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WHAT MAKES PEOPLE TRUST NEW DIGITAL TECHNOLOGIES? - THE INFLUENCE OF TRUST IN INTENTION TO USE DIGITAL SERVICES

ABSTRACT

Trust has a key role in technology acceptance. Individuals are less likely to adopt new technologies due to lack of trust. Creating trust in a digital environment encompasses more elements than in the physical social world. Electronic systems involve communication not only between individual people but also among digital components. Widening our understanding of trust from social world to digital environment is becoming more important every day as the use of technical solutions is taking a bigger part of everybody's life. Previous research has found strong connections between trust and technology acceptance but lacks the knowledge of the origin of trust. A research gap was found in the field of generalized social trust and intention to use technology, but at the same time the field of digital trust was found not to be completely discovered. An online questionnaire was used to collect data from the participants. Both generalized social trust and digital trust were found to have a relationship with intention to use digital services. Generalized social trust showed a significant but rather weak relationship with intention to use digital services. Digital trust was found to play a bigger role but not all its individual factors had a connection to intention to use digital services. Comparing these two different aspects of trust was expected to show us a path to follow when designing, building, and marketing new digital services. The purpose of the study was to clarify whether companies offering digital services should pay attention to the factors of generalized social trust in a certain customer segment or rely on the factors of digital trust.

TIIVISTELMÄ

Luottamuksella on avainrooli teknologian käytön omaksumisessa. Ihmiset ovat
vähemmän taipuvaisia ottamaan käyttöön uusia teknologioita luottamuksen
puutteen vuoksi. Luottamuksen rakentaminen pitää sisällään enemmän tekijöitä
digitaalisessa ympäristössä kuin fyysisessä sosiaalisessa maailmassa. Sähköisten
järjestelmien kohdalla kommunikointi ei rajoitu pelkästään ihmisten väliseen
viestintään, vaan lisäksi siihen sisältyy kommunikointi digitaalisten komponent-
tien kesken. Luottamuksen ymmärryksen laajentaminen sosiaalisesta maail-
masta digitaaliseen ympäristöön tulee jatkuvasti tärkeämmäksi, sillä teknisten
ratkaisujen käyttö kasvaa osana jokapäiväistä elämää. Aiemmissa tutkimuksissa
on löydetty vahva yhteys luottamuksen ja teknologian käytön omaksumisen vä-
lillä, mutta tieto luottamuksen alkuperästä puuttuu. Tutkimusaukko löytyi ylei-
sen yhteiskunnallisen luottamuksen ja teknologian käyttöaikeen välillä, mutta
samalla havaittiin, että digitaalisen luottamuksen aluetta ei ole täysin tutkittu.
Verkkokyselyä käytettiin tietojen keräämiseen osallistujilta. Sekä yleisen yhteis-
kunnallisen luottamuksen että digitaalisen luottamuksen havaittiin olevan yh-
teydessä aikomukseen käyttää digitaalisia palveluita. Yleinen yhteiskunnallinen
luottamus osoitti merkittävän, mutta suhteellisen heikon yhteyden aikomukseen
käyttää digitaalisia palveluita. Digitaalisella luottamuksella havaittiin olevan
suurempi rooli, mutta kaikilla sen yksittäisillä tekijöillä ei ollut yhteyttä aiko-
mukseen käyttää digitaalisia palveluita. Näiden kahden erilaisen luottamuksen
tyypin vertailun odotettiin antavan uutta tietoa digitaalisten palvelujen suunnit-
telua, rakentamista ja markkinointia varten. Tutkimuksen tarkoitus oli selventää,
tulisiko digitaalisia palveluja tarjoavien yritysten keskittyä huomioimaan kulloi-
senkin asiakassegmentin yleisen yhteiskunnallisen luottamuksen tekijät, vai kes-
kittyä digitaalisen luottamuksen tekijöihin.

Avainsanat: digitaalinen luottamus, yleinen luottamus, sosiaalinen luottamus,
teknologian

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1 INTRODUCTION

According to Li et al. (2008), people rely on their general disposition to trust when in a novel situation. Trust is an essential element also in intention to use technology (Belanche et al., 2012; Saariluoma et al., 2019). For example, smartphones present opportunities for businesses, and establishing trust is paramount for people to feel secure while using them. Mobile devices have evolved into indispensable tools for daily life, with individuals using them for information consumption, transactions, and communication. (Paliszkiewicz & Launer, 2020.) Trust is a key factor that drives the utilization of online stores, has a direct connection with online shopping behaviour (Gefen et al., 2003; Pavlou, 2003), and plays a critical role in online transactions (Kim et al., 2009). Trust significantly shapes consumers' attitudes and intentions regarding mobile commerce, consequently impacting their real purchasing actions (Giovannini et al., 2015). In the context of health websites, the roles of doctors and nurses are replaced by search features, making trust very important for people when they use health websites or online systems as tools for finding treatments (Boon-itt, 2019). Lack of trust is one of the most commonly cited reasons why users do not use the internet for their activities (Lee & Turban, 2001).

Digital trust emerges as a product of the evolving digital society, an inescapable facet in this new landscape, building upon traditional interpersonal and institutional trust and finding extensive application in the online realm. Currently, research on digital trust remains relatively rare. (Guo, 2022.) For example, despite the crucial role of trust in mobile commerce, there has been limited scholarly exploration of the connections between the elements of mobile devices and customer trust (Giovannini et al., 2015). Cloud computing is another good example. Cloud computing has evolved into a significant paradigm for computing and the delivery of IT services (Van Der Werff et al., 2019). A fundamental obstacle in the adoption and realization of the advantages of cloud computing is trust (Hwang & Li, 2010). The issues and challenges associated with trust in cloud computing have been broadly argued from various angles (Everett, 2009; Habib et al., 2012). Recent research on trust in the cloud zooms in on specific trust-

related aspects, leaving a comprehensive overview of trust lacking (Paliszkiewicz & Launer, 2020). Often previous studies connecting trust and technology adoption are based on several models and theories on technology acceptance, notably the Theory of Planned Behaviour (TBP) developed by Ajzen in 1991, along with its derivatives like the Technology Acceptance Model (TAM) (Davis & Venkatesh, 1996), the Unified Technology Acceptance Model (UTAUT) (Venkatesh et al., 2003) and the Extended Unified Theory of Acceptance and Usage of Technology (UTAUT2) (Venkatesh et al., 2012).

Usefulness and ease of use have been widely accepted as the main factors of technology acceptance and intention to use technology (Belanche et al., 2012). This is understandable as technologies are designed to enhance human life and improve the quality of life (Saariluoma et al., 2019). Trust as a factor has not been considered as eagerly. Most current digital systems are constructed with the assumption that users place complete trust in their device, or they must trust a service provider. Typically, these current systems lack user-configurable options concerning their trust preferences. (Yan & Holtmanns, 2007.) Various different trust-building behaviors can be found in the literature, for example, understanding the needs of the user, ensuring two-way communication and establishing guiding principles (Galford & Drapeau, 2002), being responsive and caring (Paliszkiewicz & Launer, 2020), supporting processes, creating boundaries (Bibb & Kourdi, 2004), being open and dealing with mutual expectations (Six, 2005). However, there are still numerous unresolved research inquiries regarding human-machine interaction aimed at building trust (Yan & Holtmanns, 2007).

1.1   Research problem

A connection between trust and intention to use technology has been widely studied (Belanche et al., 2012; Esteva Armida, 2008; Roh et al., 2022; Venkatesh et al., 2016) referring mostly to digital trust. However, generalized social trust related to intention to use technology has not gained as much attention. Research brings up a connection between general trust and intention to use technology concerning robots (Kraus et al., 2023) but the impacts of digital trust and generalized trust on the intention to use technology are not compared. Previous research does not reveal what type of trust is needed in trusting technological solutions.

The current study compares two categories of trust and their relationship to intention to use digital services. Generalized social trust refers to impersonal trust between strangers (Delhey & Newton, 2005). Digital trust describes how well people trust the combination of technology and people and processes

behind it (Marcial & Launer, 2021). The purpose of the current study is to find an answer to the following research question:

Which has a stronger impact on the intention to use new digital services: generalized social trust or digital trust?

Being aware of the roots of users' trust behaviour would help industry to understand how to build and market new technologies. Entering markets in different geographical locations or cultures requires wide understanding of the environments. Various aspects of people's trust behaviour should be considered when designing digital services for certain user groups.

The current research has been conducted by University of Jyväskylä SAFE Project in partnership with Digital and Population Data Services Agency (DVV) in Finland. Both parties as practitioners are interested in the role of trust in intention to use digital services and frame the topic of the study.

1.2   Literature review

The literature review is executed by searching for reliable articles and books. Google Scholar has been a primary search engine to find articles, conference publications and literature. Other search engines have been Scopus and library's online services of university of Jyväskylä. To search for sources in databases, keywords such as digital trust, e-trust, generalized trust, social trust, technology acceptance, technology adoption, and intention to use technology were used. Furthermore, combinations of these and other keywords were used in the search. Sources have also been sought from the reference lists of previously identified sources. AI tools ChatGPT and Perplexity.ai have been used to find and recognise literature. In addition, my supervisor has been kind enough to provide me with hints and links to relevant literature.

Articles used as source material were evaluated based on previous citations, authors, and publication dates. Sources were considered good when they were published in leading publications in the field, with high ratings in publication forums and widely cited. Hypothesis for the empirical study were set based on the findings in the literature review.

1.3   Empirical research

The empirical part of the research was completed as a quantitative study. A questionnaire was released online. Analysed results show a significant correlation between intention to use digital services and both forms of trust: generalized social

trust and digital trust. Digital trust can be seen in a more important role as three of its measured factors express a significant correlation with intention to use digital services, whereas none of the variables of generalized social trust indicate significant correlation with intention to use digital services.

1.4 Structure of the thesis

The progress and results of the research are presented in more detail in this paper in the following order: in chapter 2. trust and generalized social trust are introduced. Chapter 3. brings up the concept of digital trust and combines trust and intention to use technology. Chapter 4. presents the method of the research, and chapter 5. reveals the results of the study. Chapter 6. discusses the results in more detail and chapter 7. is for conclusion

2 TRUST

This chapter will introduce trust concentrating on generalized social trust. Cultural aspect is brought in considering Finland as a research environment. Finally, the chapter specifies the connection between generalized social trust and trust in technology.

2.1 What is trust?

Trust is a vague term that can have different definitions depending on the context, field of study, or even the language used. People may consider several different things when thinking of the word 'trust'. (Guo, 2022; McKnight & Chervany, 2000; Moorman et al., 1993) Rousseau et al. (1998) defined trust as a "psychological state comprising the intention to accept vulnerability based upon positive expectations of the intentions or behaviour of another". Mayer et al. (1995) specify trust as a willingness of a trustor to be vulnerable to the actions of another party, relying on the belief that the other party will carry out a specific action that holds significance for the trustor, regardless of the trustor's capacity to supervise or manage that other party. In human society trust is used to handle high-risk situations, where people operating together do not have required information about each other (Seleznyov et al., 2004). Trust is seen essential wherever risk, uncertainty or interdependence exist (Mayer et al., 1995; McKnight & Chervany, 2000).

The factors of trust (Table 1) can be described based on studies by Wang and Emurian (2005), Cook et al. (2009), Bachmann and Inkpen (2001) and Dietz (2011). According to their studies trust is a combination of four factors: 1) trustor and trustee, 2) vulnerability, 3) trust leading to action(s) and 4) trust being a subjective matter. All four aspects are required to exist. Vulnerability indicates trust occurring only in an uncertain situation. Actions following trust behaviour mostly include some level of risk-taking. Trust being a highly subjective matter points out that trust is based on different circumstances regarding the trustee,

environment and the context of a current situation. Hardin (1993) argues trust being the product of experience.

Table 1 The components of trust

Factor of trust	Context of the factor
Trustor	Party trusting.
Trustee	Party to be trusted.
Vulnerability	Trust occurs only in an uncertain situation.
Produced action(s)	Trust behaviour is followed by action(s), which mostly include some level of risk-taking.
Subjective matter	Trust is a subjective matter influenced by individual characteristics and situational conditions.

As trust can be seen in many ways, not all researchers agree to the above definition of the trust factors. Robbins (2016) argues that vulnerability and risk-taking are not components of trust as trust can also exist without them. He draws a model of trust with three dimensions only: how, who, and what. Lewis and Weigert (1985) argued that trust can be explained by three approaches: cognitive, emotional, and behavioural. These dimensions reveal the foundation of trust development as a cognitive process that expresses people and institutions as being reliable (Lewis & Weigert, 1985).

2.2 Generalized social trust

Generalized trust refers to trust in other not-familiar members of society explaining to what extent people believe that most other people can be trusted. The phenomenon is an important component of national culture. (Putnam, 2000; E. Uslaner, 2001). Generalized trust may be distinguished from particularized trust, which corresponds to trust in the family and close friends (Delhey & Newton, 2005). Kraus et al. (2022) separate two levels of trust: general trust and specific trust, where the latter is defined as trust in a specific object. Delhey & Newton (2005) use a term generalized social trust and social trust when considering a percentage of population trusting other people. However, social trust may cover both generalized trust and particularized trust. The term generalized social trust is chosen to be used in the current study, with a meaning of impersonal trust between strangers.

From the other point of view, trust is a complex construct that can be divided into two main categories: individual and societal. On an individual level, trust is affiliated with personality features or individual social and demographic attributes. On a societal level, trust is associated with a culture or social and political institutions which people participate in, contribute to, or benefit from.

(Delhey & Newton, 2003) Generalized social trust is influenced by both (E. M. Uslaner, 2008): social cultural perspective and individual experimental perspective (figure 1).

The cultural trait suggests trust being a stable phenomenon inherited from a generation to the next (Almond & Verba, 2015; Putnam et al., 1993). The experimental trait emphasizes trust as a matter changing over time due to experiences in the environment people live in (Dinesen & Hooghe, 2010; Hardin, 2002). Trust is commonly transmitted via cultural inheritance (Dinesen, 2012a, 2012b, 2013; E. M. Uslaner, 2008). According to the individual experimental view, trust is influenced by the presence of trustworthy people, while the social cultural view sees trust as a long-lasting personal value that is less susceptible to external influences. Remarkable fact is that both culture and experience have effects on trust, but it seems that ethnic heritage plays a more prominent role. Social capital, and particularly generalized trust, is a crucial component of political culture. Generalized trust does not arise from direct experiences or relate to trust in particular individuals. Therefore, generalized trust is rather stable than changing over new experiences. This understanding of trust has a cultural perspective, as it acknowledges the transmission of trust across generations, from grandparents to parents and beyond. (E. M. Uslaner, 2008).
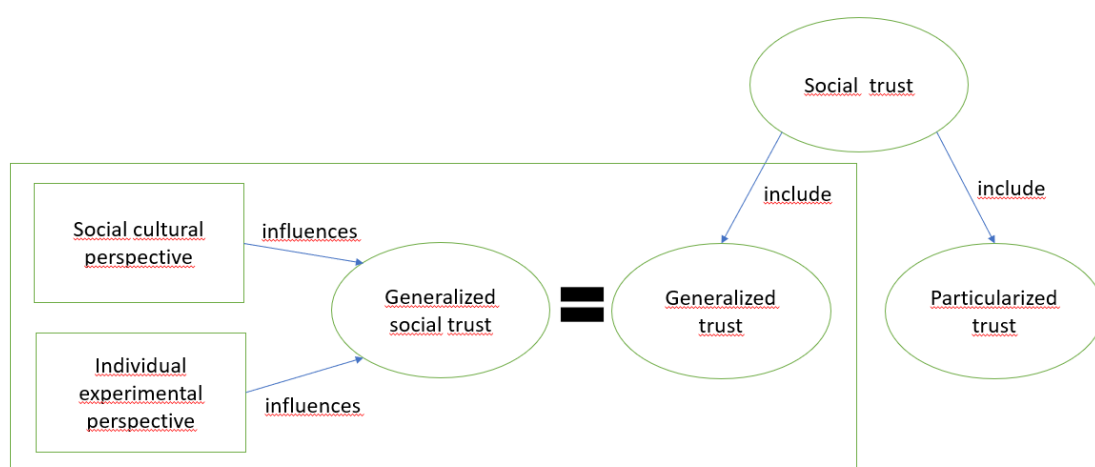
Figure 1 Generalized social trust

Generalized social trust is an important part of a civic culture, and assist building well-operating societies (Dinesen, 2012a). Generalized social trust is an essential element of main constructs of a modern society such us democracy and effective government (Almond & Verba, 2015; S. F. Knack, 2000; Putnam et al., 1993; Tavits, 2006). In more detail generalized social trust is related to democratic citizenship in a positive manner including satisfaction with democracy and confidence in political institutions (Zmerli & Newton, 2008), as well as rule compliance (Scholz & Lubell, 1998). Looking beyond political domain, generalized

social trust is found to bring positive consequences to economic growth of a society (Beugelsdijk et al., 2004; S. Knack & Keefer, 1997; E. M. Uslaner, 2002; Zak & Knack, 2001) and to individual well-being such as life satisfaction (Helliwell, 2003).

Social surveys that are used to report levels of trust (e.g. World Values surveys) work as good indicators of the trustworthiness of societies. The standard question considering trust in World Values surveys is "Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?" (www.worldvaluessurvey.org). The scores tell us about the trustworthiness of environments in which respondents live (Delhey & Newton, 2003; Putnam, 2000). According to some experimental evidence, countries achieved high trust scores in the World Values surveys have more honest and trustworthy citizens (S. Knack & Keefer, 1997). Further, empirical studies have reported remarkable variation in the level of generalized social trust between nations, which has commonly been seen coming from cultural differences (Julsrud and Krogstad, 2020).

More affluent countries and those with greater income equality tend to exhibit higher levels of trust compared to poorer and more unequal ones (Delhey & Newton, 2003; S. Knack & Keefer, 1997). Democracies tend to exhibit higher levels of trust compared to non-democratic regimes, as suggested by Booth and Richard (1998), Newton (2001) and Paxton (2002). Additionally, nations with universal welfare benefits demonstrate greater trust levels than those with selective welfare systems, as observed by (Rothstein & Stolle, 2001). Furthermore, countries with independent judicial systems and institutional checks on political executives tend to have higher levels of trust. There is also empirical support indicating that societies characterized by lower levels of social polarization, as measured by factors such as income equality and ethnic homogeneity, tend to have higher levels of social trust (S. Knack & Keefer, 1997).

Finland is within the top ten of the most trusting societies in the world. The most trusting people come from Norway, Sweden and Denmark (Delhey & Newton, 2005). The Nordic counties score social trust points from 44 to 65 (Finland 49). Social trust varies remarkably between societies. E.g. in the Baltic countries social trust scores are between 22 and 25. (Table 2). (Delhey & Newton, 2005; Gibson, 2001.) Regardless of how trust scores are distributed among individuals within societies, wealthier and/or more democratic nations exhibit higher levels of trust compared to poorer and less democratic ones (Delhey & Newton, 2003).

The experiential approach aligns with the idea that Nordic individuals tend to be trusting. However, it suggests that it's not merely the Nordic identity itself that fosters trust but rather the experience of living among trustworthy individuals, who may or may not be of Nordic descent. The Nordic population can act

as a proxy for the proportion of trustworthy individuals within a state's population. (E. M. Uslaner, 2008)

Table 2 Social trust scores (percentage of population trusting other people) (Delhey & Newton, 2005)

Country	Social trust scores
Norway	65
Sweden	60
Denmark	58
Finland	49
Iceland	44
Latvia	25
Estonia	22
Lithuania	22

Building trust can be quite challenging, particularly when it's influenced by one's family heritage. In general, there is supporting evidence for the roles of both culture and environment. Your geographic location and people around you have an impact on your trust levels, but the more compelling evidence suggests that the values you hold are shaped by the origins of your grandparents. It appears that your personal identity carries greater significance than the identities of your neighbours. (E. M. Uslaner, 2008)

2.3   Generalized social trust and intention to use

From a social aspect intention to use technological systems can be seen as a product of social processes, which is closely linked to culture (Devine-Wright et al., 2017; Wolsink, 2018). Whether a specific technology is seen as a privacy threat or a societal advantage, depends on the unique cultural connection and historical narratives it connects with (Julsrud & Krogstad, 2020). While there are numerous definitions, cultures can be characterized as belief systems that influence individuals' frameworks for understanding the world that surrounds them (Julsrud & Krogstad, 2020; Schein, 2010).

The study conducted by Kraus et al. (2023) examined the connection between general trust in service robots and trust in a particular robot, affirming the role of general trust as the initial foundation for the establishment of trust. General trust in service robots predicted a general intention to use (Kraus et al., 2023). The findings indicate that trust in service robots as a general category predicts trust in individual robots that fall within that category. This, in turn, serves as a mediator for the impact of generalized trust on the intention to use a specific

robot. This underscores the significance of general trust in shaping specific trust. (Kraus et al., 2023.)

As the level of generalized social trust is high in Finland (Delhey & Newton, 2005), and generalized trust can be used to predict intention to use technology (Kraus et al., 2023), the following hypothesis is set in line with the theoretical considerations:

H1: Generalized social trust has positive impact on intention to use digital services.

As generalized social trust has an impact on technology acceptance (Devine-Wright et al., 2017; Wolsink, 2018; Kraus et al., 2023), the factors of generalized social trust are assumed to have an impact on intention to use digital services.

Societal conditions report the respondents' feelings about political freedom, public safety, satisfaction with democratic institutions and the intensity of conflict in society. Reported feelings as citizens' subjective matter are used as a measure to assess the degree of affective polarization in society. Societal conditions are strongly associated with trust. (Delhey & Newton, 2003). The following hypothesis is set:

H1.1: Societal conditions have impact on intention to use digital services.

Social networks discover involvement in informal social networks (Delhey & Newton, 2003). It has been suggested that modern society is experiencing an increase in forms of civic engagement and social participation (Delhey & Newton, 2003; Verba et al., 1995). Informal social networks play a crucial role in fostering social trust (Delhey & Newton, 2003). Therefore, the hypothesis is set:

H1.2: Social networks have impact on intention to use digital services.

Success and well-being measures peoples' individual satisfaction of life, standard of living, household income and present job or studies. Measures of success and well-being that are based on personal perceptions (such as life satisfaction and satisfaction with one's standard of living) outperform those based on objective criteria (such as occupation and income). Success and well-being has a role in trusting. (Delhey & Newton, 2003.) Following this, a hypothesis is set:

H1.3: Success and well-being has impact on intention to use digital services.

Propensity to trust refers to a tendency to trust other persons (Mcknight et al., 2011; Rotter, 1971). The term "propensity" suggests that it is a dynamic individual difference, not a stable, unchangeable trait (Mayer et al., 1995;

Thatcher & Perrewé, 2002). Propensity is neither trustee specific (as are trusting beliefs in a technology), nor situation specific (as are institution-based trusting beliefs) (Mcknight et al., 2011). The expectation is that the degree of trust propensity will vary across various cultural contexts (Lee & Turban, 2001; Möhlmann, 2016). Trust propensity has been argued by many authors to be an important factor in trust relationships (Lee & Turban, 2001; Mayer et al., 1995; Möhlmann, 2016). Hypothesis is set:

H1.4: Trust Propensity has impact on intention to use digital services.

3 DIGITAL TRUST

This chapter will introduce digital trust. The literature review based on previous research aims to prove a connection between intention to use technology and trust. Technology acceptance model (TAM) is used as a tool to define the affiliation.

3.1 What is digital trust?

In the past systemic trust or technology-based trust has been found as another form of trust. The domain has been described as trust on advanced technologies and algorithms. (Julsrud & Krogstad, 2020). Denning (1993) underscores the significance of evaluating trust within a system, a particularly critical aspect in the digital theme, where entities often rely solely on digital artifacts to form their trust judgments. Nowadays a term 'techno trust' refers to the capabilities and performance of technology, and its capacity to facilitate the advancement of human life (Saariluoma et al., 2019). However, it has been argued whether trust in technological systems should be considered as trust or confidence (Julsrud & Krogstad, 2020; Mollering, 2006).

In the current study digital trust is handled as a form of trust. Digital trust is related to technology but also to confidence on people and processes (Marcial & Launer, 2019) giving it a wider meaning than what techno trust stands for. Although there is not a generally accepted definition of digital trust (Guo, 2022; Pietrzak & Takala, 2021), in the current study digital trust is considered as a term explaining how well people trust the combination of technology and people and processes behind it (Mubarak & Petraite, 2020). All four components of trust (table 1) are seen as features of digital trust: 1) Trustor and trustee as actors speak of trust occurring between two parties. 2) Vulnerability refers to for example users taking risks concerning their money and privacy in online commercial transactions (Friedman et al., 2000; T. E. Julsrud & Krogstad, 2020; Paliszkiewicz &

Launer, 2020). 3) Trust leading to action(s) can be seen existing in digital trust in two forms: (a) carry out an action like an online purchase or (b) explore online services or information (Dietz, 2011). 4) Trust being a subjective matter is also recognized in the field of digital trust (Kautonen & Karjaluoto, 2008).

As digital trust itself does not have a generally accepted definition (Guo, 2022; Pietrzak & Takala, 2021), the factors referring particularly to digital trust are not a clear concept either. Constructs widely used in other areas of science have been attached to digital trust, such as accuracy of data, legitimacy, performance, personalization, privacy, reliability, security, transparency, usability, usefulness and governance (Julsrud & Krogstad, 2020; Marcial & Launer, 2021; Paliszkiewicz & Launer, 2020). Success in digital trust can be achieved through honest and transparent communication (Demolombe, 2004; Turilli et al., 2010). When utilizing a trusted service, users encounter enhanced ease of use because they have reduced requirements for verifying authenticity and legitimacy (Bianchi & Brockner, 2012). One of the frequently debated concerns pertains to the invasion of individuals' privacy, which involves the infringement upon their ability to maintain seclusion and keep their personal information confidential (Julsrud & Krogstad, 2020). Researchers highlight the significance of trust when it comes to data production, collection, utilization, and sharing (Angrist, 2009; Paliszkiewicz & Launer, 2020; Sterckx et al., 2013). As per findings of Mattila and Seppälä (2016), digital trust hinges on three fundamental elements: 1) Security - ensuring that the products and services offered are protected against malware and data misuse. 2) Identifiability - verifying that the parties involved are authentic and accurately represent themselves. 3) Traceability - guaranteeing that the involved parties use their commitments for good, and in opposite cases, our contractual rights can be convincingly demonstrated and enforced.

Digital trust can be tailored to different specific contexts and technology domains, such as: 1) Online System: Online trust refers to the confidence one holds in an online environment, where there is a perceived risk that vulnerabilities won't be exploited (Corritore et al., 2003). 2) Multi-Agent System: Trust represents a subjective expectation that an agent has regarding the behaviour of another agent in the future (Mui, 2002). 3) Software Engineering: From a software engineering standpoint, trust is defined as the accepted dependability of a system (Avizienis et al., 2004).

On the other hand, digital trust can be seen in a bigger picture including digital society (Marcial & Launer, 2021) and faith in general technology (Mcknight et al., 2011). Digital trust represents a novel form of trust that involves government, individuals, enterprises, and society in the digital age. It essentially restructures the social trust model within the digital economy. In this digital society era, people are more reliant on digital technology than ever before. While digital technology adds convenience to our lives, it also diminishes our control over the surrounding environment, leading to increased risks like property loss

and threats to personal safety. As a psychological mechanism aimed at mitigating the complexity and uncertainties of the digital environment, digital trust significantly influences the development of political, economic, cultural, and social activities in the digital society. Given the profound impact of digital technology, it becomes imperative to establish trust in digital governance and extend this trust into the digital realm through technological intermediaries. (Guo, 2022.)

The results of the study by Guo (2022) demonstrate two key points. Firstly, in the digital society, the establishment of users' digital trust relies on their satisfaction. Secondly, digital trust is directly or indirectly affected by user perception and expectation. In total user satisfaction is an important feature of digital trust (Guo, 2022). According to Guo (2022) digital trust comprises two components: digital cognitive trust and emotional trust. Cognitive trust encompasses factors like practicality, commitment to execution, honesty, benevolence, and more. Emotional trust involves elements like preferences, beliefs, and so forth. (Guo, 2022.)

Digital technology, as an essential tool, shapes the construct of trust. People must foster trust in digital governance and transfer this trust into the digital domain, facilitated by technology. This transformation of trust modes within society is being orchestrated by digital technology, and digital trust has emerged as the foremost trust mechanism in this new era of the Internet. (Guo, 2022.)

3.2 Digital trust and intention to use technology

Shin (2017) validated that trust has a substantial influence on behavioural outcomes. Studies conducted in the online environment consistently demonstrate a strong connection between trust and user acceptance. (Mou & Shin, 2018; Shin, 2011). Furthermore, acceptance of technology is frequently described as the intention to use (Kraus et al., 2023; Naneva et al., 2020).

Digital technology acceptance has traditionally been seen based on individual motives and attitudes. Considering innovation studies, social psychological theories are commonly employed to investigate the adoption of new services in societies. Notably, the Theory of Planned Behaviour (TBP) developed by Ajzen in 1991, along with its derivatives like the Technology Acceptance Model (TAM) (Davis & Venkatesh, 1996), the Unified Technology Acceptance Model (UTAUT) (Venkatesh et al., 2003) and the Extended Unified Theory of Acceptance and Usage of Technology (UTAUT2) (Venkatesh et al., 2012), have played significant roles. These theories share fundamental assumptions that individuals' underlying attitudes, perceptions of ease of use, and perceived utility of a technology are critical determinants of its acceptance (Davis, 1989; Venkatesh et al., 2003). Although initially formulated for the information system adoption, these theories have found application in various other domains, including e-government

(Bélanger & Carter, 2008), organizational information systems (Horst et al., 2007), mobile applications (Beldad & Hegner, 2018), and online shopping (Gefen et al., 2003). Despite their widespread use, concerns have been raised regarding the reliability and utility of these theories. One of the issues points out neglecting the dynamic social viewpoint of technology adoption processes (Benbasat & Barki, 2007; Legris et al., 2003).

The Technology Acceptance Model (TAM) (Davis & Venkatesh, 1996) is regarded as a leading framework for comprehending the adoption of technology, and it can be flexibly extended and customized to accommodate various characteristics across diverse scenarios (Belanche et al., 2012). Belanche et al. (2012) reveal in their study that trust has a mediating role in the TAM framework, and substantial direct effects on intention to use technology. Intention to use technology is explained by three main components: perceived usefulness, perceived ease of use and trust, where usefulness and ease of use are the strongest ones, and trust is the third one (figure 2). Trust influences the intention to use technology also through attitude. The findings reveal a strong and meaningful connection between trust and the TAM framework, manifested through substantial direct impacts on both attitude and the intention to use.
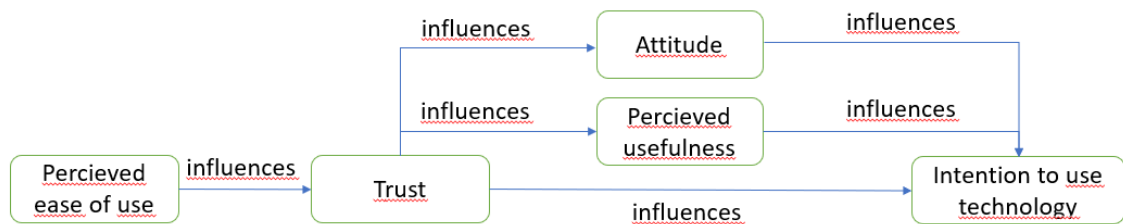

Figure 2 How trust is related to intention to use technology by Belanche et al. (2012)

Also, numerous other studies have integrated trust into different technology acceptance models through various approaches, primarily suggesting the partial mediation and direct impact of trust on technology adoption (Benbasat & Wang, 2005; Chen & Tan, 2004; Cho, 2006; Gefen, 2004; Gefen et al., 2003; Gefen & Straub, 2003; McCloskey, 2006; Palvia, 2009; Pavlou, 2003; Suh & Han, 2002; Van Der Heijden et al., 2003; Wang et al., 2006). Based on the previous research on trust influencing technology adoption, the following hypothesis is set in line with the theoretical considerations:

H2: Digital trust has positive impact on intention to use digital services.

Following the main hypothesis the sub-hypothesis are set as below.

Trust in technologies is a component of digital trust (Marcial & Launer, 2019). Therefore, trust in devices, hardware and software systems and

information systems are factors of digital trust. Furthermore, they have impact on intention to use digital services. Hypothesis are set:

H2.1: Trust in devices has impact on intention to use digital services.

H2.2: Trust in hardware and software systems has impact on intention to use digital services.

H2.3: Trust in information systems has impact on intention to use digital services.

According to Marcial and Launer (2021) trust in digital society reflects to digital trust. Hence, the following hypothesis is set:

H2.4: Trust in digital society has impact on intention to use digital services.

Faith in general digital services refers to people's attitudes towards digital services in general (Mcknight et al., 2011). The hypothesis is set as below:

H2.5: Faith in general digital services has impact on intention to use digital services.

Trusting stance refers to a level on which people believe that positive results derive from relying on technology (Mcknight et al., 2011). Being a factor of digital trust, the following hypothesis is set:

H2.6: Trusting stance has impact on intention to use digital services.

4 METHOD

The method and the process of the empiric research are introduced in this section. The topics mainly discussed are the process of questionnaire design, sample collection, and analysis method. Also, participants are described.

4.1 Participants

The total number of responses was 79 (N=79). 92 % (73) of the respondents were residents of Finland and felt they belonged to the Finnish culture. Six of the respondents were residents of other countries or felt they belonged to other than Finnish culture. These other countries or cultures were Estonia, Cyprus, Germany, Lithuania, Netherlands, and Norway. As these countries are separated and give only single answers from each country, they are left out from the results and analysis.

42 % of the respondents are under 30 years old, and 27 % are between 30 and 39 years old, whereas 60 years and older cover 8 % of the respondents (figure 3). Professionality distribution shows 34 % of the respondents coming from the field of technology, 22 % from humanities and 15 % from the business and finance sector (figure 4). Respondent with a background in technology were further asked whether they represented 1) Information Technology (IT) or Information Systems (IS) or 2) Other technologies. Majority (88 %) of technology-based respondents come from the field of IT or IS. Therefore, 30 % of all respondents have background in Information Technology or Information Systems.
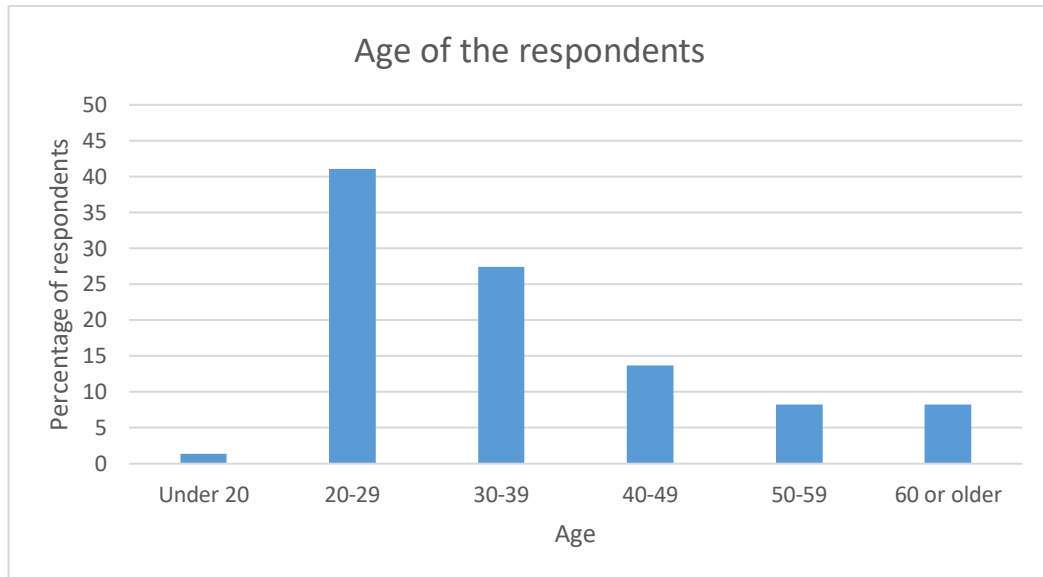
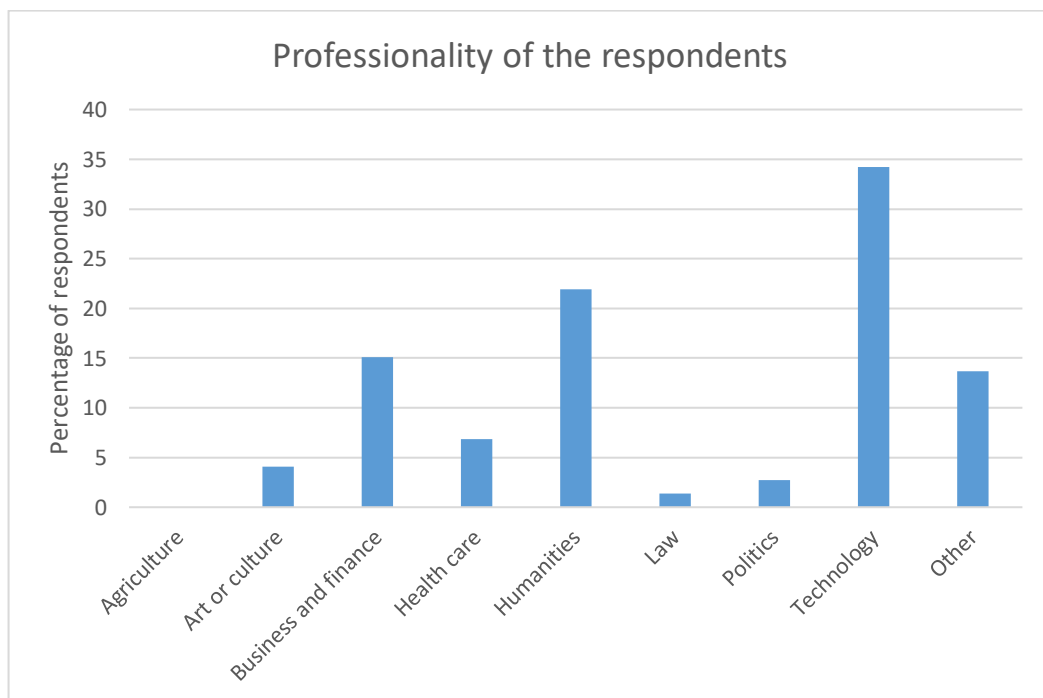Figure 3 Diagram of age distribution of respondents

Figure 4 Diagram of professionality distribution of respondents

4.2 Measures

The empiric study of the research is conducted using quantitative method. The purpose of the study was to reach wide range of respondents in several countries. Due to the targeted mass a quantitative method and an online questionnaire were selected.

The model of the study has been formulated according to the research on generalized social trust and digital trust (figure 5). The independent variables are generalized social trust and digital trust, and the dependent variable is intention to use digital services. The measurable variables of generalized social trust include four items: societal conditions, social networks, success and well-being and trust propensity. The measurable variables of digital trust include six items: trust in devices, trust in hardware and software systems, trust in information systems, trust in digital society, faith in general digital services and trusting stance. Also, intention to use digital services is a measurable variable.
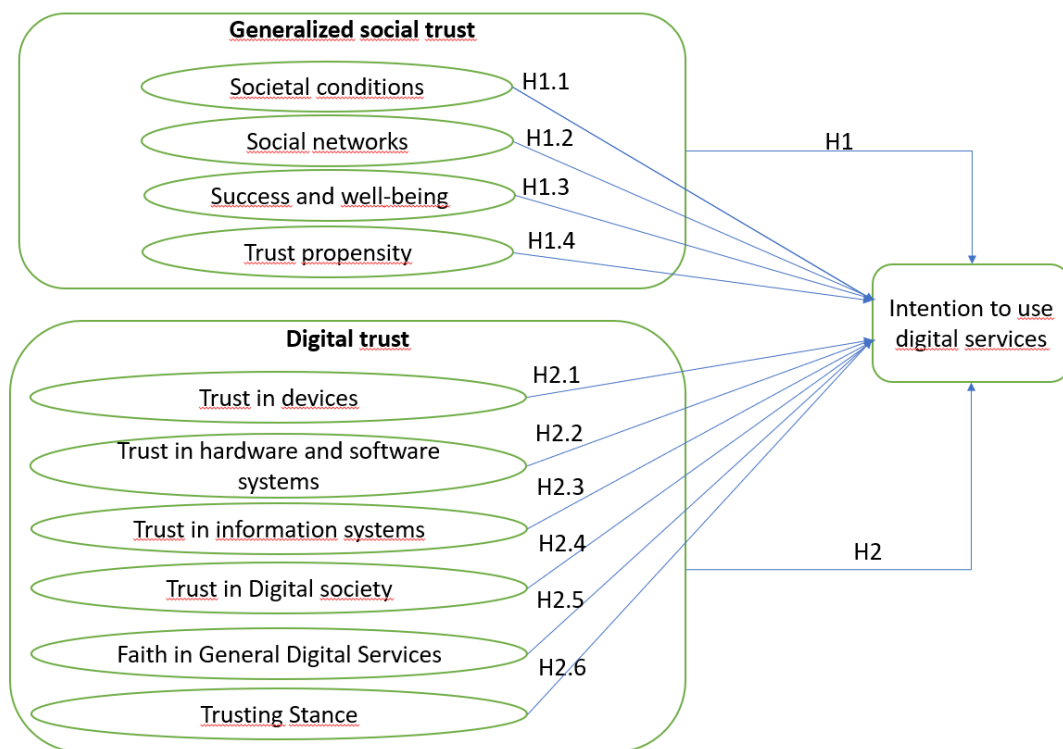
Figure 5 Diagram of the structure of the research

The questionnaire has been developed by combining and adapting questions for the selected factors from previous research (table 3). The final research questions were chosen from five different articles and modified as needed.

To measure generalized social trust, Delhey & Newton (2003) found out that three theories can explain trust well. These are societal conditions, social networks, and success and well-being. Questions related to these three topics were used for building the questionnaire from the perspective of generalized social trust. This was supplemented by a question about trust propensity from

Möhlmann (2016). Trust propensity refers to people's general propensity to trust a person or a thing (Lee & Turban, 2001; Mayer et al., 1995; Möhlmann, 2016).

To measure digital trust the studies by Marcial & Launer (2021) and Mcknight et al. (2011) have been considered. Six factors of digital trust have been chosen for the purpose of the current study: trust in devices, trust in hardware and software systems, trust in information systems, trust in digital society, faith in general digital services and trusting stance.

A study on digital trust level in the workplace by Marcial and Launer (2021) retest six components of digital trust levels: technology and information system features, hardware and software technologies, people, information systems operations, data protection and privacy, and digital citizenship. Two of these have been used as a basis to measure the level of digital trust in the current study: hardware and software technologies, and digital citizenship. Furthermore, hardware and software technologies has been divided and amended into three separate factors: 1) trust in devices, 2) trust in hardware and software systems, and 3) trust in information systems. Digital citizenship has been formed as trust in digital society.

Trust in devices refer to the level of digital trust in electronic devices, such as a computer, laptop or a smart phone. Trust in hardware and software systems refer to the level of digital trust in such systems installed, like an ID solution. Trust in information systems refer to the level of digital trust in wider systems for example customer service systems. The factors have been adapted from the study of Marcial and Launer (2021).

Trust in digital society refer to the level of digital trust in society acting in internet. Digital citizenship, or netizenship, describes a person actively involved in online communities or the internet in general. This includes using the internet for communication, commerce, political engagement, and the ability to do so safely and responsibly. (Marcial & Launer, 2021.)

Faith in general digital services comes from the study of faith in general technology. Faith in general digital services refers to people's attitudes towards digital services in general. For instance, an individual with a stronger belief in digital services in general presumes that a certain digital service is typically reliable, efficient, and offers essential assistance. (Mcknight et al., 2011.)

Trusting stance refers to a level on which people believe that positive results derive from relying on technology. If someone possesses a strong trust in technology in general, they tend to trust technology until a specific reason to distrust it arises. (Mcknight et al., 2011.)

Table 3 Factors and questions of the research

Factor	Question, or a sample of question	Adapted from	Cronbach's Alpha
Importance of Technology and Information System Features (not included in the results)	Q1: What is the degree of your priority of the following features in terms of your confidence in digital services? •Accuracy of data •Legitimacy •Performance •etc.	Test-retest Reliability and Internal Consistency of the Survey Questionnaire on Digital Trust in the Workplace (Marcial & Launer, 2021)	Not possible to indicate
Trust in devices (digital trust)	Q2: What is the level of your trust in the following technology? Electronic devices that could be provided with you (either for official or personal use): •laptop computer •tablet •smart phone •etc.	Test-retest Reliability and Internal Consistency of the Survey Questionnaire on Digital Trust in the Workplace (Marcial & Launer, 2021)	Not possible to indicate
Trust in hardware and software systems (digital trust)	Q3: What is the level of your trust in the following technology? Hardware and Software Systems installed (either for official or personal transactions): •ID system (such as passport) •ID system for doors, gates and other entrance and exit • system detecting your biometric data •etc.	Test-retest Reliability and Internal Consistency of the Survey Questionnaire on Digital Trust in the Workplace (Marcial & Launer, 2021)	Not possible to indicate
Trust in information systems (digital trust)	Q4: What is the level of your trust in the following technology? Information systems that are implemented (regardless of your usage): •customer service systems •fault reporting systems •internet bots •etc.	Test-retest Reliability and Internal Consistency of the Survey Questionnaire on Digital Trust in the Workplace (Marcial & Launer, 2021)	Not possible to indicate
Trust in digital society (digital trust)	Q5: In the digital society, I am confident that ... • registering with a Web site (i.e., giving my name, e-mail address, medical registration number, etc.) may enable that site to keep track of what I view or spend online. •that providing personal information in social media is safe. • my friends do not spread unverified information on social media – especially those that do nothing but provoke fear in the community.	Test-retest Reliability and Internal Consistency of the Survey Questionnaire on Digital Trust in the Workplace (Marcial & Launer, 2021)	0,816

	•etc.		
Faith in general digital services (digital trust)	Q6-1: Please think of new digital services handling your personal data e.g. an electronic driving licence, electronic certificate of education or online healthcare services. Please respond to each statement below. •I believe that most digital services are effective at what they are designed to do. •A large majority of digital services are excellent. •Most digital services have the features needed for their domain. •I think most digital services enable me to do what I need to do.	Trust in a specific technology: An investigation of its components and measures (Mcknight et al., 2011)	0,814
Trusting stance (digital trust)	Q6-2: Please think of new digital services handling your personal data e.g. an electronic driving licence, electronic certificate of education or online healthcare services. Please respond to each statement below. •My typical approach is to trust new digital services until they prove to me that I shouldn't trust them. •I usually trust a digital service until it gives me a reason not to trust it. •I generally give a digital service the benefit of the doubt when I first use it.	Trust in a specific technology: An investigation of its components and measures (Mcknight et al., 2011)	0,843
Intention to use digital services (intention to use)	Q7: When I will need it... •...I will intend to use a digital service •...I predict I would use a digital service •...I would like to use a digital service	Integrating trust and personal values into the Technology Acceptance Model: The case of e-government services adoption (Belanche et al., 2012)	0,843
Societal conditions (generalized social trust)	Q8-Q11: Please describe your satisfaction with public safety. Please describe your satisfaction with democracy.	Who trusts?: The origins of social trust in seven societies (Delhey & Newton, 2003)	0,857
Social networks (generalized social trust)	Q12-Q14: Do you have close friends? How many close friends do you have? How often you are in contact with your friends?	Who trusts?: The origins of social trust in seven societies (Delhey & Newton, 2003)	Not possible to indicate
Success and well-being	Q15-Q18: Please describe your satisfaction with standard of living.	Who trusts?: The origins of social trust in seven	0,802

(generalized social trust)	Please describe your life satisfaction.	societies (Delhey & Newton, 2003)	
Trust propensity (generalized social trust)	Q19: Please respond to each statement below. •It is easy for me to trust a person or thing. •My tendency to trust a person or thing is high. •I tend to trust a person or thing, even though I have little knowledge of it. •Trusting someone or something is not difficult.	Digital trust and peer-to-peer collaborative consumption platforms: A mediation analysis (Möhlmann, 2016)	0,926

To avoid the respondents already being influenced by the factors of generalized social trust, the questions concerning digital trust were chosen to be asked first in the questionnaire. Question 1 concerning the factor "Importance of Technology and Information System Features" gathers data about importance of technology and information system features. This information is for practical use and not related to finding out the level of digital trust or generalized social trust, and therefore not included in the results of the current study. Questions from 2 to 6 are related to measuring the level of digital trust, whereas questions 8-19 concern the level of generalized social trust. Question 7 covers intention to use digital services. Background information is collected by questions 20-24.

Cronbach's alpha was calculated for each of the factors when possible and all of them were found reliable with a Cronbach's alpha of > 0.700 (Nunnally, 1978). Cronbach's alpha could not have been calculated for the question 1-4 and 12-14 because of the format of the questions.

4.3 Procedure

Webropol has been used as a tool to create the questionnaire. A link to the online survey has been sent to possible participants nationally and internationally in co-operation with DVV. Both personal email addresses and emailing lists have been used. The main channels have been emailing lists of the faculties of information technology and education in the university of Jyväskylä, as well as subject associations related to languages and cultural policy. DVV has promoted the questionnaire within their national and international networks. Additionally, the questionnaire has been published in private persons' LinkedIn and Facebook accounts.

The results were first gone through in excel and answers reversed when needed. Excel has been used to draw diagrams. The factors of digital trust and

generalized social trust were grouped and treated separately because they were compared as opposite components of intention to use digital services.

The data gained was analysed using IBM SPSS Statistics. Multiple regression with Enter method was used to calculate p-value, F-ratio and Adjusted R Square separately for generalized social trust and digital trust. Beta and p-value have been calculated for each predictor variable.

Ethical aspects were taken into consideration. Completing the survey was voluntary and respondents had the right to withdraw from the study at any time, leaving their results out of the final report. All information collected during the study is kept confidential. No identifying information was collected, and therefore, responding was completely anonymous. By participating in the study, participants agreed that the information they provided would be used for scientific research purposes. Privacy notice and contact information for further questions were provided.

5 RESULTS

Here the results of the study are reported. Results of multifactor correlation between intention to use digital services and generalized social trust and digital trust are presented. Hypothesis are discussed.

5.1 Generalized social trust and intention to use

The correlations between intention to use and generalized social trust and it's factors have been calculated using the enter method. The overall result of generalized social trust is significant ($F_{4,68}$=2,537, p = 0,048). Adjusted R Square = 0,079. This supports H1. However, none of the individual factors are not significant (table 4).

Table 4 Multiple regression analysis results of generalized social trust

Predictor variable	Standardized Coefficients Beta	p
Societal conditions	0,091	0,557
Social network	-0,094	0,431
Success and well-being	0,262	0,081
Trust propensity	0,062	0,625

The measurable variables societal conditions, social networks, success and well-being and trust propensity have no relationship to intention to use digital services. As none of the individual factors of generalized social trust correlate with intention to use digital services, H1.1, H1.2, H1.3 and H1.4 are not supported (table 5).

Table 5 Results of hypotheses testing of generalized social trust

H1	Generalized social trust has positive impact on intention to use digital services.	Supported
H1.1	Societal conditions have impact on intention to use digital services.	Not supported
H1.1	Social networks have impact on intention to use digital services.	Not supported
H1.1	Success and well-being has impact on intention to use digital services.	Not supported
H1.1	Trust Propensity has impact on intention to use digital services.	Not supported

5.2 Digital trust and intention to use

The correlations between intention to use and digital trust and it's factors have been calculated using the enter method. A significant model emerged ($F_{6,66}$=5,057, $p < 0,001$). Adjusted R Square = 0,253. The overall result of digital trust is significant supporting H2, but all individual factors are not (table 6).

Table 6 Multiple regression analysis results of digital trust

Predictor variable	Standardized Coefficients Beta	p
Trust in devices	-0,080	0,504
Trust in hardware and software systems	0,332	0,018
Trust in information systems	0,077	0,550
Trust in Digital society	-0,498	<0,001
Faith in General Digital Services	0,312	0,008
Trusting Stance	0,107	0,372

Three significant variables can be found: 1) Trust in hardware and software systems, 2) Trust in digital society, and 3) Faith in general digital services supporting H2.2, H2.4 and H2.5 (table 7). Trust in hardware and software systems and faith in general digital services give a positive Beta-value suggesting these factors strengthen the intention to use digital services. Faith in general digital services measures a belief that digital services are good at doing what they are designed to do. The more people trust hardware and software systems, as well as have faith in general digital services, the more likely they intend to use digital services.

According to a negative Beta-value, trust in digital society gives an opposite response. Digital society consists in persons actively involved in online

communities or the Internet in general. The less trust people have towards digital society, the more they intend to use digital services. On the other hand, the negative Beta-value can be interpreted arguing that the more people trust in digital society, the less they intend to use digital services.

Table 7 Results of hypotheses testing of digital trust

H2	Digital trust has positive impact on intention to use digital services.	Supported
H2.1	Trust in devices has impact on intention to use digital services.	Not supported
H2.2	Trust in hardware and software systems has impact on intention to use digital services.	Supported
H2.3	Trust in information systems has impact on intention to use digital services.	Not supported
H2.4	Trust in digital society has impact on intention to use digital services.	Supported
H2.5	Faith in general digital services has impact on intention to use digital services.	Supported
H2.6	Trusting stance has impact on intention to use digital services.	Not supported

5.3 Intention to use digital services

Most of the respondents intend to use digital services. 52,1 % of respondents agree and 32,9 % strongly agree on using digital services (figure 6).
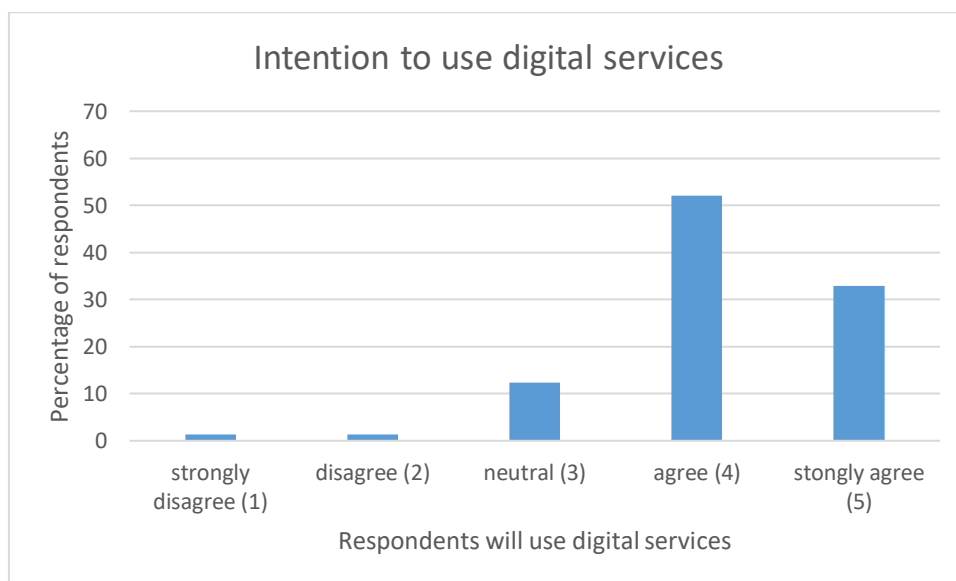

Figure 6 Diagram of intention to use digital services

Results of the current study revealed that both generalized social trust and digital trust as total, and the three factors of digital trust have a correlation with intention to use digital services (p < 0,05) (figure 7). However, generalized social trust shows a barely significant total result.
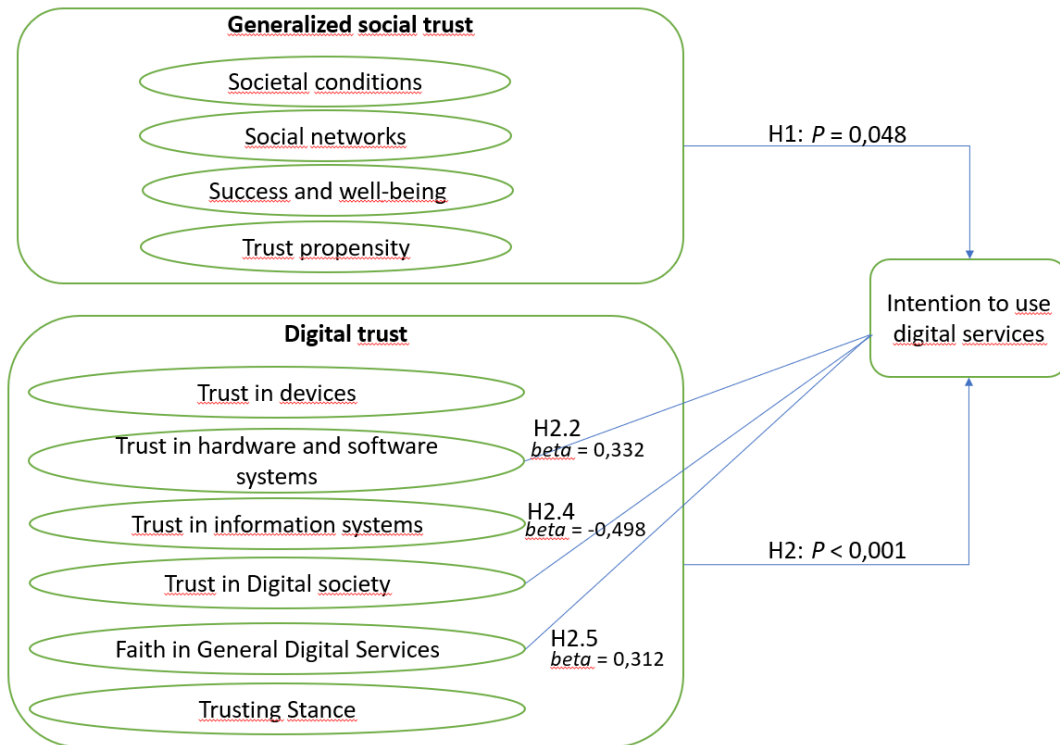

Figure 7 Results of the research

6   DISCUSSION

The results of the current study reveal that digital trust has stronger impact on intention to use digital services than generalized social trust has. However, none of them alone explain the phenomenon of adopting new technologies. According to the results of the current study, people are more willing to use digital services than their trust level imply. This supports the research of (Belanche et al., 2012) where intention to use technology is explained by three main components: perceived usefulness, perceived ease of use and trust, where usefulness and ease of use are the strongest ones, and trust is the third one.

6.1   Results regarding generalized social trust

The relationship between generalized social trust and intention to use digital services was barely significant. Such a weak connection can be partly explained by the age distribution of respondents. 42 % of the respondents were under 30 years old, and 8 % of the respondents were 60 years or older. Delhey and Newton (2003) point out a possibility of social trust following a U-curve. Both the young, who often adopt a "never trust anyone over 30" mentality, and the elderly tend to have higher levels of distrust (Delhey & Newton, 2003).

However, the most surprising finding of the study was that none of the factors of generalized social trust showed correlation with intention to use digital services. Societal conditions, social networks, success and well-being and trust propensity have no relationship to intention to use digital services.

Although the factors were carefully chosen, there is a change of going wrong with setting hypothesis. The factors are proven to connect to the level of social trust (Delhey & Newton, 2003). However, the purpose of the study was not to measure the level of generalized social trust, but to measure the correlation between generalized social trust and intention to use digital services. Here the

lack of previous research created the research gap but also made it difficult to set the hypothesis. The connection found between the generalized social trust and intention to use technology came from two directions: 1) from a social aspect where intention to use technological systems could be seen as a product of social processes (Devine-Wright et al., 2017; Julsrud & Krogstad, 2020; Schein, 2010; Wolsink, 2018), and 2) from the study with robots where the results showed the significance of general trust in shaping specific trust (Kraus et al., 2023). Here the specific trust can be seen as trusting to use digital services, but this can also be interpreted to point to the direction of digital trust. Following this path would lead us to think of hypothesis being set incorrectly. Maybe the factors of generalized social trust have an impact on digital trust and not directly to intention to use technology.

According Julsrud and Krogstad (2020) the trust level depends on the unique cultural connection and historical narratives it connects with. Considering the strengths of independent variables on social trust, different type of variable explains trust best in different countries (Delhey & Newton, 2003). A cultural aspect is not fully considered in the current study, and a comparison to societies in other cultures is missing. It may be the case that the factors of generalized social trust used in the current study correlate with intention to use digital services in societies with different cultural backgrounds.

Societal conditions measure the respondent's perception of social conflicts, satisfaction with public safety and democracy, and achievement of public goods such as freedom of political participation and protection of private property. Especially conflicts and public safety are deeply connected to trust (Delhey & Newton, 2003). All these can be influenced by situational factors. For example, boundaries and content of what is understood as private variate between cultures and individuals (Julsrud & Krogstad, 2020). In societies where people believe that social conflicts are not acute and that levels of public safety are high, trust tends to be greater (Delhey & Newton, 2003). However, it seems that either the respondents of the study do not show as high generalized social trust level as expected, or their willingness to use digital services is very high leaving generalized social trust level far behind. 30 % of all respondents in the current study have a background in information technology or information systems, which may make them more willing to use particularly digital services. This can deepen the gap between the generalized social trust level and intention to use digital services.

Social networks, particularly a network of friends, is consistently associated with trust (Delhey & Newton, 2003). Social networks not correlating with intention to use digital services can be explained by respondents having different type of trust in people and technical solutions. Hence, the size of group of friends does not have a relationship with intention to use digital services.

In high trust societies the best variable to measure social trust is success and well-being (Delhey & Newton, 2003), and Finland is a high trust society (Delhey & Newton, 2005). Nevertheless, not even this factor gave significant correlation with intention to use digital services. According to Delhey and Newton (2003) most studies show a connection between trust and education, but they had a surprising finding showing only little support for the proposition that educated people are more trusting. The results of the current study may support the results of Delhey and Newton (2003), if we consider education representing success.

Propensity to trust refers to a tendency to trust other persons, which is strongly associated with social trust (Mcknight et al., 2011; Rotter, 1971). Trust propensity is a dynamic individual trait (Mayer et al., 1995; Thatcher & Perrewé, 2002) which separates it from stable cultural influence. As an individual factor trust propensity has no correlation with intention to use digital services, although total generalized social trust shows the relationship. This can be explained by the lack of stable cultural influence regarding trust propensity, supporting the study of Uslaner (2008) about the importance of one's family heritage and culture.

6.2   Results regarding digital trust

Regarding the results of the current study, the relationship between digital trust and intention to use digital services is clear. Each factor of digital trust can be analysed regardless of existing correlation with intention to use digital services.

Trust in devices is not showing significant correlation with intention to use digital services. This can be explained by respondents segregating hardware and software and considering them as separate objects. Devices represent hardware whereas digital services are software. Trust or distrust in hardware does not seem to have a relationship with trust in software.

Trust in hardware and software systems refer to both software and hardware. Significant positive correlation with intention to use digital services appears as expected. When the respondents combine hardware and software in order to judge them as a one package, the positive correlation with intention to use technology occurs.

Opposite to what was expected, trust in information systems does not correlate with intention to use digital services. According to a paradigm for trusted computing systems, trust is seen as a property of a system. This kind of a property can be formally modeled, specified, and verified, and therefore it can be "designed into" a system (Denning, 1993). However, a system is trusted if and only if its users trust it. Trust is not an inherent property of the system itself but rather a perception formed by users based on their interactions with the system and their assessment of its behavior (Yan & Holtmanns, 2007). It is possible that users

see information systems technologies that can be manipulated, and therefore trusting them is not obvious. Intention to use digital systems seem to rely on something else but trust in information systems. One possibility is that users do not consider digital services as information systems.

Trust in digital society has a correlation with intention to use digital services as expected. Surprising finding is that the correlation is negative. The negative Beta-value of trust in digital society can be interpreted arguing that the more people trust a digital society, the less they intend to use digital services. If all actions in the digital society are seen honest and reliable, maybe people feel no need to confirm anything themselves using objective technology. In other words, citizens trust that their digital society will handle issues without individuals needing to pay attention to the correctness of the outcome. A legal framework often creates and supports trust, ensuring that misbehaviour can be punished with legal actions and encouraging to start trust relationships (Ba et al., 1999).

On the other hand, the less trust people have towards digital society, the more they intend to use digital services. It looks like people think that wrong or illegitimate actions in digital society performed by persons can be bypassed or disposed using nonaligned technology. Julsrud and Krogstad (2020) point out an access to citizen information being a prerequisite for national authorities to safeguard citizens, coordinate services, and uphold legal rights. However, there has always been tension between an individual's right to privacy and the state's duty to protect itself and the community by delving into citizens' lives. With the advancement of digital technology, sensors, network infrastructure, and algorithms for processing vast data sets, the extent of the state's capacity to enter citizens' information has expanded rapidly (Julsrud & Krogstad, 2020). This has raised concerns about an elevated risk of a "panoptic state" (Bannister, 2005), which continuously observes and records individuals' activities and constructs profiles from various sources. The negative correlation between trust in digital society and intention to use digital services can be explained by citizens being willing to use technologies themselves instead of letting their digital society handle everything.

As Finland is considered being a high trust society (Delhey & Newton, 2005), the citizens can be assumed to trust the actions of the society and legislative processes. Therefore, the negative correlation between trust in digital society and intention to use digital services in Finland is confusing. The conclusion can be that society and digital society are not the same thing, or at least are not based on the same type of trust. Finland can have a high social trust level but at the same time a low trust level in digital society. This would explain the negative correlation between trust in digital society and intention to use digital services.

An expected positive correlation between faith in general digital services and intention to use digital services rises from the close connection between

digital services in general and a particular digital service. This supports the finding of the study among robots by Kraus et al. (2022) indicating that trust in a certain technology as a general category predicts trust in individual technology within that category.

Trusting Stance having no significant correlation with intention to use digital services was not an expected result. The question was formulated to concentrate on digital services handling user's personal data. Perhaps the aspect of intimate data has affected the respondent. Understanding this outcome properly would require further research. It is difficult to see an explanation for the result.

6.3   Implications

Technological innovations are intended to simplify people's tasks and, on a broader scale, enhance people's overall efficiency (Saariluoma et al., 2019). Understanding the essence of trust and what influences it becomes crucial for establishing a competitive edge and for attracting and retaining customers (Paliszkiewicz & Launer, 2020).

The current study proposes to concentrate on digital trust instead of generalized social trust while considering users' intention to use digital services. The specific items to look at are hardware and software systems instead of e.g., devices only, investigating the users' trust in digital society and getting familiar with the users' faith in general digital services.

6.4   Limitations

The current study has some limitations. Regarding to the literature review, the current study may not cover all research in the field.

The empirical study could be repeated with more generalized population of participants. The survey was spread mainly among university students, which may have affected the distribution of the respondents. The age or professionality distribution of the respondents does not follow the national average of Finland (Statistics Finland, 2021). This can be explained by a rather small sample size (N=73) and participants probably mainly being university students. However, compared to other equivalent studies, the sample size is sufficient.

The topic of the current study is not considered in a different cultural context. Generalized social trust is not much related to intention to use digital services in Finland but could be the case in other countries. It is probably not

possible to reach accurate predictors when considering human beings, but more data would give better understanding of the topic.

6.5   Future research

The field of digital trust and the connections between social or generalized trust and intention to use technology are not widely studied in previous research. Both areas alone and combined require further research. Paliszkiewicz & Launer (2020) argue that digital trust is believed to become a more significant academic field.

Considering the topic of the current study in a different cultural context would be valuable. To research further, comparison between different cultures would be beneficial. Even studies employing classic technology acceptance models have observed variations in their performance across diverse cultural contexts, with certain factors showing more importance that others depending on the culture (Ameen & Willis, 2015; Chi et al., 2023; Choi & Geistfeld, 2004; Ferguson et al., 2017; Hofstede et al., 2010; Im et al., 2011; A. S. Mattila, 2000; Straub et al., 1997; Sun et al., 2020).

The current research raised a question about the relationship between digital trust and the factors of generalized social trust. There is a possibility that measured four factors of generalized social trust have an impact on digital trust and not directly to intention to use technology. Further research would be required to reveal possible connections.

Measuring the relationship between trust propensity and intention to use technology gave another aspect to look closer. As an individual factor trust propensity has no correlation with intention to use digital services, although total generalized social trust shows the relationship. All measured factors combined probably gives a more valid result. However, understanding this phenomenon would require further research. Also, trusting stance having no significant correlation with intention to use digital services would require further research. Seeing this outcome properly would require deeper understanding.

Finally, understanding the phenomenon of society and digital society and the type of trust they are based on, would require further research. The results of the current study give a hint that society and digital society are not the same thing, or at least are not based on the same type of trust. A certain population can have a high social trust level but at the same time a low trust level in digital society. Also, as generalized social trust is only barely correlating to intention to use digital services, should we go back to the basics and consider digital trust not as a form of trust but confidence (Julsrud & Krogstad, 2020; Mollering, 2006)?

Digital technology is not merely altering the present, but it's also shaping the future. By further enhancing the digital social environment, millions will experience a heightened sense of benefit by participating in the Internet's development. The arrival of the digital society has revolutionized the dynamics of trust. It has evolved from interpersonal trust during the agricultural era to institutional trust in the industrial age, and now to digital trust in the Internet era. (Guo, 2022.) Trust needs time and interaction to grow, but no-one can tell whether trust will be respected in the future (Möllering, 2001; Paliszkiewicz & Launer, 2020).

7 CONCLUSION

Trust plays a substantial role in technology adoption. When individuals lack trust in new technology, they are less likely to accept it. (Belanche et al., 2012; Saariluoma et al., 2019). Creating a trust relationship within a digital network environment encompasses more elements than in the physical social world. Technological systems involve communication not only between individual people but also among digital components. (Yan & Holtmanns, 2007) Widening our understanding of trust from social world to digital environment is becoming more important every day as the use of technical solutions is taking a bigger part of life.

The current study highlights the meaning and differences of generalized social trust and digital trust in relation to intention to use digital services. Literature review reveals a research gap in the field of generalized social trust and intention to use technology, and at the same time the field of digital trust is not well discovered. Comparing these two different aspects of trust was expected to show us a path to follow when designing, building and marketing new digital services.

An online questionnaire was used to collect data from the participants. Information was analysed, and both generalized social trust and digital trust were found to correlate with intention to use digital services. Generalized social trust shows a significant but rather weak relationship with intention to use digital services. Digital trust is playing a bigger role but not all its individual factors have a connection to intention to use digital services.

The results can be interpreted following the model of Belanche et al. (2012) arguing trust being the third component of intention to use technology, usefulness and ease of use being the first two in the scale of importance.

An important aspect of cultural influence has not been covered in the current study. To gain further knowledge and understanding of how to bring new digital services into international markets, geographically wider research needs

to be completed. Revealing differences in trust behaviour between different cultures would benefit companies targeting to those markets.

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