is highlighted as a driver of success, meaning both a competitive and a collaborative environment between public and private sectors are factors that may contribute to a successful implementation of eID (Walke et al., 2023). There are indications that the Swedish eID market is characterized by such a public-private link, as BankID and Freja eID both have established strong public-private partnerships with vast collaborations in the public sector. Moreover, Walke et al. (2023) found that introducing a service that requires new and challenging behaviors from users could be a hindrance for success. Thus, overcoming user inertia when transitioning from one eID to adopting yet another, causes a significant challenge.

2.3.3 Consumer Adoption of eID: Trust, Security, and User Preferences

To further understand potential factors leading to successful adoption of eID, a study by Rodrigues, Sarabdeen, and Balasubramanian (2016) investigated the factors influencing consumer adoption in e-government services, utilizing the UTAUT model. They found that adoption depends heavily on consumer satisfaction, which is significantly affected by confidentiality and trust. Improvements in security and private information handling policies can increase consumer trust, thereby contributing to the success of electronic initiatives by the government (Rodrigues et al., 2016). The study emphasized that trust in the government is essential for the acceptance of technology-enabled processes and that identifying these barriers is important. Rodrigues et al. (2016) analyzed factors such as Confidentiality and Trust (CT), Facilitating Conditions (FC), Attitude toward Using Technology (AT), Performance Expectation (PE), Effort Expectation (EE), Overall Satisfaction (OS), Internet Usage (IU) and concluded that CT, FC, AT, PE, and EE were significant, with CT and AT having greater impact on a successful adoption. Moreover, OS and IU were also deemed significant for adoption. The study continues by arguing that the presence of security risks can slow down the development of e-government services by causing users to question the integrity of the government, leading to slower adoption rates (Rodrigues et al., 2016).

While Rodrigues et al. (2016) underscore the foundational role of trust and confidentiality in the adoption of e-government services, the findings of Tsap et al. (2020) complement this perspective by highlighting how trust, alongside security, functionality, and the availability of multiple authentication options, shapes public acceptance and preferences for eID systems. A study by Tsap and his colleagues (2020) on public acceptance and user preferences for authentication options in Estonia also found that trust in the service provider plays an important role in public acceptance, with security being another significant factor (Tsap et al., 2020). Functionality, including aspects like speed, was identified as key in encouraging eID system usage. The study also emphasized the importance of ease of use or convenience, alongside the availability of multiple eID options for authentication, as important to user preference and public acceptance (Tsap et al., 2020). According to Tsap et al. (2020) offering several authentication options, as Estonia does, is not only beneficial for stable e-government functioning but also appeals to users by providing variety, further underlining the significance of speed, convenience, security, and the availability of multiple eID options. Building on this understanding of what drives user acceptance, the concept of relative advantage, as explained in the Diffusion of Innovations by Everett Rogers (1995), discusses the impact of familiarity and the need for significantly better features to drive adoption.

2.3.4 Diffusion of Innovations

Relative advantage, as explained in the Diffusion of Innovations by Everett Rogers (1995) plays an important role in the adoption of new technologies. It aims to measure the degree to which a system is perceived as better than the system it means to replace. The key factors contributing to relative advantage are improvements in efficiency, ease of use, effectiveness and overall usefulness. When the perceived advantages are great, a system is more likely to be adopted Rogers (1995).

The concept of relative advantage is closely related to user satisfaction with current systems. When users are satisfied with their current services, they often perceive less advantages in new innovations (Rogers, 1995). According to Rogers (1995), this can decrease their willingness to adopt new similar (or identical) services, due to that the current use is sufficient enough, and new innovations must have significant improvements in order to be considered needed. García-Avilés (2020) continues explaining the Diffusion of Innovation by Rogers (1995), by claiming that people do not evaluate services through expert opinions, but rather through their friends who have adopted the innovation. This highlights the social impact of adoption, which is also a strong factor in the UTAUT model.

Moreover, satisfaction with the current system can increase the perceived risk among potential adopters. They might prefer to maintain the “status quo”, meaning they prefer to maintain their current situation, rather than trying the unknown associated with a new system. The uncertainty about the actual benefits of the system could contribute to a user putting it off or completely avoiding adopting said system (Rogers, 1995). This feeling of maintaining the current status is further enhanced by the comfort and familiarity associated with the current system, underscoring how deeply satisfaction influences the adoption process (Rogers, 1995).

Through careful examination and integration of these studies, we can see the multifaceted nature of eID system success and the importance of factors such as public-private collaboration, user behavior adaptation, trust, security, and the functionality of eID systems. The insights from these diverse studies offer a comprehensive view of the challenges and considerations important to the successful implementation and adoption of eID systems across different contexts.

2.4 Unified Theory of Acceptance and Use of Technology (UTAUT)

Leveraging the insights learned from this chapter of the thesis will improve the survey component of this research. It will guide the design of suitable questions, ensuring they are asked effectively and that they have meaningful responses that provide valuable insight on the Swedish populations willingness to adopt multiple eID-services.

Introducing UTAUT in the context of its predecessor, Technology Acceptance Model (TAM) provides insights into the evolution of understanding user interaction with technology. TAM was created by Davis and his colleagues (Davis et al., 1989) which puts forward that there are two primary factors, Perceived Usefulness (PU) and Perceived Ease of Use (PEU), in determining a users acceptance of technology. It aims to simplify technology adoption into these key components, highlighting the users belief in the technology and its ability to enhance performance and ease of use as concrete factors for adoption rates (Davis et al., 1989).

Building upon the foundational principles of TAM, the Unified Theory of Acceptance and Use of Technology (UTAUT) by Venkatesh, Morris, Davis, and Davis (2003) aims to expand the understanding of user acceptance. Venkatesh and his colleagues (2003) introduce a combined viewpoint on how users accept information technologies, with the primary focus on usage as the dependent variable. Previously, a number of models were created and shared within the research community building upon insights from information-systems, sociology, and psychology to understand the reasons as to why people adopt new technologies. Venkatesh and his colleagues (2003) conducted a selection and analysis of eight models related to the subject of user acceptance. The result of this analysis was the development of the Unified Theory of Acceptance and Use of Technology (UTAUT) Venkatesh et al. (2003). This model is described as a practical tool for evaluating the potential success of innovations within technology, as well as, pinpointing the key factors that influence user acceptance.

After conducting their analysis, Venkatesh and his colleagues identified four primary factors: *Performance Expectancy*, *Effort Expectancy*, *Social Influence*, and *Facilitating Conditions* as the main factors for users acceptance and usage behavior towards a system. They also define four additional elements *Gender*, *Age*, *Experience*, and *Voluntariness of Use* that reportedly influence the aforementioned factors. The interaction between these factors and the elements provides deeper insights and opens up for a thorough analysis.

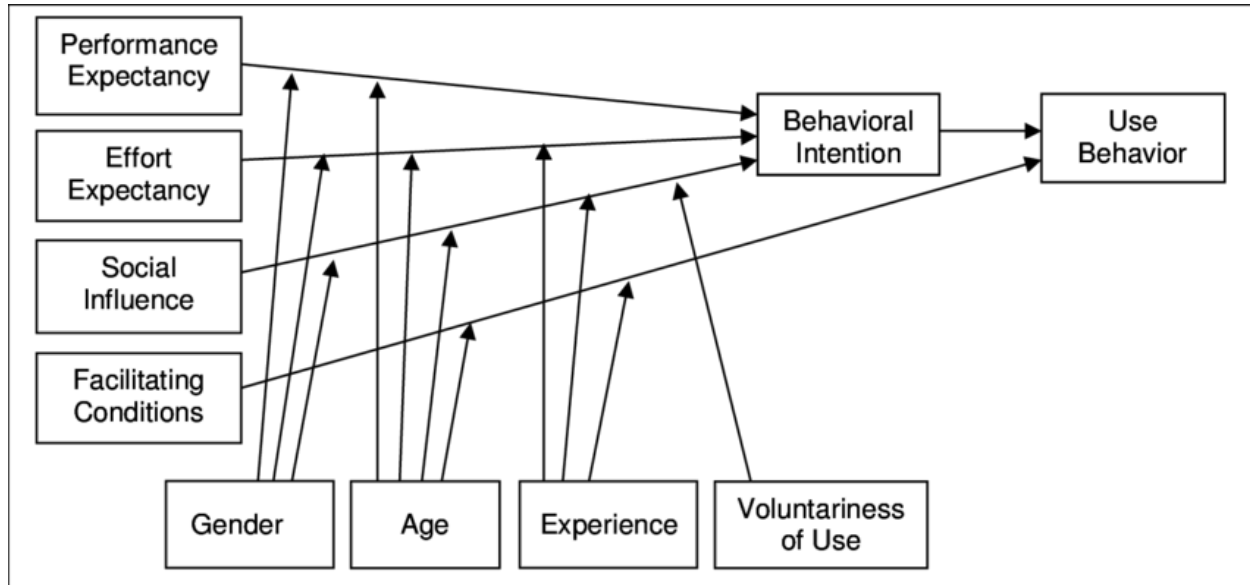


Figure 2.4: The Unified Theory of Acceptance and Use of Technology model (Venkatesh, Morris, Davis & Davis, 2003, pp.447)

The first factor, *Performance Expectancy*, reflects the extent to which a user perceives the system to be beneficial in improving their job performance. Across all models considered, this factor is shown as the most significant predictor of the intention to use technology.

Effort Expectancy, a central factor in the adoption and ease of use of technological systems, reflects the degree to which an individual believes that using a system will be free of effort. This concept, closely related to the “*perceived ease of use*” within the Technology Acceptance Model (TAM) holds significant importance in the initial stages of technology adoption. *Effort Expectancy* is another factor influenced by various other factors, including the anticipated effort required to learn the given system and the individuals past experiences with similar technologies. The anticipated learning effort, or the perceived difficulty of becoming capable with a new system, plays an important role in shaping *Effort Expectancy*. According to Venkatesh et al. (2003) users estimate the effort needed based on their initial interactions and the complexity of the systems interface and functionalities. Similarly, an individuals past experiences with similar systems can greatly influence their perception, often lowering the anticipated effort and making the new system seem more accessible and less scary (Venkatesh et al., 2003). Venkatesh et al. (2003) highlight the importance of *Effort Expectancy* in predicting an individuals intention to use technology, particularly during its adoption phase. They note that as users gain familiarity and get better with the technology, the importance of *Effort Expectancy* becomes less over time. This suggests that developers and implementers should prioritize minimizing perceived effort, to ease the learning curve for new users.

Social Influence is a factor in the UTAUT model that measures the extent to which individuals perceive that important people or groups within their social or professional circles think they should use a new information system. This is deeply rooted in the concept of *Subjective Norm* from the Theory of Reasoned Action (TRA), which claims that the beliefs of people we value can significantly change our intentions. On the subject of technology acceptance, this means that if people important to us, such as supervisors, colleagues, or even friends believe we should learn

a new technology, we are more likely to do so (Venkatesh et al., 2003). Venkatesh et al. (2003) underline the particular impact *Social Influence* has in mandatory settings, in cases where the decision to use a system is a must and requirement rather than an individual's choice. In such contexts, the perceptions of what others believe affects a user even more. Venkatesh et al. (2003) also highlights that an individual's pressure to follow norms and be viewed positively can, particularly within one's professional community, become a driver for technology acceptance even if the decision to use the system is not voluntary.

Facilitating Conditions address the extent to which an individual believes that an organizational and technical environment supports the use of a system. This factor is essential for understanding technology acceptance, as it highlights the importance of practical support and resources in enabling users to effectively adopt and utilize new technologies (Venkatesh et al., 2003). Venkatesh et al. (2003) emphasize the important role that environmental and organizational factors play in the successful adoption and use of technology. They suggest that even if individuals have a positive attitude towards a new system, and perceive it to be easy to use as well as useful, the lack of support and infrastructure for the user can hinder its acceptance and usage. This further emphasizes the significance that *Facilitating Conditions* have on technology acceptance.

2.5 Literature Summary

This chapter examined the role and impact of electronic identification (eID) in modern society. It starts with a definition of eID, distinguishing it from traditional physical IDs and emphasizing its importance for accessing digital services. The discussion then moves to the eIDAS regulation, which aims to enhance trust and facilitate cross-border transactions within the EU by enabling mutual recognition of national eID systems. Furthermore, the literature section also explored user acceptance, utilizing definitions from Dillon (2001) and frameworks like the Unified Theory of Acceptance and Use of Technology (UTAUT), to understand the factors driving the successful adoption of eID systems. This framework is widely utilized and highly cited (Williams, Rana & Dwivedi, 2015). These key studies highlight the significance of security, trust, and user-friendly designs in encouraging broad acceptance and integration of eID systems.

Table 2.5: Literature Summarisation

Main Area	Keywords	Literature
eID and Electronic Identity	eID Access Levels Trust Digital Infrastructure	European Commission (n.d) Axelsson & Melin (2012) Sharif, Ranzi, Carbone, Sciarretta, Marino & Ranise (2022)
eIDAS Regulation	Trust Cross-Border Transactions Mutual Recognition	European Union (2023) European Union (2019) Gregušová, Halášová & Peráček (2022) Pöhn, Grabatin & Hommel (2021)
Acceptance and Success for eID implementation	Adoption Barriers User Acceptance Economic Impact Technology Adoption Public-Private Partnership Non-adoption Confidentiality and privacy Trust in government Multiple eID options for authentication	Dillon (2001) Walke, Winkler & Le (2023) Rodrigues, Sarabdeen, & Balasubramanian (2016) Tsap, Lips & Draheim (2020) Cambridge Dictionary (2024) Collins Dictionary (2024) Orr (2003) García-Avilés (2020)
Technology acceptance	Performance Expectancy Effort Expectancy	Davis, Bagozzi & Warshaw (1989) Venkatesh, Morris, Davis

	Social Influence	& Davis (2003)
	Facilitating Conditions	Williams, Rana & Dwivedi (2015)
	Behavioral Intention	Khechine, Lakhel & Djambou (2016)
	Use Behavior	Rodrigues, Sarabdeen, & Balasubramanian (2016)
	Availability	Tsap, Lips & Draheim (2020)
	Trust	

3 Method

This section will be presenting the chosen research method, web surveys. It will continue by explaining the design of the questionnaire, in detail. Afterwards a description of the target quotas will be displayed. It will be followed up by a description of how the data analysis will be performed, how the data is gathered, alongside with the validity and reliability.

The method of this study will, through a survey, explore the factors for user acceptance of multiple eID. This will be done by looking at several factors about perception towards eID, with an emphasis on comparing users who have already adopted more than one eID with users that have a single eID. This is to understand the underlying differences in attitudes toward eID between the groups. Quantitative statistical analyses may open a nuanced understanding of differences between the groups, and open up for further interpretation and discussion.

3.1 Literature Search Strategy

The findings discussed in the literature section of this thesis were identified through a comprehensive literature review. The search process involved utilizing various academic databases, including LubSearch accessible through Lund University, as well as Google Scholar. To ensure a broad and thorough search a multitude of keywords and topics were searched and combined in different ways. These keywords were selected based on their relevance to the topic of electronic identification (eID) and the adoption of such systems. The keywords were:

- eID
- eIDAS
- Acceptance
- Adoption
- Diffusion of Innovations
- Public-Private sector
- UTAUT

Other searched words were:

- Framework
- Governmental regulations
- Digital infrastructure
- Non-adoption

The selection process for studies included in the literature review were based on their relevance to the research objectives and their contribution to understanding the factors influencing eID adoption. Peer-reviewed articles, conference papers, academic publications, Government-publications and in some cases dictionaries, were considered and added in the literature review.

An illustration of the search process is demonstrated using the keyword "eID" in the LubSearch database; this search provided 1,384 results. To refine these results, the Academic, Peer-Review

filter was applied, reducing the number to 1,000. Further filtering was achieved by adding the term "regulation" to the search, resulting in 121 results, thus enhancing the comprehensiveness of the search.

After conducting the initial search, relevant studies were identified and systematically reviewed. The review process involved analyzing the titles and abstracts of the aforementioned articles to determine their suitability for this study. The articles, in their entirety, were then chosen based on their potential suitability and alignment with the themes of the literature review, such as, eID acceptance, user satisfaction, and diffusion of innovation.

Table 2.5 provides a summary of the gathered literature, sorted by the principal themes identified in the review. It includes relevant keywords associated with each theme and lists the sources that address them. This aims to provide a quick overview of the key findings and insights gathered from the reviewed literature, facilitating a deeper understanding of the factors influencing eID adoption.

3.2 Choice of method

In concentrating on the analysis of frequently used eID systems like BankID and Freja eID within Sweden, this study seeks to analyze a wide distribution of the population categories, aiming to get a broader understanding and generalization of the Swedish population. To achieve this, we focus on individuals aged 18-70. Since the purpose of our research is to understand the factors, willingness, and attitude towards accepting eID-services among the Swedish people, gathering data from a wide variety of ages is important to accurately represent Swedish society in its entirety. However, a more nuanced generalization would require a more fine-grained sample, but this is deemed too impractical for the range of this study. For example, reaching out to minors would require parental approval, making the process more difficult. Quantitative methods, particularly surveys, are ideal for this study as they can quickly reach a broad audience across many different geographical locations (Wyatt, 2000). Furthermore, this method allows us to fetch large amounts of data effectively, supporting our aim to provide a comprehensive analysis of eID acceptance across Sweden.

3.2.1 Survey as Research Method

To thoroughly review the acceptance levels among Swedish citizens, a quantitative method such as surveys is, as previously mentioned, beneficial. Surveys facilitate access to a wide demographic range, offering a broad view of the population's perspectives for more accurate generalizations. This approach enables the exploration of a greater amount of subjective experiences and beliefs. When combined with statistical analysis, it is possible to better understand intersubjective truths or establish a general consensus, as many subjective thoughts may form a proximity to an objective answer. This methodology aligns with the insights presented in "*Research Design: Quantitative, Qualitative, Mixed Methods, Arts-Based, and Community-Based Participatory Research Approaches*" by Leavy, P. (2017), which underscores the value of survey research in quantitative studies for capturing a broad spectrum of opinions.

3.2.2 Web-Based Surveys

As mentioned previously, surveys are used for gathering detailed information quickly from a lot of people. Even though we have many ways to conduct surveys, such as by mail or email, this project uses a web survey. This choice is based on insights from Wyatt (2000), who discusses the benefits and challenges of different survey methods.

Wyatt (2000) talks about two main things to consider with surveys: choosing participants and collecting their answers. For choosing participants, researchers can have a *lot of control* by picking specific people from a list, *some control*, but not as much, by sending surveys to a group they know, or *no control* by letting anyone take the survey. This flexibility is important for this thesis because it lets us reach a wide range of people, so that we can represent the general Swedish population. Despite the wide range this methodology brings, it has a limit of only targeting people with access and adequate skills of the internet. Although, this is not considered a problem in this thesis since the respondent, before answering the survey, must have access to the internet and have a certain technical skill to use eID-services such as BankID or Freja eID. The underlying issue of a web survey rather lies in the lack of involvement with the researchers, since the participants must understand the questions themselves without assistance (Rea & Parker, 2014; Jacobsen, 2000). We have tried to tackle this issue by including definitions or explanations for questions which, we believed, could lead to misunderstandings. Furthermore, an email to one of the authors was provided in the survey, in case any participant wanted to ask questions.

Wyatt (2000) continues talking about when it comes to collecting answers where he points out that web surveys are great because they make it easy to gather and look at the data since it is captured electronically. Our thesis will be using data analysis to find patterns and prove significant statistical differences in the data. Wyatt (2000) finishes by touching on the potential limitations of web surveys, by arguing that despite their advantages, web surveys are not without limitations. Concerns regarding the generality of results and the potential for bias, such as multiple responses by a single participant. However, this research addresses this by hosting the survey through Sveapanelen, which allows the user to contribute only once, since the survey becomes unavailable to them after completion, thereby preserving the integrity of the data collected (Flow Group AB, 2024).

In conclusion, the selection of a web survey as the method for collecting data for this thesis is a deliberate choice, strengthened by the advantages found by Wyatt (2000). The ability to efficiently gather data from a wide variety of ages, in conjunction with the enhanced accuracy of data analysis, makes web surveys a great tool for achieving the objectives of this research.

3.2.3 Determine Survey Questions

Introduction

This survey is structured into a single section that takes into account participants regardless of the number of eID-services they use, meaning that both groups get asked the same questions. This approach facilitates the collection of data while allowing for nuanced analysis tailored to the participants specific experiences with eID-services. Thus, the design of the survey questions are made to be relevant to all participants. The survey, in its entirety, can be found in Appendix C.

For analytical purposes, the responses will be categorized and analyzed based on two distinct groups: those utilizing multiple eID solutions and those relying on a single eID service. This categorization enables a targeted analysis that takes into account the unique contexts of each groups experiences. The following paragraph will provide a short description of the thought process and structure of the survey. This is done in order to facilitate transparency, which is important for the reliability of a study.

Three main parts build the foundation of the survey. It will begin with an introduction, which includes necessary information such as the research subject, the survey's objectives, anonymity and how participants contribute to our study. Adding to the introduction section is demographic data, including a question about the participant's age, and about their use of eID-services. Following the introduction, we will ask questions which explore a number of factors based on the Unified Theory of Acceptance and Use of Technology (UTAUT) model. The survey ends with questions based on previous research.

The questions in this survey were designed with two ways of answering, these are by a Likert scale or by answer alternatives. But the questions have been designed, as far as possible, to be answered on a Likert scale (e.g., 1=Strongly Disagree to 7=Strongly Agree). Author Taherdoost (2019) supports this choice by arguing that the seven-point scale is best overall, and yields the most accurate answers. Furthermore, the Likert scale will allow for nuanced answers, which allows the study to capture different degrees of agreement or disagreement. This type of format contributes to the ability to perform analysis of patterns in acceptance, and also allows for identifying areas which might need further investigation. To ensure that our survey accurately reflects the perspectives of all participants, the language of the surveys is important in order to facilitate a smooth process for the respondents.

Although this thesis is composed in English, the survey will be conducted in Swedish. This decision is made considering that the survey targets Swedish citizens. By utilizing Swedish, we aim to facilitate a smoother and more efficient response process for the participants, reducing any potential language barriers and simplifying their participation. Using the native language of respondents in surveys has been shown to increase the integrity of the data collected. It minimizes the risk of misinterpretation, enhances the quality of responses but also enhances the reliability and validity of the survey findings, making it a best practice in survey research (Sha & Gabel, 2020).

Section One - Introduction

In the survey's first section, two questions were asked: The first one inquired about the participants' ages to ensure representation across a wide age range, and the second explored whether the participant uses one or more eID-services. Determining this enabled us to compare participants using a single eID service against those utilizing multiple services. According to Creswell & Creswell (2018), such information is considered control variables, commonly used in quantitative research as a type of independent variable influencing dependent variables. Creswell & Creswell (2018) highlight that control variables are used to understand how various factors impact study outcomes, allowing researchers to account for variability and support the validity of their findings.

Section Two Understanding User Acceptance and Adoption using UTAUT

This part of the survey was designed to examine Swedish users' acceptance and adoption of eID-services, using the Unified Theory of Acceptance and Use of Technology (UTAUT) framework. The initial two factors explored were Performance Expectancy and Effort Expectancy. The purpose of these questions was to measure the participants' attitudes and perceptions towards BankID or Freja eID, assessing how perceived ease of use influences a participant's willingness to adopt an eID service. The questions related to Performance Expectancy aimed to capture the degree to which Swedish citizens believed the different services improved their life, boosting their productivity, among other benefits.

The survey continued by asking questions regarding Social Influence and Facilitating Conditions. Questions about Social Influence were asked to understand the impact of a participant's social environment: how much the opinions and behavior of others, such as family or friends, affect their willingness to adopt a further eID service. Afterwards, questions about Facilitating Conditions were asked to analyze whether users feel like they have the help and infrastructure needed to use the technology adequately.

Finishing up questions constructed using the UTAUT framework are Behavioral Intention and Use Behavior. Behavioral Intention was used to analyze why individuals use or avoid technology, as well as to identify factors or barriers leading to the non-adoption of eID systems. Use Behavior measured the level of usage the participants had, allowing us to understand usage patterns and perhaps draw conclusions as to why a certain eID service is more frequently used.

Section Three Question Regarding Previous Research

The survey concludes by asking questions based on the findings of previous research, such as factors and variables that have been shown to lead to system adoption in the past. The purpose of this was to enable discussion and analysis of our findings compared to previous ones, thus allowing for a direct comparison.

3.2.4 Likert Scale

The Likert Scale, a widely used psychometric tool in research across fields such as education, social science, and information systems, facilitates the measurement of attitudes, opinions, or perceptions (Joshi et al., 2015). By presenting a statement and asking respondents to rate their level of agreement on a scale typically ranging from "strongly disagree" to "strongly agree," it

transforms qualitative insights into quantitative data, enabling statistical analysis of perceptions (Joshi et al., 2015).

According to Joshi et al. (2015), a true Likert scale measures a single dimension of attitude with a series of statements, each contributing to a composite score reflecting the respondents stance. In contrast, our research on e-legitimation services will employ Likert-type items, which use the same response format for individual questions but do not aggregate into a composite score. This method allows for a detailed analysis of specific attitudes and perceptions without combining them into a singular measure.

While traditionally the Likert scale included five points, variations ranging from two to eleven points have been utilized in this survey. Joshi et al. (2015) note that a seven-point scale optimally balances the need for detailed responses without overwhelming respondents, particularly effective for nuanced topics like e-legitimation services. Following the survey design principles outlined by Simms et al. (2019), we will design and craft our survey response labels, detailed in Appendix A, to accurately capture user perceptions, ensuring our survey aligns with both our research objectives and best practices in survey design.

3.3 Pilot study

A pilot study was performed to enhance the outcomes of the conducted study. It was necessary to ensure that the questions were clear and to prevent participants from having to guess the answers, thereby maintaining the accuracy of the results. Conducting a pilot study helps increase the chances of success and decrease the likelihood of too complex design which could lead to failure of the research project (Teijlingen & Hundley, 2002).

The pilot study involved three participants who were asked to complete the survey and provide feedback on questions that were too complex, had missing options, or where improvements in readability and clarity were needed. Based on the feedback received, several improvements were identified and could be implemented before proceeding to a full-scale launch.

3.4 Data Gathering

This study will recruit its survey respondents through Flow Group AB's panel product SveaPanelen, a Swedish market research firm specializing in targeted respondent recruitment (Flow Group AB, 2024). Flow Group AB's capability to fulfill specific quota requirements is important for ensuring that the sample accurately reflects the Swedish populations demographic structure, particularly in terms of age distribution. In the spirit of striving for full transparency it becomes important to highlight that the author, Oliver Weitman, has a personal link with the company. Oliver has an active role, and is one of the founders of Flow Group AB (Flow Group AB, 2024). However, this should not affect the quality of the responses, but is included for full transparency. The survey project was not paid by the authors, but rather seen as *pro bono* from Flow Group.

Respondents of the survey from SveaPanelen are registered users on the mobile platform and are not influenced by the author's role. Despite the connection to the company, there are no conflicts

of interest that would affect the study's integrity or the quality of the responses. The survey project was conducted *pro bono* by Flow Group AB and was not influenced by any financial or personal interests of the authors.

The survey was created using SurveyMonkey's visual builder. To distribute it, a link was generated and published via the administrative system of SveaPanelen. This system also manages the distribution of quota groups among the target demographics. It is designed to optimize the collection process, ensuring the exact number of responses specified is achieved. When the survey is published from the administration panel, it will immediately start showing in the SveaPanelen mobile app.

The study aims to collect 300 responses, aligning the respondent demographics with the population pyramid data from Statistikmyndigheten (n.d.a), to achieve a somewhat balanced representation across various age groups. It is important to note that the survey will focus on respondents aged 18-70, which presents a limitation regarding the age range of our study population, due to the lack of outreach to younger and older citizens.

Collecting data from the entire population, or a very large amount is practically impossible, and therefore a selection is used in order to generalize the results (Rea & Parker, 2014). A sample size of 300 should prove enough for our research objectives. Rea & Parker (2014) argues as sample sizes increase, the resulting data tends to more accurately mirror the true population mean, which is motivated by the Central Limit Theorem. Furthermore, a sample of 100 or more is sufficient to approximate a normal distribution, regardless of the distribution of the original raw data (Rea & Parker, 2014). The table below is based on the Swedish population pyramid from Statistikmyndigheten (n.d.a), and was the targeted respondent quotas for the survey. This distribution was achieved through SveaPanelen.

Table 3.4: Number of people in age categories 18-70 (Statistikmyndigheten, n.d.a)

Age	Number of people	Percentage of total (age 18-70)	Percentage * 300 Respondents	Achieved Respondents
18-29 years	1,474,545	≈ 21.53%	≈ 65	65
30-39 years	1,496,128	≈ 21.84%	≈ 65 (65.52 rounded down to match 300 respondents)	65
40-49 years	1,299,755	≈ 18.98%	≈ 57	57
50-59 years	1,343,105	≈ 19.61%	≈ 59	59

60-70 years	1,235,768	≈ 18.04%	≈ 54	54
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3.5 Ethics and Data Management

Upon entering the survey, participants were immediately informed about the purpose of the study, starting with an explanation of the term “eID”, which was necessary in order to give the participant an understanding of the researched topic. The participants were informed that this study was entirely voluntary with the ability to exit at any point without consequences. This approach respects the participant by allowing them to be the decision makers, and ensuring that they feel safe contributing to the study. Furthermore, they were made aware that their data would be used exclusively for the research purposes of this study and assured that all personal information would be anonymized and secured to prevent any potential identification. In addition, the participants were informed that the data would only be stored for the duration of this study.

Compliance with the General Data Protection Regulation (GDPR) was followed during the data collection process. The data gathered were limited to only the necessary data for achieving the objectives of the study, ensuring minimal risk to participant privacy. Access to unfiltered data was restricted exclusively to the authors of this thesis, while the readers would be presented with only compiled and anonymized data. Furthermore, it is important to note that demographic data, such as age, was collected but never analyzed, ensuring that identification of any individual participant is impossible.

The study was conducted as a bachelor’s thesis at Lund University, thus following its policies of data handling and privacy was important. Participants were provided with a link to the policies and encouraged to contact one of the thesis authors via provided email addresses, if they had any concerns regarding the use of their data or their privacy. It is possible to see the information provided to the user in its entirety at Appendix C.

3.6 Method for data analysis

As previously described, Flow Group AB will be used as a tool for collecting respondents to participate in the surveys. Flow Group (2024) has panels with large user bases within different demographics, making it a suitable choice for targeted survey responses. Data analyses will be performed using R in RStudio, to strengthen the findings statistically. Further discussion regarding how and why the analysis has been conducted will be described in the next coming section.

The questions were designed with regards to the UTAUT model, and analyses will be conducted using a quantitative approach when investigating the results of the survey. Most research questions in the survey use Likert scales, which are argued by some to be considered continuous with enough data. However, others argue that Likert scales should be seen as categorical (ordinal) due to the fact that differences in values may not represent equal ranges throughout the scores. Presenting closely similar means offers little to no nuance for the reader (Sullivan &

Artino, 2013). Therefore, without assuming any normal distribution, even though larger samples may approximate data normality according to the Central Limit Theorem, this motivates the use of a non-parametric test. A non-parametric test such as the Wilcoxon rank-sum test might be more suitable for Likert-scaled data, as it does not assume normal distribution and is less sensitive to extreme values. A further quantitative statistical test used in this thesis is Pearson's Chi-squared test for calculating frequencies in the number of answered categorical options in questions between the two groups.

All quantitative analyses will be performed using R in RStudio. The analyses are performed using the packages `readxl`, `dplyr`, `ggplot2`, and `Rcmdr`. The Wilcoxon rank sum tests will be performed using the `wilcox.test` method with a two-sided alternative (`alternative = "two.sided"` in R). Findings from the statistical tests will be presented as tables in the Results section, which will include relevant statistical variables for the test. The p-value threshold for statistical significance is set to $p = 0.05$ in all tests, which is commonly used in present-day studies (Flechner & Tseng, 2011).

3.7 Validity and reliability

This research was designed around the UTAUT framework to accurately capture the intended data, a model renowned for its capabilities in analyzing user acceptance (Venkatesh et al., 2003). Wang et al. (2022) support UTAUT as a powerful framework for predicting technology adoption as well as an important tool for understanding users attitudes and behavioral intentions towards technology. The foundation of this study was strengthened by incorporating previous research on adoption and user acceptance into our survey questions, ensuring that they aligned and followed the intended area of research. Another important objective of this survey was to include a wide age range, mirroring the general views of the Swedish population on eID-services. By analyzing Sweden's demographic distribution and designing our survey to match these age groups, we aimed to achieve a representative sample of the Swedish population.

Aiming to further enhance the robustness of our survey, the concepts Validity and Reliability become important. The work of Jacobsen (2000) will be used to explain these. Jacobsen (2000) distinguishes between two primary types of validity: internal and external. Internal validity is important for ensuring the credibility and relevance of a study's outcomes, achievable through the careful selection of methodologies and data sources. This is further highlighted by Heale & Twycross (2015) which states that to maintain validity is of utmost importance for research to maintain, which is why questions, interpretations and concepts measured must be maintained within the boundaries of the research thesis in order to conduct valid research.

External validity relates to a study's applicability in other contexts. Utilizing Sveapanelen to recruit respondents ensured participants were familiar with eID-services, since BankId is necessary to register to Sveapanelen (Flow Group AB, 2024), thus arguing for the study's relevance and applicability in understanding eID service adoption. With 300 responses, the validity of the findings could be considered credible.

Reliability, according to Jacobsen (2000), means that the results need to be dependable and genuine. To ensure the reliability of our study, we emphasized transparency in both the survey's design and execution, with a focus on enabling repeatability.

In order to further enhance reliability we implemented safeguards such as data filtering. There are a few reasons why to filter and preprocess the data from a web-based survey that is collected from a panel. As respondents are incentivized to participate in surveys, there are some that attempt to race through the questionnaire as quickly as possible, in order to receive as many incentives as possible in a short time, without actually reading the questions. This phenomenon is referred to as speeding, which occurs when there is a beneficial factor for the respondent, and may contribute to less quality in answers (Zhang, et al., 2014). The study conducted for this paper will filter responses that are practically impossible to finish if questions are read, based on the completion time. A further security question has also been asked that includes a simple mathematical problem, where respondents who fail to correctly identify the correct answer are deemed to either be speeding or not seriously answering the questions. No web-based survey can be fully certain of the quality of the responses, but utilizing such simple quality filtering can improve the accuracy of the research while reporting back to the panel with poor answers to strengthen future survey responses.

Furthermore, The responses collected from the participants will be used for statistical analysis to ensure reliability, for the main purpose of confirming that outcomes did not happen by pure chance (Salkind, 2019, p. 203), strengthening the findings of the survey. Data that is not statistically significant within the frames of the data analyses will instead reject the hypothesis and accept the counterpart null hypothesis as the truth (however no null hypothesis is stated), until further proof has been confirmed. By approaching the results with this methodology, the findings and further analyses of the results are strengthened and can be considered more reliable.

4 Empirical Results

The survey results are presented following the structure of the survey's sections. Subsequently, a brief introduction and explanation clarifying the comparison of necessary differences such as relevant central tendencies are provided, followed by a presentation of data related to questions designed with UTAUT, namely technical acceptance, and concluding with questions designed around prior research. For each question, the results include a summary of the statistical analysis and a box-plot group by multi eID users and single eID users.

The survey achieved our target of 300 respondents, with 72 respondents identified as multiple eID users and 228 as single eID users. This is the case for all given questions. It was distributed through Sveapanelen and achieved our intended participant-goal within two days. Substantial emphasis has been placed on analyzing the statistical differences between the groups. This analysis is important as it attempts to shed light on the reasons why some individuals have adopted multiple eIDs while others have not. Consequently, a comparison of medians has been conducted, making it essential to explain the methodology behind this comparison.

Given the importance of understanding the statistical differences, the Wilcoxon test has been used for comparing the ordinal Likert-scale values, however, it does not specify any direction or magnitude of difference between two groups. For statistical simplicity, post-interpretations of tests that yield significant results will limit the comparison and interpretation of differences in median values unless deemed necessary for deeper interpretation. Higher medians tend to reveal details in the direction of the difference, even though the Wilcoxon rank-sum test considers the entire data distribution and goes beyond median distributions alone.

It's important to acknowledge that this study may contain certain limitations. The primary focus on Freja eID and BankID, without including other eID systems, might restrict our understanding of adoption differences across a broader range of eID services. Additionally, the number of participants is relatively small, consisting of only 300 participants, which may limit the findings of our survey. All participants were existing users and already familiar with BankID, potentially impacting the answers in favor of their familiar system and impacting the perceived ease of adoption of Freja eID. Furthermore, the data analysis was relatively straightforward and may not have captured more nuanced aspects of user behavior and preferences. Future research should consider further eID systems, a larger participant pool, and employ more detailed analytical methods in order to deepen insights into eID adoption.

4.1 Performance Expectancy Results

The following represents question one and two, which revolves around performance expectancy. A question of how much eID-services facilitates the use of ID-verification, online transaction and security was presented to the user. Keep in mind that the questions are presented in English, but were asked in Swedish to the participants.

The **first** question was defined as “*To what extent do you feel that the use of your eID-services facilitates ID verification, online transactions, and security?*”, and used a Likert scale from 1 to 7, where 1 was specified as “None”, 4 as “Neutral”, and 7 as “A lot”. In assessing the impact of

eID-services, it is important to understand user facilitation. A statistical analysis using a Wilcoxon rank sum test revealed a significant difference in central tendencies: the group of respondents having one eID service ranked the use of their service as more facilitating, with a median of 7 (can be seen from the black lines in the figures such as in 4.1), compared to the group of respondents having multiple eIDs, who had a median of 6. The p-value (0.0001342) was significant, indicating a result unlikely to be due to chance. This could indicate that users with one eID experience greater satisfaction with their current service, for their use case, compared to the other group with experience of several eIDs. However, as with any statistical analysis, this should be analyzed with caution, and regarded as an indication rather than definitive proof. It does not necessarily mean that any of the groups feel unsatisfied with the facilitation of eIDs, especially when the median was close to, and exactly, the highest value of the Likert scale, 7. The results clearly state that a difference may exist and are worth considering as a factor in the overall understanding of acceptance and the willingness to adopt multiple eID-services.

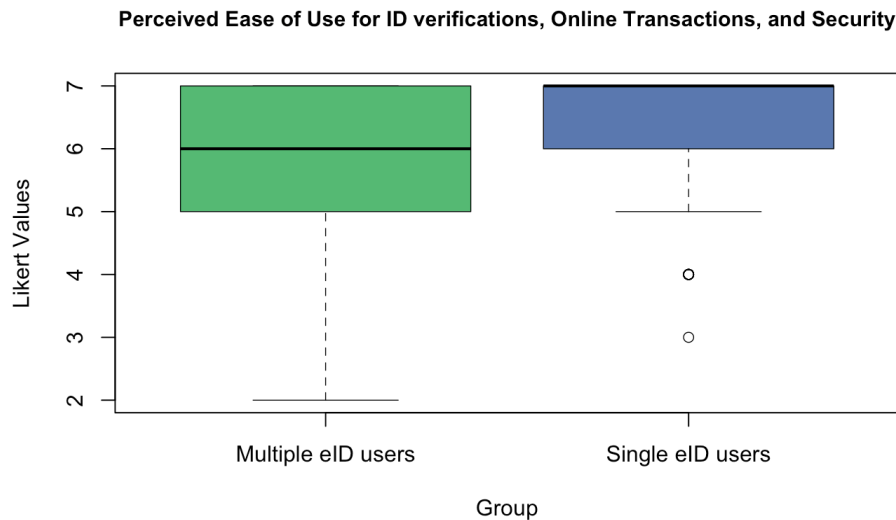


Figure 4.1: “To what extent do you feel that the use of your eID-services facilitates ID verification, online transactions, and security?”

Table 4.1.1: Result of statistical analysis for perceived ease of use of eID-services regarding ID verifications, online transactions, and security

TEST	W-STATISTICS	P-VALUE
Wilcoxon rank sum test with continuity correction (in R)	5974	0.0001342 (significant)

Continuing this section, a **second** question regarding thought or perceived benefits of using multiple eID solutions was asked. The reasoning behind this question is to find out if there is a difference between what people who have adapted multiple eID-services perceive as useful in comparison to what people who have a single eID believe. The question was defined as “Based on the eID-services you have. What benefits do you experience (if you have multiple), or do you believe (if you have one), are there in using multiple eID solutions compared to just one? (Max 3 answers)?”. A Chi-squared test was used in order to find differences in answer frequencies for the given options. The test for reviewing differences did not result in a statistically significant

finding ($p = 0.3511$). This suggests that there is not enough statistical evidence to conclude any association between the two groups, and the distribution frequency of their responses, meaning that both groups seem to have somewhat similar response frequencies. Users with one eID seem to evaluate the perceived advantages (or it could be regarded as disadvantage – “*Inget av ovanstående alternativ*”), as frequently as the groups that have multiple eIDs. However, there seems to be some deviation between the two groups, mostly in the frequency of denying any of the presented options (2 versus 18, although keep in mind that the single eID user group is larger), but not enough evidence for statistically proving this.

Despite the statistical analysis of differences, both groups ranked ease of use as the most dominating factor from both perceived and experienced advantages. This finding aligns well with the UTAUT framework. Second highest factor was safety, followed by increased availability, and backup solution when having issues.

Table 4.1.2: Observed answer counts from the survey – “Based on the eID-services you have. What benefits do you experience (if you have multiple), or do you believe (if you have one), are there in using multiple eID solutions compared to just one? (Max 3 answers)?”

GROUP/FREQUENCY	INGET AV OVANSTÅENDE ALTERNATIV	SÄKRARE	SMIDIGARE	RESERVLÖSNING VID PROBLEM AV EN TJÄNST	ÖKAD TILLGÅNGLIGHET
Single eID users	18	95	118	70	90
Multiple eID users	2	37	39	16	34

Table 4.1.3: Result of statistical analysis for perceived advantages with using multiple eID-services

TEST	X-SQUARED	P-VALUE	DEGREES OF FREEDOM
Pearson's Chi-squared test (in R)	5.5629	0.3511 (insignificant)	5

4.2 Effort Expectancy Results

This section of the survey asked respondents to evaluate the effort required to adopt and integrate eID-services into their daily activities. The questions are designed to measure the perceived ease or difficulty associated with these processes. Measuring effort expectancy is important in our research, as it provides insights into user acceptance and the usability of a service. In regards to eID-services, understanding effort expectancy might help in identifying potential barriers to adoption.

The **first** question was defined as: “*Reflect on your experiences: how difficult or easy was it to adopt the eID service(s) you use?*”. The results of the data analysis showed that there was a statistically significant difference ($p = 0.0009121$) in the reported ease of adopting current eID-services. Respondents using multiple eID-services reported a higher level of difficulty, with a median score of 6, indicating that it was harder to adopt. In contrast, users of a single eID service found it easier, reporting a median score of 7. The scoring options ranged from 7 (Easy to adopt), to 4 (Neutral), to 1 (Hard to adopt). The analysis indicates that respondents using

multiple eID-services experience a somewhat more challenging adoption process compared to those with a single eID service. This suggests that using multiple eIDs may add complexity. In contrast, using just one eID tends to make the adoption process more straightforward and user-friendly. While this barrier might discourage new users from adopting additional services, it is important to note that the **simplicity of adoption generally scored high on the Likert scale**, indicating that most users still found the services relatively easy to adopt.

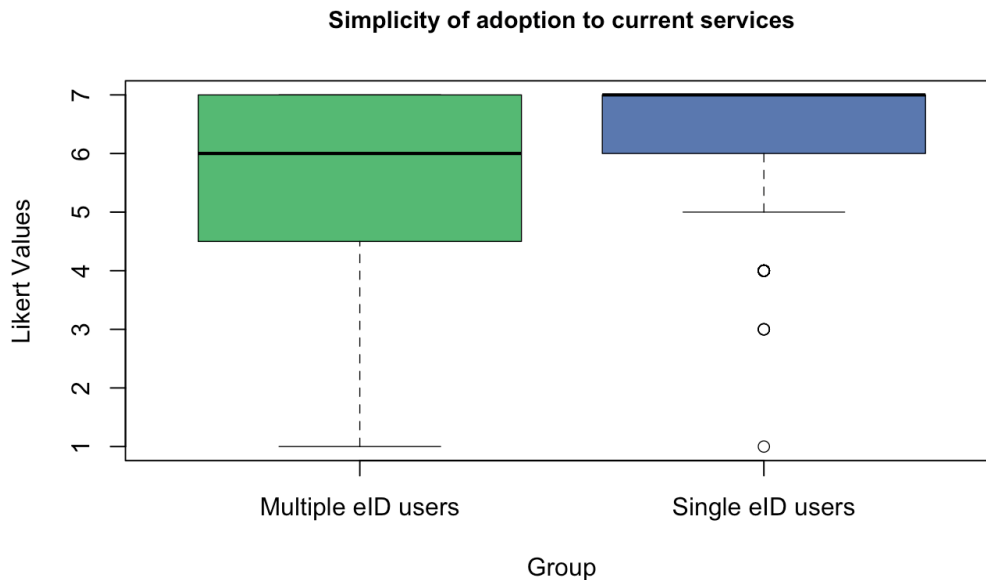


Figure 4.2.1: “Reflect on your experiences: how difficult or easy was it to adopt the eID service(s) you use?”

Table 4.2.1: Result of statistical analysis for simplicity of adoption to current services

TEST	W-STATISTICS	P-VALUE
Wilcoxon rank sum test with continuity correction (in R)	6248	0.0009121 (significant)

The **second** question, aimed at measuring the ease of adopting eID-services, asked about the ease or difficulty users experienced while integrating these services into their daily routines. The question was phrased as follows: “*How easy or difficult was it to integrate the use of eID-services into your regular routines?*”

The test also revealed statistically significant differences in the ease (or difficulty) of integrating eID-services into daily routines between the groups. Similar to the previous analysis on the initial simplicity of use, respondents with a single eID service reported a more simplicity of integration, with a median score of 7, compared to those using multiple eIDs, who reported a median of 6. This suggests that individuals using multiple services may find it more challenging to incorporate their eID usage seamlessly into their daily activities. The findings show that using multiple eID-services can make daily use more complicated compared to using just one eID service. Users with only one eID service reported easier and simpler integration into their routines, which can be seen by the higher median score. This difficulty with multiple eIDs might come from having to handle different systems. Overall, these results suggest that having several

eID systems could be seen as less user-friendly for regular use. However, yet again, the median scores regarding this question were also ranked high on the Likert scale, indicating that neither group found it really difficult to integrate these services in their daily routines.

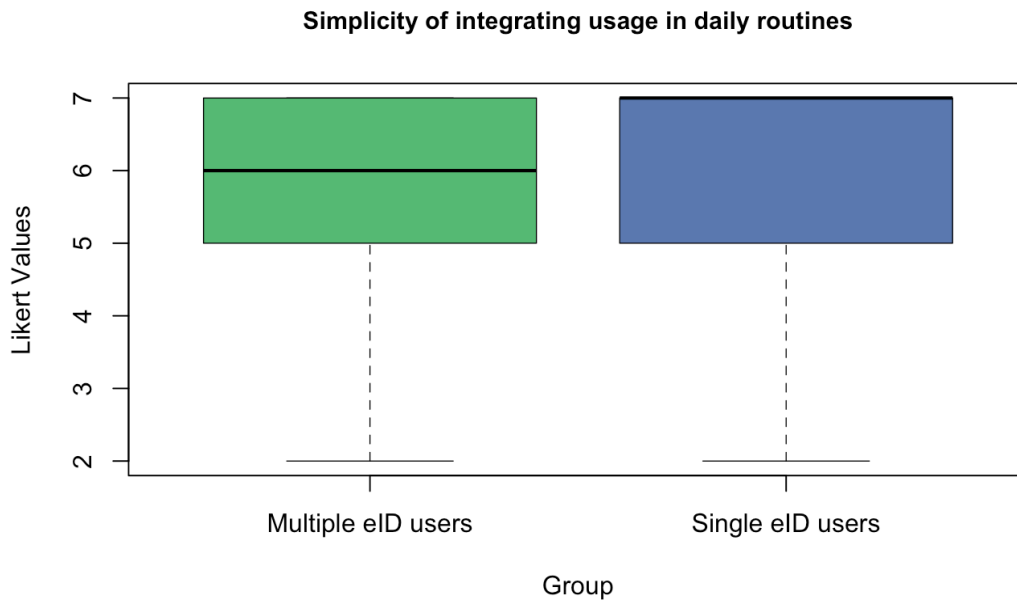


Figure 4.2.2: “How easy/difficult was it to integrate the use of eID services into your usual routines?”

Table 4.2.2: Result of statistical analysis for perceived ease of integration of current eIDs to daily routines

TEST	W-STATISTICS	P-VALUE
Wilcoxon rank sum test with continuity correction (in R)	6156.5	0.0005521 (significant)

4.3 Social Influence Results

This part of the survey was designed to examine the impact of social influences on the participants decisions to adopt their current eID solutions. It aimed to determine how much the opinions and behaviors of family, colleagues, and friends affected their choice to use these technologies, which is an important part of adoption according to Venkatesh (2003). The question was asked as follows: “*How much did your surroundings (such as family, colleagues, friends, etc.) influence your decision to start using your current eID solution(s)?*”

The analysis of social influence on the adoption of eID solutions did not show a significant result ($p > 0.05$). This means that there is insufficient evidence to prove that the groups differ in their propensity to take on social influence. However it is worth noting that while the test was not significant, there seems to be some tendency of the interquartile range (IQR) for single eID users to be larger than the group of multiple eID users. The broader interquartile range among single eID users might suggest a greater diversity in the degree to which they are influenced by their social surroundings, indicating that while some are heavily affected by friends and family, others are less so. Furthermore, the outcome of insignificance could be due to a lacking sample size, but this would require further analysis.

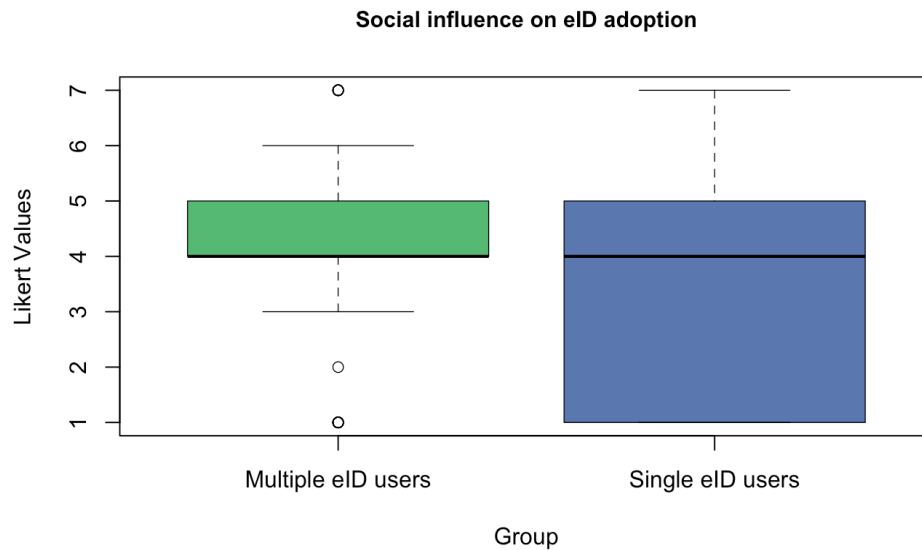


Figure 4.3: “How much did your surroundings (such as family, colleagues, friends, etc.) influence your decision to start using your current eID solution(s)?”

Table 4.3: Result of statistical analysis for social influence from surroundings to start using current eID services.

TEST	W-STATISTICS	P-VALUE
Wilcoxon rank sum test with continuity correction (in R)	9802.5	0.01068 (insignificant)

4.4 Facilitating Condition Results

This section of the survey assessed Facilitating Conditions by exploring participants' perceptions of the technical support available for their eID-services. According to Venkatesh (2003), perceived support is an important factor in technology acceptance. The question asked was: “Evaluate how well you perceive the availability of technical support for using eID solutions, or if, for instance, you often encounter problems. Technical support could encompass internet guides or customer service that assists you.” and the results of this question are displayed below.

The test results for measuring the difference in perceived quality of technical support between the groups were not statistically significant ($p = 0.6156$). This suggests that the responses between the groups were similar enough that any observed differences in the median could be due to chance. Although the test was not significant, a quite neutral (4.9 of combined average) in Likert-score. This may, even if no significant difference can be found, mean that neither groups found the technical support very high, or low.

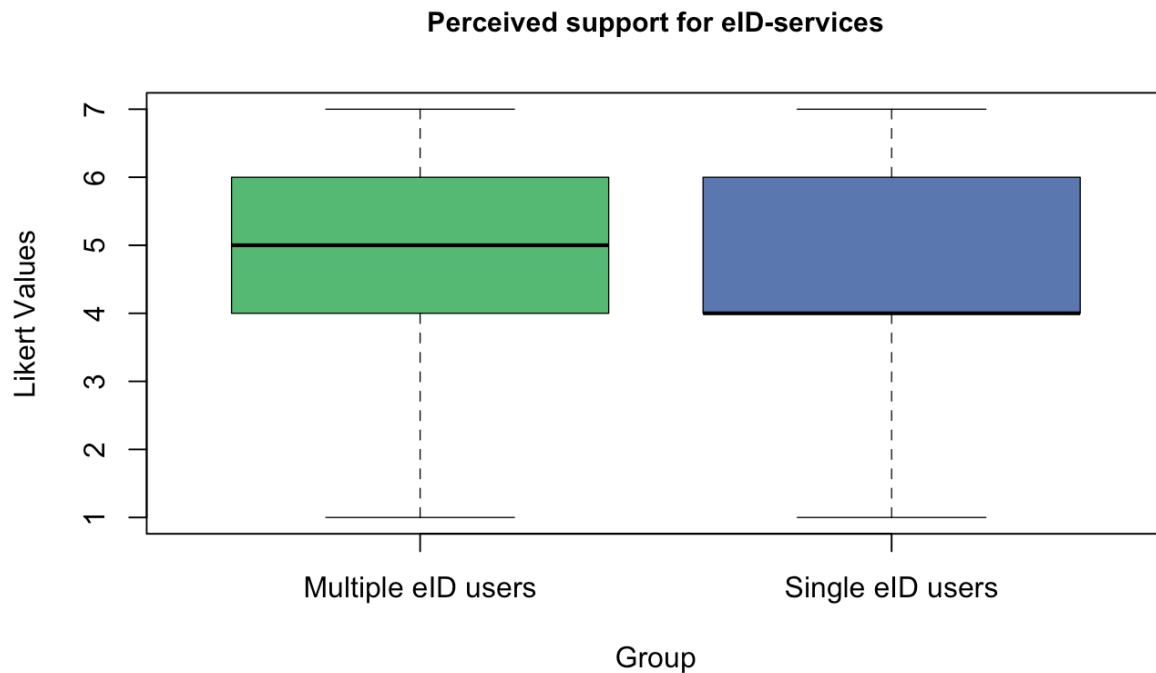


Figure 4.4: “Evaluate how well you perceive the availability of technical support for using eID solutions, or if, for instance, you often encounter problems. Technical support could encompass internet guides or customer service that assists you.”

Table 4.4: Result of statistical analysis for evaluation of perceived technical support in eID usage

TEST	W-STATISTICS	P-VALUE
Wilcoxon rank sum test with continuity correction (in R)	8516	0.6156 (insignificant)

4.5 Behavioral Intentions Results

This section aimed to examine the behavioral intentions regarding user adoption of eID-services. It explored not only the likelihood of participants adopting additional eID-services, but also the factors that influence their use of the existing eID-services they utilize. The **first** question asked was: “Based on your current use of eID-services, how likely is it that you will start using even more eID solutions?”

Regarding whether users feel the need for an additional eID service based on their current usage, there was a statistically significant difference ($p = 0.0003918$). Respondents using multiple eID-services answered with a higher likelihood of willingness to adopt another service. This is reflected in the median values, with the multiple eID group rating their likelihood as 5 (somewhat more likely than neutral), compared to the single eID group, which rated it as 4 (neutral). The interquartile ranges, as shown in the boxplot in figure 4.5, also support this finding. This could indicate that users who are used to handling multiple eID systems are more aware of or open to the possibilities of adopting a further service. It might reflect scenarios

where their existing eID does not fully meet their needs, or expectations, and that they are in need of an even more comprehensive utilization.

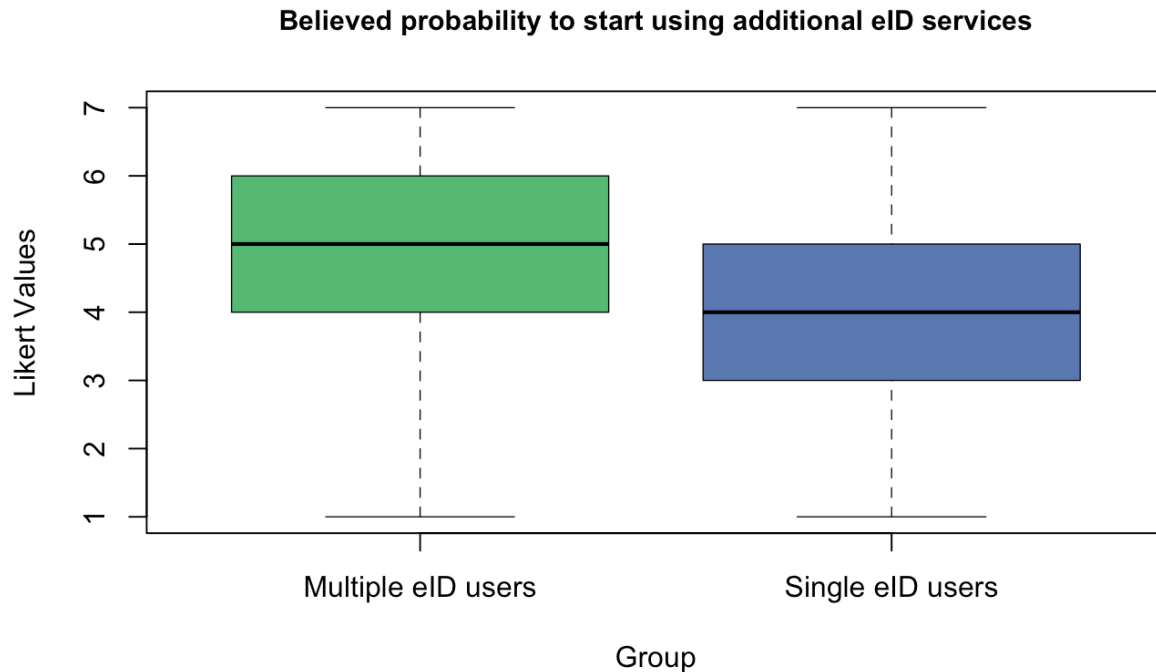


Figure 4.5: “Based on your current use of eID-services, how likely is it that you will start using even more eID solutions?”

Table 4.5.1: Result of statistical analysis for likelihood to start using more eID solutions

TEST	W-STATISTICS	P-VALUE
Wilcoxon rank sum test with continuity correction (in R)	10432	0.0003918 (significant)

The **second** question was as follows: “*What factors most influence your willingness to use eID solutions, whether you have one or several? (Up to 3 answers)*”. This question used a Chi-squared test. The result of this analysis will be displayed below.

To conclude any differences in the measured perceptions between users of a single eID service and those utilizing multiple services, a Pearson’s Chi-squared test was applied to the response frequencies of the factors for the willingness that influence their use of an eID service. The analysis did not reveal a statistically significant difference ($p = 0.6546$). This result suggests there is no sufficient statistical evidence to see an association between the number of eID-services used and the benefits perceived by the users.

Despite this, the distribution of responses was relatively similar across both user groups, indicating that single eID users and multiple eID users may evaluate the same factors affecting them to “want to use” an eID service. The highest ranked factor for the willingness to use eID solutions was that the service should be *easy to use* (179/300 total), followed by a tie for *secure handling of user data* and *usability* (138/300 total).

Table 4.5.2: Observed counts from the survey – “What factors most influence your willingness to use eID solutions, whether you have one or several? (Up to 3 answers)”

GROUP	TILLIT	ANVÄNDBARHET	SÄKER HANTERING AV ANVÄNDARDATA	ENKELHET ATT ANVÄNDA	KOMPATIBILITET
Single eID users	79	107	104	140	85
Multiple eID users	31	31	34	39	23

Table 4.5.3: Result of statistical analysis for influencing factors of willingness to start using eID solutions

TEST	X-SQUARED	P-VALUE	DEGREES OF FREEDOM
Pearson's Chi-squared test (in R)	3.2952	0.6546 (insignificant)	5

4.6 Use Behavior Results

This survey section assessed participants usage behavior by asking about their daily use with eID-services, and if there are situations where they feel forced to use a specific eID service. The **first** question was asked as: “*Estimate how often you use eID-services in a single day?*”

This particular question was the only one where a t-test was applied for data analysis. The choice to use a parametric test, such as the t-test, was due to the type of the response (continuous data). Given the sample size from the survey, we can expect the distribution of responses to be sufficient and approximate data normality, in line with the Central Limit Theorem, justifying the use of a parametric test.

The analysis of the daily eID usage frequency revealed statistically significant differences. The positive t-statistic suggests that participants who use multiple eID-services estimate a more frequent daily use of eID authentications (x = multiple eID users, y = single eID users). Specifically, the group with multiple eIDs reported an average of approximately 7.7 authentication per day, compared to the single eID users, who showed an average of approximately 5.8, thus showing a difference of about 1.9 in usage per day. This finding could mean that respondents with multiple eID solutions show signs to be more active in their usage, which may be due to a greater necessity of multiple eIDs.

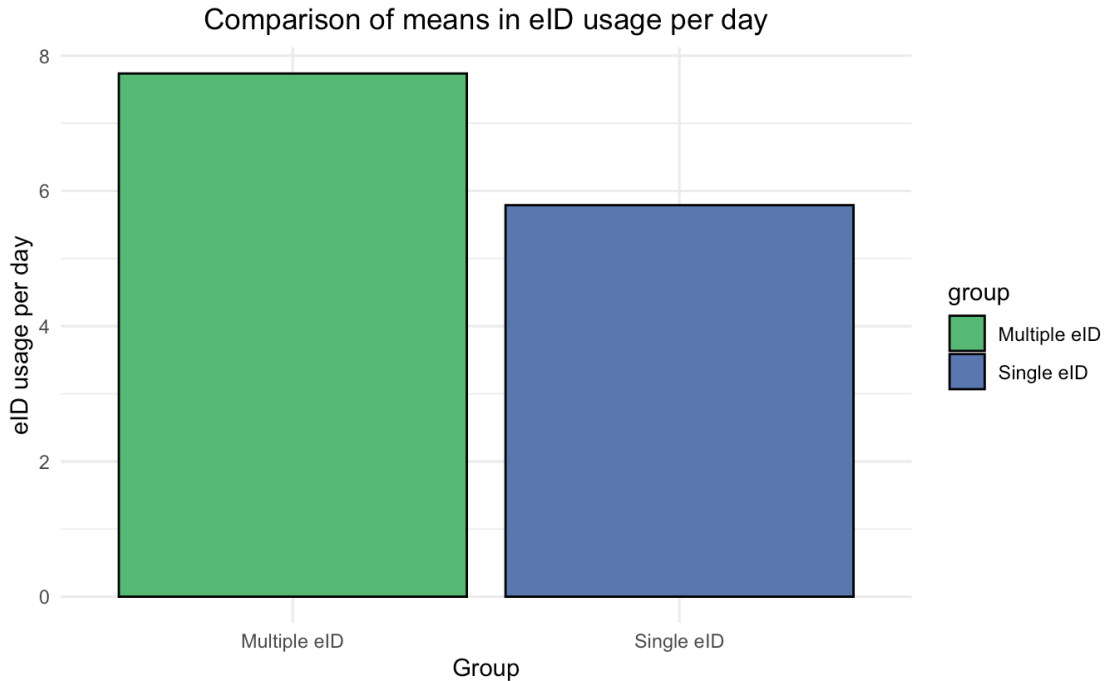


Figure 4.6.1: “Estimate how often you use eID-services in a single day?”

Table 4.6.1: Result of statistical analysis for how often respondents use eID on a single day.

TEST	T-STATISTICS	DEGREES OF FREEDOM	P-VALUE
Welch Two Sample t-test (in R)	3.1854	114.29	0.001864 (significant)

The **second** question asked was: “Are there situations where you feel compelled to use a specific eID solution?” and the data from this question will be presented below in table 4.6.2.

The test examining whether there were differences between the groups in how often they felt encouraged to use a specific eID solution did not yield significant results. The responses to “Yes” were followed by an open-ended question, which has a slight analysis regarding the results beyond the statistical analysis of differences. By reviewing word occurrences as shown in figure 4.6.2, the words BankID (“*Bank id*” merged as BankID), authorities (“*myndigheter*”), Banks and banking matters (“*Banker*” and “*Bankärenden*”), are some of the most common themes. Many of the Swedish banks do only accept logins through BankID, and there seems to be some perception that authorities also are linked with only accepting a certain eID-service.

Table 4.6.2: Answer counts – “Are there situations where you feel compelled to use a specific eID solution?”

GROUP	JA	NEJ
Multiple eID users	13	59
Single eID users	25	203

Table 4.6.3: Result of statistical analysis for situations where respondent feels obligated to use a certain eID-service

TEST	X-SQUARED	P-VALUE	DEGREES OF FREEDOM
Pearson's Chi-squared test (in R)	2.487	0.1148 (insignificant)	1

Bankärenden Inloggning
BankID
 myndigheter **Banker**



Figure 4.6.2: Frequent word occurrences in follow up question regarding where the respondent feels forced (if previously answered “Yes”) to use a certain eID

Figure 4.6.2 displays the five most frequently used words, some of which have been merged. The reason for merging these words was their similarity but different structures. For example, “bank id” and “bank-id” were combined into “BankID” because they convey the same meaning. As one open response mentions, “Banker och myndigheter.” is a common theme among the limited responses collected on this topic. Another interesting response was “Bankid är fortfarande vanligast men man ser Freja oftare än tidigare nu.”, which aligns with the general perception that, despite the continuous growth of Freja eID, BankID is still perceived as the most dominant. This perception related to availability is further confirmed from the findings in 4.7.2, which shows BankID as being more frequently supported across most systems.

4.7 Perceived trust & public-private availability

This section of the survey examined the responses of Swedish eID users, conducting an analysis and discussion on the perceived trust and availability of eID-services. As previously mentioned, the focus will be on measuring trust, particularly regarding safety and privacy, in relation to both BankID and Freja eID. It will also measure the perceived availability of said eID-services in, for example, government websites. It’s important to note that respondents were given the option, for the second question, to choose that they did not know what Freja eID is, in case they were not aware of this service. The reason behind not having this option for BankID comes from the fact that participants already had to have BankID to contribute to this study, thereby making the same decision there invalid. This was previously underscored in the methodology chapter of this thesis.

4.7.1 Trust for eID

The first subsection regarding previous research was to investigate whether there is difference between trust, among the groups, for two of the more well known services, BankID and Freja eID, in Sweden. The **first** question regarding trust for BankID was defined: “*What trust do you have in BankID when it comes to security and privacy?*”.

No statistical evidence was found when analyzing if the trust level in security and integrity had any difference among the groups. BankID is broadly used in Sweden, which could mean that using multiple eIDs may not be a direct reflection of seeing BankID as more “*insecure*”, but rather other underlying reasons.

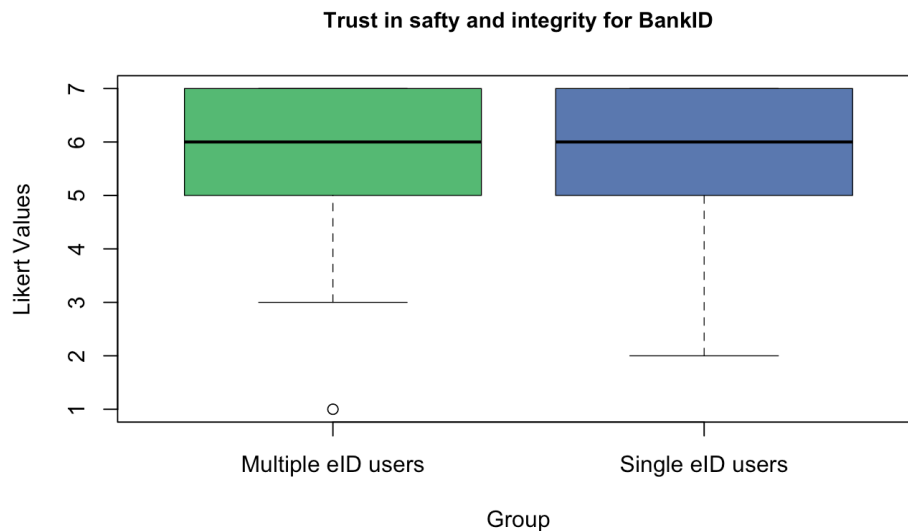


Figure 4.7.1.1: “What trust do you have in BankID when it comes to security and privacy?”

Table 4.7.1.1: Result of statistical analysis for trust in BankID regarding security and integrity

TEST	W-STATISTICS	P-VALUE
Wilcoxon rank sum test with continuity correction (in R)	7072.5	0.06464 (insignificant)

The **second** question of this subsection was: “*What trust do you have in Freja eID when it comes to security and privacy?*”.

The results for trust in the safety and integrity of Freja eID showed a statistically significant difference. When comparing the median responses, it was found that respondents with multiple eID solutions generally had a higher trust in Freja eID, with a median of 5 and responses from 69 out of 72 participants. The median trust level for single eID users was lower at 4, with 131 out of 228 participants responding. This finding stands out more when compared to previous results for trust in BankID, where both groups rated Freja eID lower. The lower trust rating for Freja eID among single eID users might explain why fewer people have adopted multiple eID solutions like Freja eID. Furthermore, the analysis showed greater response variability among multiple eID users, which can be seen by a larger range of whiskers in the boxplot. To confirm that multiple

eID users indeed ranked Freja eID higher, the distribution of answers was analyzed and plotted below in 4.7.1.3. The graph shows that while single eID users mostly centered their answers around the middle value of 4, multiple eID users generally scored towards the higher range, supporting the conclusion of higher trust among them, which can be seen in the distribution graph.

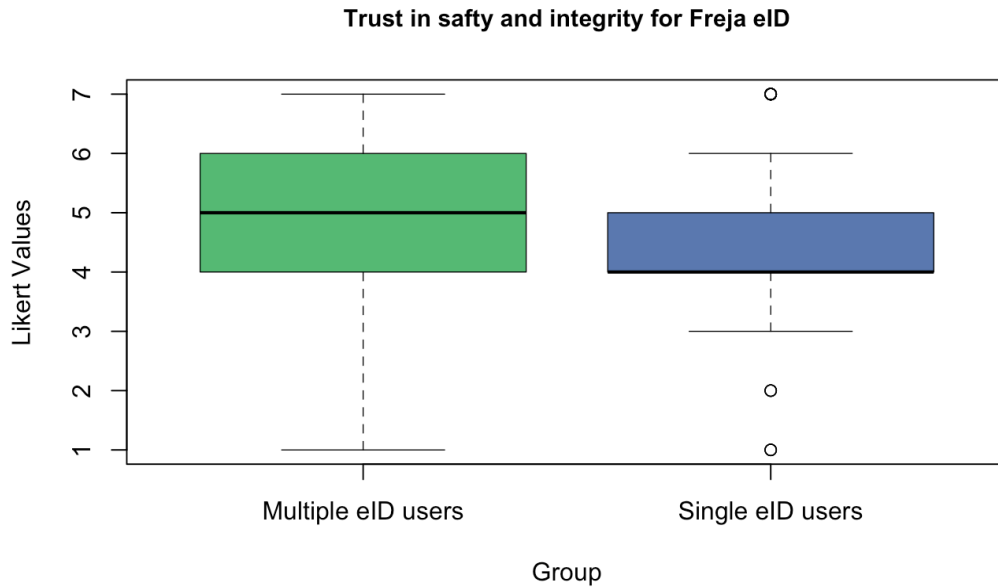


Figure 4.7.1.2: “What trust do you have in Freja eID when it comes to security and privacy?”

Table 4.7.1.2: Result of statistical analysis for trust in Freja eID regarding security and integrity

TEST	W-STATISTICS	P-VALUE
Wilcoxon rank sum test with continuity correction (in R)	5811	0.0003167 (significant)

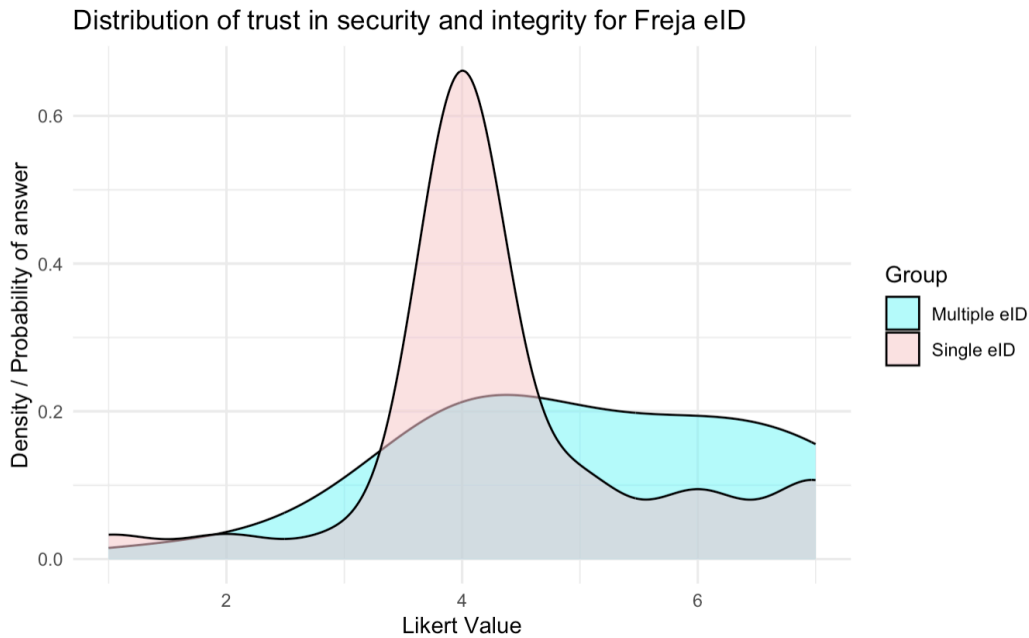


Figure 4.7.1.3: Distribution plot of trust in security and integrity of Freja eID among the groups

4.7.2 Availability

The **second** subsection examines the perceived availability of BankID versus Freja eID in both the private and public sectors. Specifically, it measures the extent to which either eID service is available and accepted as an option.

The **first** question asks about the availability of BankID: *“To what extent do you feel that both authorities and private actors accept BankID?”*

Although a median difference can be seen in the boxplot graph 4.7.2.1, the statistical test did not yield a significant result. A difference between the groups regarding the perceived extent of acceptance for BankID in authorities and private actors can not be proven with the data available for the analysis. However, an important result to highlight is that both groups ranked the availability of BankID high. The median of both groups combined were at 6, and with no difference in significance between the groups. This may suggest that whether the participants have multiple eIDs or not, it is likely that the perceived availability of BankID is high.

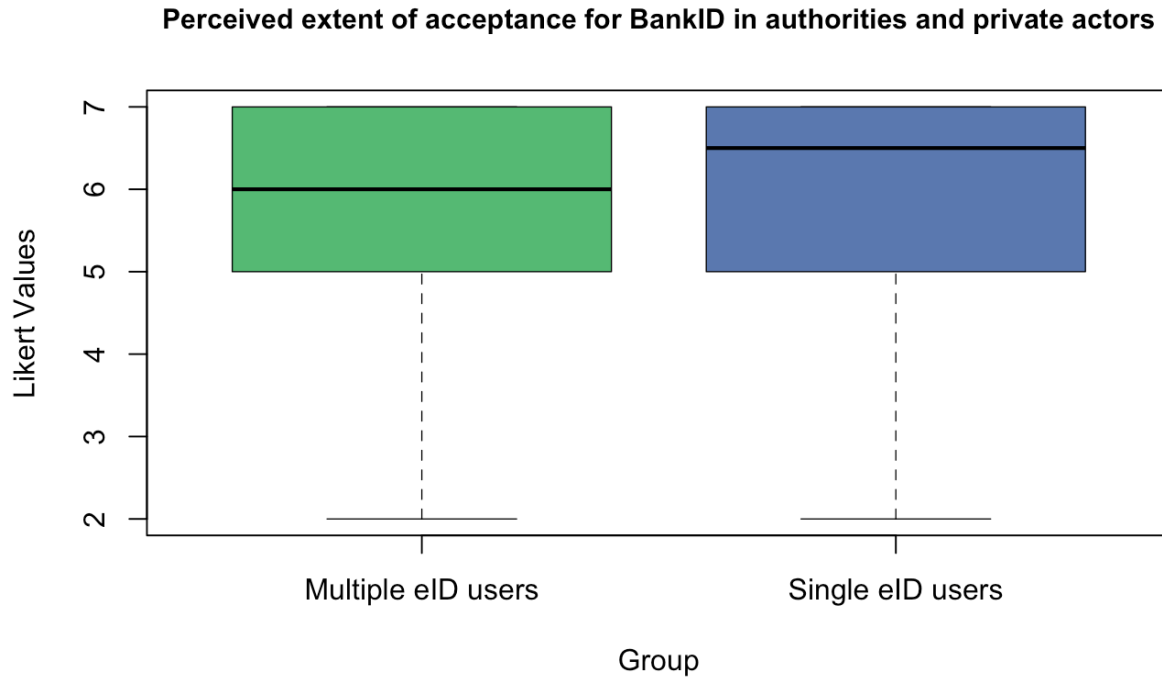


Figure 4.7.2.1: “To what extent do you feel that both authorities and private actors accept BankID?”

Table 4.7.2.1: Result of statistical analysis for the perceived extent of availability of BankID

TEST	W-STATISTICS	P-VALUE
Wilcoxon rank sum test with continuity correction (in R)	7421	0.1898 (insignificant)

The **second** question aimed to assess the same as the first one, but now with the focus of Freja eID: “To what extent do you feel that both authorities and private actors accept Freja eID?”

The analysis of the perceived acceptance of Freja eID among authorities and private actors showed a statistically significant difference between groups. Respondents using multiple eID solutions had a median response of 5, with 69 out of 72 participants responding, indicating a higher level of acceptance. Users with only one eID service reported a lower median of 4, from 131 out of 228 responses. The boxplot in figure 4.7.2.2 shows a wider range in responses among multiple eID users, indicating greater variability. This observation is further supported by the distribution plot in figure 4.7.2.3, which shows that single eID users mostly centered around the middle value of 4, whereas the multiple eID users were more frequently found in the higher values. This further supports the finding that multiple eID users tend to view the acceptance of Freja eID more favorably.

Further interesting findings is that the responses tend to rank lower for Freja eID compared to the ranking of availability of BankID. This indicates that there is a stronger perception that BankID

is more available, and therefore possibly more useful as a service. The median of both groups combined were at 4, whereas BankID ranked a combined median of 6.

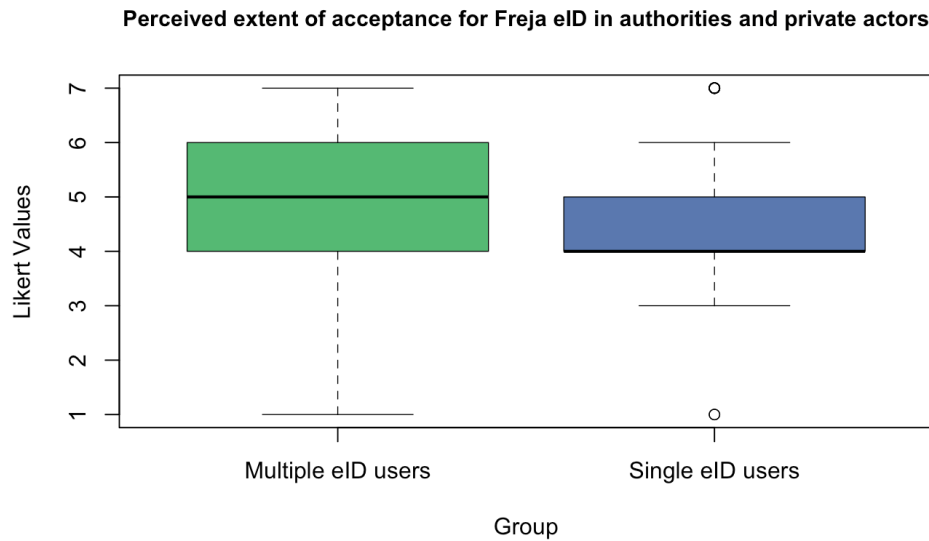


Figure 4.7.2.2: “To what extent do you feel that both authorities and private actors accept Freja eID?”

Table 4.7.2.2: Result of statistical analysis for the perceived extent of availability of Freja eID

TEST	W-STATISTICS	P-VALUE
Wilcoxon rank sum test with continuity correction (in R)	5960.5	0.00004548 (significant)

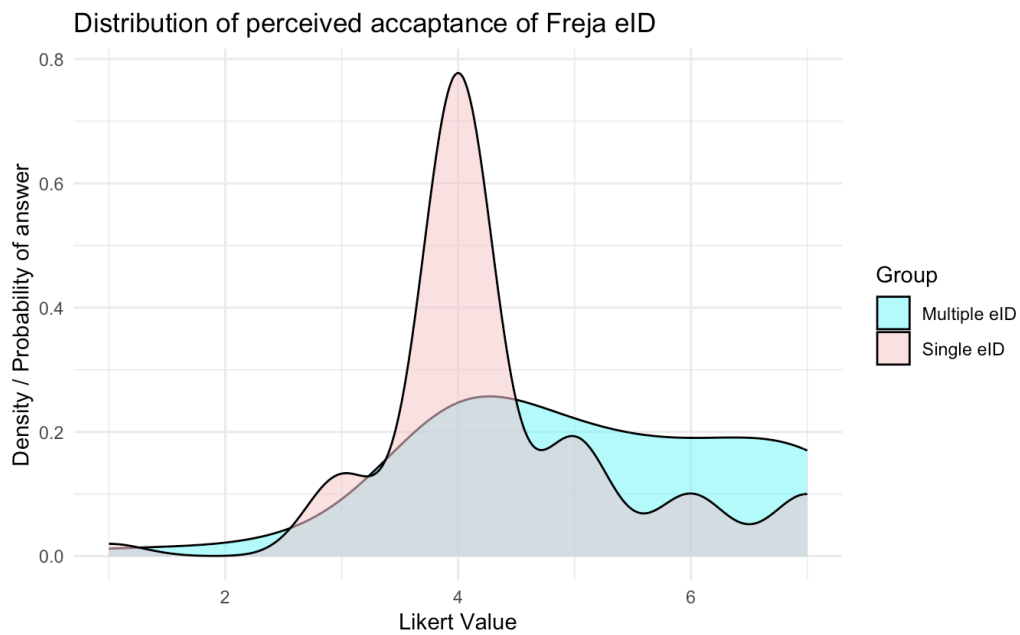


Figure 4.7.2.3: Distribution of perceived acceptance of Freja eID

5 Discussion

The following will discuss the findings of the empirical result in relation to the literature review of this thesis. The discussion will primarily analyze the results following the presentation and structure outlined in the Results section.

5.1 Performance Expectancy

The findings regarding performance expectancy showed that single eID users had a greater perceived satisfaction when dealing with online transactions, security, and ID-verifications. This may be an effect due to the fact that BankID, which is the primary eID-service for single eID users, not only in the survey but amongst Swedish citizens, 99.4% in ages from 18 to 67, (BankID, 2024), is such a well established system. A high satisfaction would severely increase expectations for a secondary similar service, which is one of the key elements in Rogers (1995) Diffusion of Innovations theory. There might be some correlation between this type of high satisfaction in BankID, and the lack of appreciated benefits of using several electronic identification solutions. When analyzing such thought benefits, there were no significant differences between users who have already adopted another eID-service. However, even though there were no clear statistical results, which may be due to lack of data, there seem to be some tendencies where people using one eID, a bit more frequently, ranked using another service as having none of the listed benefits. From the perspective of acceptance of electronic identification in general, such as the study by Walke (2023), which discusses hindrances posed by introducing new eID-services mostly by the challenging behavioral changes, could dampen the adoption rate. If the main barrier for the secondary adoption of a service is as Rogers (1995) described, a necessity of extraordinary benefits, such behavioral change challenges could potentially pose an even larger barrier. When the respondents got to rank some beneficial factors in the utilization of multiple services, ease of use was the most important factor among the given options. The UTAUT framework suggests that ease of use is the most significant predictor of the intention in using a technology (Venkatesh et al., 2003). Concerning ease of use as a factor in accepting eID, Tsap et al. (2020) confirmed the view that ease of use is seen as one of the primary acceptance factors for eID systems. The data from the conducted survey indicates that this is no exception regarding the Swedish users intention of adopting a secondary, similar service based on the findings of this study. This is even further emphasized by Pöhn et al. (2021) which also found ease of use to be a key factor in successful adoption of technical services.

Our study supports previous research by confirming that performance expectancy is one of, if not the most important for the adoption of electronic systems (eID-services). Our data shows that ease of use remains a strong, key factor in eID adoption, whether users use one or multiple eID-systems. This underscores that for higher adoption rates, a system must be perceived as straightforward and user-friendly.

5.2 Effort Expectancy

Our survey results revealed a subtle, but nonetheless, important distinction in effort expectancy between users with multiple eIDs and those with a single eID service. The median values 6 for multiple eID users and 7 for single eID users suggest that those with multiple eIDs find the effort of adopting an additional service slightly more difficult. Despite both groups showing an overall small sign of difficulty adopting a further eID service, this finding is important. According to the framework UTAUT by Venkatesh et al. (2003), previous experience with similar services typically lowers the effort expectancy and promotes greater adoption. This is reflected in the previous study regarding eID adoption by Rodrigues et al. (2016), who found that effort expectancy has an impact on adoption for eID systems. Contrary to this, our results indicate that Swedish eID users might face unique challenges when adopting another eID service. The increased difficulty of managing multiple accounts, remembering various passwords, and understanding different user interfaces could decrease users willingness to adopt additional eIDs. This added complexity introduces a significant cognitive load on the user, which might explain why users of more eIDs find this more inconvenient than users with one eID, as they already carry a greater cognitive load, and might further explain why users with one eID find it slightly less difficult. Moreover, as Rogers (1995) suggests, if users are satisfied with their current service, any additional service must offer a substantial unique benefit over the “challenged” system. Outside of BankID and Freja eID, we find it unlikely that another service might provide benefits of such magnitude. This may also explain why users having only BankID might not feel a need for another, since other services might not provide significant benefits over BankID. Our findings indicate that the perceived benefits of additional eIDs may not be enough to outweigh the effort and complexity of managing them, even for experienced users. These findings highlight an important aspect of eID adoption in Sweden, suggesting that while experience with technology generally facilitates further adoption, the specific situation and user satisfaction with existing eIDs play a significant role in increasing users willingness to expand their usage of eID services.

We found differences in our research to the traditional view of UTAUT by Venkatesh et al. (2003), that previous experience does not necessarily make adopting additional eIDs easier, rather we found that it might actually make it seem harder. Thus, we do not agree with their suggestion that familiarity with similar technologies usually reduces the effort needed for adoption. On the other hand, our findings support Rogers (1995) belief that a new service must offer significant unique benefits to be adopted. Our study focuses on the adoption of similar or identical services, revealing that previous experience could lead to perceiving the adoption process as more challenging, not easier. We agree with Rogers that the advantages of a new service must significantly outweigh its ease of use to increase adoption rates. We further argue that the perceived effort required for a new system, if not seen as easier than previous ones, may increase the difficulty perceived in adopting additional services. While we do recognize that previous experience can help future adoption, our findings suggest that this is conditional and not always the case, and it depends on specific situations.

5.3 Social Influence

Even though the results showed a non-significant difference in social influence between the groups, this does not necessarily mean that there is no influence at all. It might suggest that the

effect of social influence on both groups does not vary much. This could mean that both groups are similarly influenced by their social environment, or it might even indicate that social influence is not a very dominant factor in the adoption of another eID service by Swedish users. It is important to note, that this finding could be due to an insufficient sample size, which might have affected the results. Further research could incorporate a larger sample size to get a stronger understanding on the role of social influence in eID services in Swedish users. Continuing, Rogers (1995) argues for social influence having a positive impact on adoption rates. Venkatesh et al. (2003) argues further that social influence is supposed to be a stronger factor when the use of the technology is more optional. In contexts where the adoption of eID is perceived as more mandatory, social influence might play a lesser role. This *could* be a factor for Swedish users showing signs of being less or similarly affected by this factor, since BankID is mandatory for accessing services such as banks. Considering all this, we can not with certainty conclude that social influence is a strong factor for either the willingness or unwillingness to adopt another eID service, at least in the case of our study and Swedish users. We want to highlight that although we did not find a significant difference in how social influence affects groups, it does not mean it has no effect at all. It might simply suggest that all groups are equally influenced by their social surroundings (such as family or friends) or that social influence is not a key factor in adopting new eID services in Sweden. The study's small sample size could have affected these results, so more research with more participants might be needed. Previous research by Rogers (1995) and Venkatesh et al. (2003) suggest social influence should be stronger when technology use is optional, not mandatory like with BankID. This might explain why social influence seems less important in our study. However, more research is needed to understand this in greater detail.

5.4 Facilitating Conditions

In examining the facilitating conditions, we found scores that were around the average of the given Likert scale, with no significant differences between groups. This analysis did not specifically evaluate technical support for any specific eID provider, but rather assessed the overall perceived support within the eID landscape. According to the UTAUT framework facilitating conditions and support for technical services are important for the successful adoption of a system (Venkatesh et al., 2003) and is additionally supported by Rodrigues et al. (2016), which also conducted research based on the UTAUT framework, who also argues for facilitating conditions to be a driving factor for adoption. The general perception of support for eIDs among the Swedish population seems to be average. Although this result is not very low, it is not high enough to conclude that respondents felt any type of strong level regarding support.

The absence of strong support services may discourage individuals from learning and adopting secondary services, potentially reducing overall adoption rates. This interpretation requires caution, as the perceived support was described as “neutral”. The neutral perception in the result of this factor might be viewed as neither particularly positive nor negative. The authors interpret the support factor in facilitating conditions in the UTAUT framework as: “requiring to be more than average”, or at least perceived as good, to effectively drive adoption. Since the support in the eID landscape is not seen as good, but rather average, this might be a pain point for a wider adoption.

Contrary to previous studies, we found that facilitating conditions, such as technical support, did not play a significant role in eID adoption among Swedish users. Our findings showed an average level of perceived support, with no significant differences between users of one or multiple eID services. This suggests that facilitating conditions have only a neutral impact on adoption rates. Therefore, we conclude that, in the context of Swedish eID users, facilitating conditions are not a key factor for successful adoption as previously research might have thought. Keep in mind this is argued in regards to Swedish eID users.

5.5 Behavioral Intention

The analysis of behavioral intentions revealed a statistically significant result, with a median score of 5 on the Likert scale for users of multiple eIDs (slightly above neutral) and a median of 4 (neutral) for single eID users. This suggests that individuals with multiple eIDs may be more likely to adopt additional eID services, despite the score being close to neutral. This trend indicates that familiarity with and dependence on a technology, or perhaps the need to meet a wider range of functionalities, drive further adoption. Such a phenomenon aligns with the Diffusion of Innovations theory by Rogers (1995), highlighting a greater will among these users to explore and adopt additional systems.

Interestingly, this finding contradicts with our analysis of effort expectancy, where users with multiple eIDs show slightly higher resistance and perceived tediousness in adopting another eID service. The result concerning behavioral intention, indicating a higher likelihood of adopting further eID services, make sense with the emphasis placed by Venkatesh et al. (2003) on this factor as a strong influencer of adoption. It seems that users with multiple eIDs might be more inclined to adopt additional services, possibly due to their technological familiarity or because these services meet specific needs.

However, these same participants may find the process more difficult, **as suggested by the effort expectancy results**. This perceived burden could come from the increased cognitive load and diminishing returns associated with managing multiple eIDs. This conflict suggests that while users recognize the benefits of adopting additional eIDs, the effort required may make them less likely to adopt further services. To further explore these conflicting findings, additional qualitative research, possibly through interviews, could perhaps shed light on this conflict.

The second question concerning behavioral intention showed no statistically significant results, however, it still provided valuable insights. We asked users about the factors that most influenced their willingness to adopt eID solutions and discovered that the distribution of responses was relatively similar across both groups. This similarity suggests that single eID users and multiple eID users may regard the same factors as primary drivers for adoption. Notably, both groups showed signs of emphasizing the importance of secure data handling, usability, and ease of use. The UTAUT framework (Venkatesh et al., 2003) underscores ease of use and usability as drivers for adoption, and this is further strengthened by the findings from Tsap et al. (2020) as well as Pöhn et al. (2021). Additionally, secure handling of data is highlighted as a strong factor by Rodrigues et al. (2016), who argue that improvements in security and privacy policies can enhance consumer trust, thereby contributing to the success of electronic initiatives. The significance of trust in the adoption process is also emphasized by Tsap et al. (2020).

Our analysis of behavioral intentions revealed mixed results. While multiple eID users showed a higher tendency to adopt additional services, suggesting a relation between familiarity with technology and adoption, this was not a safe and strong predictor of further adoption. These results reflect some alignment with the UTAUT framework of Venkatesh et al. (2003) on the importance of familiarity, although they also suggest a more nuanced interaction. Even though familiarity appears to increase willingness to adopt new eID-services, the perceived effort and complexity of learning these systems might lower this effect. In regards to the findings from Tsap et al. (2020), Pöhn et al. (2021) and Rodrigues et al. (2016), we found that ease of use and data security are significant, yet the relationship between the factors influencing adoption is complex and requires further analysis. This indicates that, while users recognize the benefits of new eIDs, the perceived difficulty with it may influence their willingness to adopt and use additional services.

5.6 Use Behavior

A statistically significant difference was observed in the frequency of eID usage between participants who utilize multiple eID services compared to those who rely on a single service. Specifically, individuals with access to multiple eIDs reported an average of 7.7 authentications per day, whereas single eID users reported approximately 5.8 times, which indicates a higher usage rate among multiple eID users. The more frequent engagement with multiple eID-services may suggest a greater extent to the acceptance which is potentially driven by the convenience, availability and security multiple options offer. This finding can be seen in some of the key aspects by Tsap et al. (2020), who emphasized the importance of willingness to employ technology for its intended purposes.

Although the statistical analysis did not show significant results regarding the question if the respondents have perceived a case where a specific eID was forced to be used. However, the open-ended data suggested somewhat different views from a few of the respondents. The frequency analysis of open-ended responses highlighted some interesting recurrent words, with terms such as “BankID,” “authorities,” “banks” (including “banking matters”), as most frequently occurring. This suggests a perceived necessity to use certain eIDs for some respondents within specific contexts, where BankID stands out. However, there are significant quantitative differences between the groups. Reviewing the answers one-by-one, this seems to confirm the conclusion that BankID is often motivated as a forced method regarding banking related and authority logins. These findings align with Rodrigues et al. (2016), who discussed that consumer satisfaction and trust significantly affect the adoption of e-government services. The emphasis on “BankID” suggests a trust in this service, potentially contributing to its frequent mention as an obligatory eID-service for highly critical use cases.

Based on our findings, we agree with previous research by Tsap et al. (2020) and Rodrigues et al. (2016), who argue that the frequency and context of eID use (use behavior) significantly influence successful adoption. Our data show a similar pattern where higher involvement with multiple eIDs lead to greater acceptance and usage, supporting the statement that convenience, availability, and security drive user adoption.

5.7 Trust & public-private partnerships

The study asked participants to rank their trust in BankID and Freja eID, leading to some interesting findings. It appears that BankID is universally trusted and reliable among both groups, which might explain its widespread use among Swedish citizens. This level of trust is important for the adoption of a system, as emphasized by Rodrigues et al. (2016) and Tsap et al. (2003), and it seems to be common among the Swedish people, no matter how many eID services they use. Since having a BankID was required to participate in this study, its high acceptance rate and trust might be seen as basic. However, we cannot ignore the possibility of bias. As previously mentioned, Rogers (1995) suggests that users might not see enough benefit in a new service like Freja eID to try something new. Moreover, we found that users with multiple eIDs tend to trust Freja eID more than those with just one. This suggests that using multiple eIDs might lead to a better understanding of the security and benefits offered by different providers like Freja eID. The higher trust among users of multiple eIDs might also come from their greater familiarity with the digital identity ecosystem, possibly making them more open to or aware of the advantages/disadvantages of different eID services. Thus, the fear or lack of awareness of new options might be holding back further adoption, which is a factor, according to Rogers (1995). This is further highlighted by the eIDAS regulation, which underscores the importance of trust for allowing successful eID initiatives. Furthermore, the possible lack of awareness or understanding among single eID users, leading to more conservative trust levels, could also reflect a general resistance to change or a preference for sticking with a familiar and trusted service. Finally, further emphasis on trust is put by Axelsson and Melin (2012) who argues that trust is not only a technical requirement for users, but foundational. They put forward that a lack of trust from citizens may create a lack of trust in electronic systems.

Our research supports the idea that trust is key for adopting technology, as shown by Rodrigues et al. (2016), Tsap et al. (2003) and the eIDAS regulation (European Union, 2019). We found that the large trust in BankID among Swedish citizens is probably a big reason for its wide use. However, our study also shows that people who use multiple eID services, like Freja eID, also trust these services at a higher rate. This suggests that being familiar with different eIDs can make people more open to new technologies, which fits with Rogers (1995) ideas on adopting innovations. Our findings show signs of a challenge in adopting new systems like Freja eID for those used to just a singular service.

5.8 Availability

To enhance understanding of public-private partnerships in the context of eID-services such as BankID and Freja eID, a question regarding their availability in both authorities and private companies was asked to the respondents. The goal was to understand the extent to which these services are accepted and utilized across various sectors, both in governmental services and private actors. Walke et al. (2023) highlights the importance of a public-private link, where the collaboration between authorities and private companies was found highly important for the success of an eID. Their findings suggest that environments lacking in competition and collaboration can lead to the failure of an eID service. In this scenario, a collaborative environment indicates broad acceptance and integration of the service with the use extending across both public authority login systems and private actors. Regarding perceptions of availability, participants rated BankID highly, with an overall median score of 6 out of 7 in total

across both groups combined. In contrast, Freja eID received lower scores, with a median of 4 out of 7 in both groups combined, indicating a perception of less widespread availability. This perceived absence could potentially hinder its growth and adoption rate. Further analysis revealed a significant difference in the perceived availability of Freja eID between the two groups, which may be attributed to better awareness among early adopters, or those using multiple eID services, thus being more familiar with the eID landscape. For the purpose of understanding willingness to adopt a secondary service, the single eID users is the more interesting group for this question. Compared to users with multiple eIDs, single eID users perceive a weaker public-private partnership in Freja eID, and also view it as less available than BankID.

Our findings align with findings by Walke et al. (2023) that emphasize the importance of public-private partnerships for the success of eID services like BankID and Freja eID. We found that BankID is widely accepted and used across both public and private sectors, scoring high on availability. In contrast, Freja eID scoring lower, seems less available and integrated, indicating potential barriers to its adoption.

6 Conclusion

The purpose of this study has been to analyze the factors influencing the willingness of the Swedish population to adopt multiple eID services, hence leading to formulating the research question: “*Factors influencing the willingness of multiple eID usage in Sweden: A study of the factors in acceptance and willingness to adopt several eID solutions other than BankID in the Swedish market.*” This study has concluded several highly interesting factors of eID adoption which have been reviewed and discussed in the previous chapter. The outcome of this study aids in understanding and shedding more light into what influences the willingness and adoption in the Swedish eID market. Although it is not an easy and intuitive research as the term “willingness” is complex and can be seen from many different perspectives. However, a few of the more important areas can be cautiously concluded. The eID adoption of multiple solutions has indeed some barriers where some factors seem to have a more important role than others. We are arguing that BankID holds a strong position and grip in the competition, possibly making the factors for acceptance quite different from other types of industries. From the analysis and discussion we can conclude that our findings points out that *ease of use* was the most influencing factor when interpreting the results as a whole in the perspective of UTAUT.

Beyond the factors outlined by, for example, UTAUT and previous research, Rogers (1995) suggests that the success of new products or services relies on their ability to offer unique and substantial benefits. This requirement is important for encouraging users to adopt a new service, as there must be a strong perceived benefit. Such innovation may be essential to achieve widespread success in the Swedish market, more importantly when competing against established services like BankID. Although some users recognized benefits in adopting an alternative service like Freja eID, and BankID’s existing high levels of trust and perceived availability have led to high user satisfaction. As a result, for a new eID service to increase in popularity, it would need to offer significant improvements to the existing eID market. Another important success factor is the integration and visibility of the service within both public authority systems and the private sector. This not only improves convenience but also increases user trust. Therefore, a lack of presence in such areas could contribute to a reduced level of adoption for a new eID service.

Our study confirms that for a new eID service to succeed in a market dominated by established options like BankID, it must offer significant and unique benefits that users clearly perceive as superior. This is necessary to overcome the high satisfaction and trust that BankID has already established, as Rogers (1995) suggests. Additionally, our findings underscore the importance of broad integration and cooperation across both public and private sectors to enhance convenience and trust, which are important for successful adoption. This goes hand in hand with the findings of Walke et al. (2023). As previously mentioned, we also found that trust is an important factor for adoption, which is supported by previous research (Pöhn et al., 2021). Thus, our results are consistent with existing studies on eID services, emphasizing the need for significant advantages, trust, and comprehensive system integration.

However, it’s worth highlighting that our findings differ from some already established theories and previous research. Contrary to the traditional view of acceptance from the UTAUT by Venkatesh et al. (2003), our data suggests that previous experience with eID services does not

necessarily reduce the effort required for adopting additional systems. Instead, it might increase the perceived effort leading to adopting becoming more challenging. This indicates a more difficult interaction between user experience and new technology adoption than previously understood.

In conclusion, it is evident that the willingness of Swedish eID users to adopt *multiple* electronic identification services is influenced by several factors. First among these is the need for an eID-service to be useful, and easy to use. Another is the well established position of BankID, which demonstrates a high trust level and a wide availability, making it a preferred choice among a majority of the Swedish users. This deep trust and efficiency set a high standard that new eID services may struggle to meet. Additionally, the lack of unique innovative features and alternatives that provide significant improvements over BankID discourages users from adopting multiple eID services. This underlines the challenging market for new eID-services in Sweden and highlights the important role of innovation, trust, availability and service efficiency in influencing user willingness to adopt multiple eID. These factors together suggest a compelling explanation for why the Swedish market shows a strong preference for a single, established service like BankID, despite the presence of alternative options.

6.1 Future research

For future research, we recommend expanding the sample size to enable a more precise data analysis. Additionally, it would be beneficial for future studies to take a more comprehensive and detailed analysis of the data to uncover deeper insights and trends. Furthermore, qualitative approaches, for example in the form of interviews, could be utilized to understand deeper connections between willingness and acceptance and potentially give further depth to complementary areas. A qualitative approach would however require a somewhat longer timespan, since the focus of this thesis is to understand the factors of willingness in an entire population. Further adjustments could be to evaluate the acceptance through different frameworks, other than the UTAUT. Worth considering is that the eID landscape is in constant change, hence, an expanded evaluation and more comprehensive analysis could be useful to cover all different eID vendors, thus potentially uncovering more nuanced insights. Furthermore, we encourage future research to consider another perspective to eID-acceptance research, by investigating the perspective of individuals who have recently immigrated to Sweden regarding eID acceptance. This research should focus on understanding the process of obtaining an eID for newcomers and explore their acceptance of and challenges related to eID usage.

7 Usage of generative AI

There have been several cases when generative AI has improved this thesis. Foremost, it has been used to proofread and identify grammatical errors, suggest punctuation and commas throughout the text, and aid in issues relating to R code (helping to understand errors mostly and how to fix them). It has also suggested word replacements where phrasing or certain words have been poorly used. Further usage, although somewhat limited, has included bouncing ideas, especially in the **results section**, to provide different perspectives of what the data could mean besides our own initial understanding. We have also tried to use AI to help in filtering literature to more quickly find relevant areas, however, this was something it did not perform very well in, so there is little to no usage for this. Furthermore, AI was used in order to ensure that we followed the correct structure and guidelines provided by LUSEM Harvard Referencing by supplying the model with the relevant LUSEM material regarding references.

To clarify the usage with help in proofreading and grammatical issues, **no new content has been generated** with AI, but rather it has contained the content from the authors and pinpointed where the issues are, and motivations why it is not suitable or identified as an issue. The feedback generated has been treated as commentary suggestions and **not directly copied** from the model, although some suggestions have had a highly relevant point, causing the changes to be very similar to the suggestions.

An example of how punctuation and commas have improved readability is as follows:

The sentence: “To ensure the reliability of our study we emphasized transparency in both the survey’s design and execution with a focus on enabling repeatability.”

- Prompt “Keep the content and wording but suggest how we can improve grammatical errors, insert punctuation or commas.”

- Change: “To ensure the reliability of our study, we emphasized transparency in both the survey’s design and execution, with a focus on enabling repeatability.”

The only generative model used is OpenAI with GPT-4.

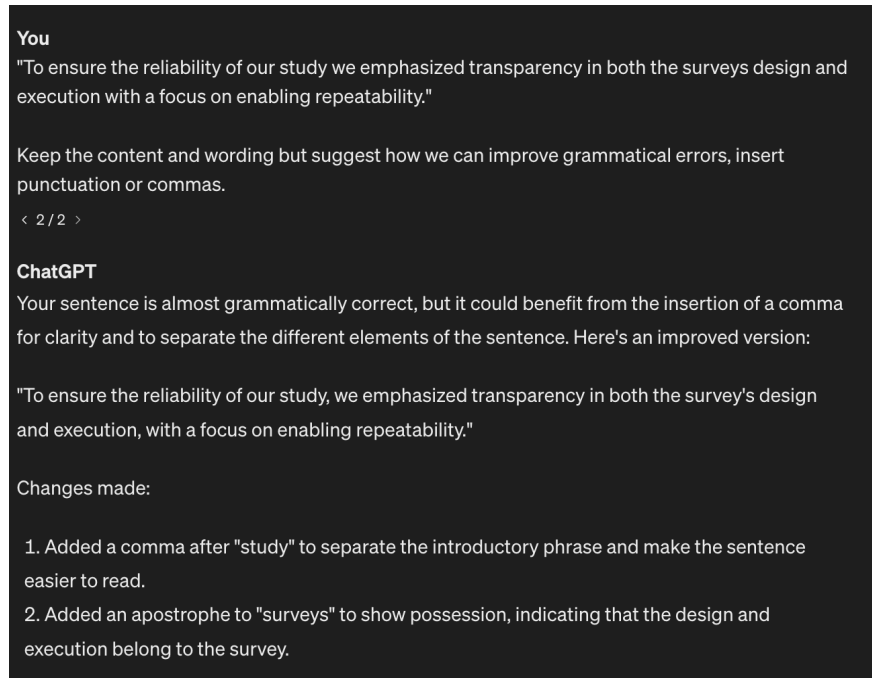


Figure 7.1: Example usage of GPT-4

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Appendix A

Options	1	2	3	4	5	6	7	8	9	10	11
2-points	<i>Disagree</i>	<i>Agree</i>									
3-points	<i>Disagree</i>	<i>Neither Agree nor Disagree</i>	<i>Agree</i>								
4-points	<i>Strongly Disagree</i>	<i>Disagree</i>	<i>Agree</i>	<i>Strongly Agree</i>							
5-points	<i>Strongly Disagree</i>	<i>Disagree</i>	<i>Neither Agree nor Disagree</i>	<i>Agree</i>	<i>Strongly Agree</i>						
6-points	<i>Strongly Disagree</i>	<i>Disagree</i>	<i>Slightly Disagree</i>	<i>Slightly Agree</i>	<i>Agree</i>	<i>Strongly Agree</i>					
7-points	<i>Strongly Disagree</i>	<i>Disagree</i>	<i>Slightly Disagree</i>	<i>Neither Agree nor Disagree</i>	<i>Slightly Agree</i>	<i>Agree</i>	<i>Strongly Agree</i>				
8-points	<i>Very Strongly Disagree</i>	<i>Strongly Disagree</i>	<i>Disagree</i>	<i>Slightly Disagree</i>	<i>Slightly Agree</i>	<i>Agree</i>	<i>Strongly Agree</i>	<i>Very Strongly Agree</i>			
9-points	<i>Very Strongly Disagree</i>	<i>Strongly Disagree</i>	<i>Disagree</i>	<i>Slightly Disagree</i>	<i>Neither Agree nor Disagree</i>	<i>Slightly Agree</i>	<i>Agree</i>	<i>Strongly Agree</i>	<i>Very Strongly Agree</i>		
10-points	<i>Very Strongly Disagree</i>	<i>Strongly Disagree</i>	<i>Disagree</i>	<i>Mostly Disagree</i>	<i>Slightly Disagree</i>	<i>Slightly Agree</i>	<i>Mostly Agree</i>	<i>Agree</i>	<i>Strongly Agree</i>	<i>Very Strongly Agree</i>	
11-points	<i>Very Strongly Disagree</i>	<i>Strongly Disagree</i>	<i>Disagree</i>	<i>Mostly Disagree</i>	<i>Slightly Disagree</i>	<i>Neither Agree nor Disagree</i>	<i>Slightly Agree</i>	<i>Mostly Agree</i>	<i>Agree</i>	<i>Strongly Agree</i>	<i>Very Strongly Agree</i>

Appendix B

Category	Survey Question	Question Code
Kontrollfrågor	Vad är din ålder?	K1
Kontrollfrågor	Använder du en eller flera eID-tjänster (såsom BankID och Freja eID)	K2
Kontrollfråga	Vilka/Vilken eID-tjänst(er) använder du?	K3
Performance Expectancy	I vilken grad upplever du att användningen av din/dina eID-tjänster underlättar ID-verifiering, onlinetransaktioner och säkerhet?	PE1
Performance Expectancy	Utgå från de eID tjänster du har. Vilka fördelar upplever du (om du har flera), eller tror du (om du har en), att det finns med att använda flera eID-lösningar jämfört med en? (Max 3 svar)?	PE2
Effort Expectancy	Reflektera över dina erfarenheter, hur svårt/enkelt var det att ta till den/de eID-tjänst(er) du använder?	EE1
Effort Expectancy	Hur enkelt/svårt var det att integrera användningen av eID-tjänster i dina vanliga rutiner?	EE2
Social Influence	Hur mycket påverkade din omgivning (såsom familj, kollegor, vänner etc.) ditt beslut att börja använda din(a) nuvarande eID-lösning(ar)?	SI1
Facilitating Conditions	Utvärdera hur väl du upplever att det finns tekniskt stöd kring användningen av eID-lösningar eller om du exempelvis ofta stöter på problem. Ett tekniskt stöd kan exempelvis vara guider på internet eller kundtjänst som hjälper dig.	FC1
Behavioral Intention	Utifrån din nuvarande användning av eID-tjänster, hur sannolikt är det att du kommer börja använda ännu fler eID-lösningar?	BI1
Behavioral Intention	Vilka faktorer påverkar mest din vilja att använda eID-lösningar, oavsett om du har en eller flera? (Max 3 svar)	BI2

Use Behavior	Uppskatta hur ofta använder du eID-tjänster på en och samma dag?	UB1
Use Behavior	Finns det situationer där du känner dig uppmanad till att använda en specifik eID-lösning?	UB2
Literature regarding acceptance, adoption and success of eID	Vilken tillit har du till BankID när det kommer till säkerhet och integritet?	LRA1
Literature regarding acceptance, adoption and success of eID	Vilken tillit har du till Freja eID när det kommer till säkerhet och integritet?	LRA2
Literature regarding acceptance, adoption and success of eID	Till vilken utsträckning tycker du att både myndigheter och privata aktörer accepterar BankID?	LRA3
Literature regarding acceptance, adoption and success of eID	Till vilken utsträckning tycker du att både myndigheter och privata aktörer accepterar Freja eID?	LRA4

Appendix C

Användaracceptans av eID-lösningar – Huvudenkät

Denna enkät syftar till att undersöka acceptansen hos svenskar för eID-lösningar. Vi genomför detta genom att betrakta **både de som använder flera eID-tjänster, men även de som enbart använder sig av en.**

Vad är eID?

eID är en förkortning för elektroniskt ID. Detta syftar till digital identifiering, liknande ett pass, körkort eller nationellt id-kort fast istället digitalt. BankID är ett exempel på en tjänst som ofta används för digital identifiering, alltså som ett eID.

Övrig datasäkerhet

Det är helt frivilligt att delta i en enkät och du kan när som helst välja att avsluta din medverkan.

Genom att svara på frågorna godkänner du att vi kommer att samla in data om dig i form av dina svar och använda detta som grund till undersökningen.

Svaren är anonyma och kan inte spåras tillbaka till dig.

Datan kommer inte användas för något annat syfte än för den planerade uppsatsen.

Data kommer att samlas in i enlighet med GDPR, General Data Protection Regulation. Vi samlar endast data som är nödvändig för vår studie och kommer endast spara data under studiens gång, inte längre än nödvändigt. Datan kommer att sparas på ett säkert sätt. Endast skribenterna har tillgång till den obehandlade datan och läsare av uppsatsen kommer endast se den sammanställda datan.

Datainsamlingen sker med hjälp av Lunds Universitet och följer därmed universitetets privacy policy för forskning som du kan läsa mer om här: [Privacy policy | Lund University](#).

Du är välkommen att kontakta Oliver (ol5254we-s@student.lu.se) om du har frågor gällande studien eller dina rättigheter.

* Vad är 3 + 6?

- 8
- 9
- 10
- 11

* Har du läst introduktionen noggrant?

- Kanske
- Vet ej
- Ja
- Nej

* Vänligen godkänn att du kommer uppmärksamma alla frågor samt att svara ärligt.

- Jag kommer att ge ärliga svar
- Jag kommer inte att ge ärliga svar

Nästa

Användaracceptans av eID-lösningar – Huvudenkät

* Vad är din ålder?

- 18-29 år
- 30-39 år
- 40-49 år
- 50-59 år
- 60-70 år

* Använder du en eller flera eID-tjänster (exempelvis BankID och Freja eID)

- Jag använder flera eID-tjänster
- Jag använder enbart en eID-tjänst

Bakåt

Nästa

Användaracceptans av eID-lösningar – Huvudenkät

Användare av en eID-tjänst

* Vilken eID-tjänst använder du?

- BankID
- Freja eID
- AB Svenska Pass

Bakåt

Nästa

Användaracceptans av eID-lösningar – Huvudenkät

Acceptans av eID

* I vilken grad upplever du att användningen av din/dina eID-tjänster underlättar ID-verifiering, onlinetransaktioner och säkerhet?

- 1 (Inget)
- 2
- 3
- 4 (Neutral)
- 5
- 6
- 7 (Mycket)

* Utgå från de eID tjänster du har.

Vilka fördelar upplever du (om du har flera), eller tror du (om du har en), att det finns med att använda flera eID-lösningar jämfört med en? (Max 3 svar)?

- Säkrare
- Smidigare (Använder det som passar situationen)
- Reservlösning vid problem av en tjänst
- Ökad tillgänglighet (Finns alltid en tjänst som passar situationen)
- Möjlighet att anpassa efter arbete och privatliv
- Inget av ovanstående alternativ

* Reflektera över dina erfarenheter, hur svårt/enkelt var det att ta till den/de eID-tjänst(er) du använder?

- 1 (Svårt)
- 2
- 3
- 4 (Neutral)
- 5
- 6
- 7 (Enkelt)

* Hur enkelt/svårt var det att integrera användningen av eID-tjänster i dina vanliga rutiner?

- 1 (Svårt)
- 2
- 3
- 4 (Neutral)
- 5
- 6
- 7 (Enkelt)

* Hur mycket påverkade din omgivning (såsom familj, kollegor, vänner etc.) ditt beslut att börja använda din nuvarande eID-lösning(ar)?

- 1 (Inget)
- 2
- 3
- 4 (Neutral)
- 5
- 6
- 7 (Mycket)

* Utvärdera hur väl du upplever att det finns tekniskt stöd kring användningen av eID-lösningar eller om du exempelvis ofta stöter på problem.

Ett tekniskt stöd kan exempelvis vara guider på internet eller kundtjänst som hjälper dig.

- 1 (Inget stöd)
- 2
- 3
- 4 (Neutral)
- 5
- 6
- 7 (Mycket stöd)

* Utifrån din nuvarande användning av eID-tjänster, hur sannolikt är det att du kommer börja använda ännu fler eID-lösningar?

- 1 (Osannolikt)
- 2
- 3
- 4 (Neutral)
- 5
- 6
- 7 (Sannolikt)

* Vilka faktorer påverkar mest din vilja att använda eID-lösningar, oavsett om du har en eller flera? (Max 3 svar)

- Tillit
- Användbarhet
- Säker hantering av användardata
- Enkelhet att använda
- Kompatibilitet (Går att använda på många tjänster)
- Förväntad fördel med användning av eID-tjänsten

* Uppskatta hur ofta använder du eID-tjänster på en och samma dag?

0 20 (och över)

* Finns det situationer där du känner dig uppmanad till att använda en specifik eID-lösning?

Nej

Ja (Vänligen berätta kort när)

* Vilken tillit har du till BankID när det kommer till säkerhet och integritet?

1 (Lite)

2

3

4 (Neutral)

5

6

7 (Mycket)

* Vilken tillit har du till Freja eID när det kommer till säkerhet och integritet?

- 1 (Lite)
- 2
- 3
- 4 (Neutral)
- 5
- 6
- 7 (Mycket)
- Jag vet ej vad Freja eID är

* Till vilken utsträckning tycker du att både myndigheter och privata aktörer accepterar BankID?

- 1 (Liten utsträckning)
- 2
- 3
- 4 (Neutral)
- 5
- 6
- 7 (Bred utsträckning)

* Till vilken utsträckning tycker du att både myndigheter och privata aktörer accepterar Freja eID?

- 1 (Liten utsträckning)
- 2
- 3
- 4 (Neutral)
- 5
- 6
- 7 (Bred utsträckning)
- Jag vet ej vad Freja eID är

Bakåt

Klar