The Digital Divide and Voting Advice Applications

To what extent do socio-demographic factors that explain the Digital Divide and Political Participation also explain the usage of VAAs?

Bachelor Thesis

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Abstract

This research deals with the research question: "To what extent do socio-demographic factors that explain the Digital Divide and Political Participation also explain the usage of VAAs?". After presenting the state of theoretical research on the Digital Divide and Political Participation, the Digital Divide and Political Participation in Germany is analyzed. It is concluded that socio-demographic factors education, gender, and age have a significant impact on Internet use and Political Participation. In order to determine these factors' effects on VAA usage, the Wahl-o-Mat and Wahl-Kompass users are analyzed according to their socio-demographic characteristics. The result of the analysis present that the factors influencing Internet use and Political Participation in Germany have the same disadvantageous effect on VAA users. Furthermore, the interaction of Internet use and Political Participation is analyzed concerning VAA use, revealing conditions for VAA use and its limitations.

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1 Introduction

Today's elections in Europe are clearly shaped by the Internet. Many campaigns run on websites: blogs, discussion boards, and also events shared on social media are a way for voters to get information and mobilize peers. A prominent development in connection with the Internet is the widespread use of online voting tools like Voting Advice Applications (VAAs). In several European countries such as Belgium, Finland, Germany, Switzerland, and the Netherlands, VAAs have become an essential element of election campaigns. However, these tools do not reach all groups in society in equal numbers. Therefore, this thesis focuses on the extent to which inequalities exist in access to the Internet and usage of VAAs. Online communication tools like VAAs are question tools that generate personalized voting advice for their users by matching users' opinions about a selection of policy issues to party stances (Marschall 2014; Garcia 2010). Today, these applications are used in a variety of countries by millions of voters. For example, the German "Wahl-O-Mat" established in 2002 reached 3.7 million users in the first year, while reaching 15,7 million users in 2017 for the Federal Election in Germany (BPB 2018). Another example is the dutch VAA StemWijzer, which was introduced in 1989 as a paper-and-pencil test and went online in 1998 (Gemenis, Rosema 2014). The user figures rose from only 6500 in 1998 to about two million in 2002. In the year of 2012, the StemWijzer was consulted by 38% of the electorate in 2012 (Gemenis, Rosema 2012).

The main reason for the popularity of this new online voting tool is the increasing importance and use of the Internet. Both the general public and the scientific community discovered the advantages of faster research that could be done from home, as well as the benefits of online exchange with other Internet users on any topic. At this point, it is questionable whether all groups of the population have the same chance to use and to have access to the Internet, for example, to use online voting tools such as VAAs. In this context, according to Ladner, VAAs are regarded as a simple tool, which can be used by everybody with internet access, to receive crucial political information on the verge of elections (Ladner 2012). Hereby, it becomes apparent that access to the Internet is the first condition for using online voting tools.

As Internet usage became more and more popular from day to day in the mid-nineties, many scholars began to notice the Internet as a new opportunity to counteract the democratic deficit that had arisen (Coleman 1999: 370). An internet-based technological modernization of governmental institutions and participatory practices was perceived as an opportunity to increase the quality of democracies. Advocates of digital democracy argued that such

modernization increases democratic and civic participation (Vassil 2011: 13). However, when the technology was first adopted in the political arena in the form of experimental internet voting in Switzerland, the United Kingdom, the Netherlands, and the United States, the turnout levels did not change at all and were still small (Vassil 2011: 13). It seemed that high expectations toward the transformative power of the Internet were not reached in the long-term. Therefore, the standard explanation of the Internet's inability to increase citizen participation in political life was offered by theories of the Digital Divide in the general and political divide in particular. It is argued that online politics mirrors the patterns of inequality experienced in conventional politics and even increases the gap between the engaged and disengaged (Vassil 2011: 14; van Dijk 2003: 2). Online tools, such as VAAs, tend to empower the rich and educated and marginalize low-income and low-educated people (Mossberger et al. 2003). In this context, Stefan Marschall conducted a survey, with a random selection of Wahl-o-Mat users after the Bundestag election 2017, presenting information about different sociodemographic factors and the Wahl-o-Mat usage (Marschall 2017). The study showed that the VAA users were mostly men between 40 and 60 with a university degree and interest in politics. Similar differences, except the age of the users, have been found in the Netherlands where ‘’previous research has shown that such tools are primarily used by young males and highly educated citizens’’ (Van de Pol 2014).
In this sense, the so-called Digital Divide research asks about the distribution of participation opportunities, information, money, or social capital as a result of the use and availability of the Internet (Zwiefka 2007). The Digital Divide thesis also states that higher education, in particular, promotes practical Internet usage, which is linked to increasing rather than decreasing social inequalities (Zwiefka 2007). Despite the diversity of Digital Divide research, it can be seen that those who are already in a privileged social position have more benefits from such mediums (Zwiefka 2007). As a result, an existing inequality in society remains and is consolidated.

Following this, this research aims to analyze the impact of Digital divide and Political Participation on the access to, and the usage of Voting Advice Applications. VAAs are developed with the aim to address all groups of population to provide political knowledge and to increase democratic and civic participation. However, due to limitations in internet access and usage through different socio-demographic factors, VAAs may not reach all groups of population. In order to accurately assess the magnitude of the impact of the Digital Divide on VAA usage, it is useful to analyze the interplay between Digital Divide and Political Participation for examining reasons for non-participation resulting in VAA non-usage.
To sum up, this research aims to identify the most common socio-demographic factors which have an impact on the access to, and the usage of VAAs, while developing strategies for

counteracting inequalities in the sense of political turnout and user scope. Consequently, this thesis' research question will be:

To what extent do socio-demographic factors that explain the Digital Divide and Political Participation also explain the usage of VAAs?

1.1 Sub-questions

In the following part, three sub-questions are posed in a specified order to provide a meaningful answer to this thesis's research question.
Since the Digital Divide is an essential aspect of the main question, the first step involves examining groups of internet users and non-users in Germany. Identifying non-users and their socio-demographic characteristics will reveal the existence of a Digital Divide in German society and influential factors.

1. *Who are the Internet users/non-users, and to what extent is there evidence of a Digital Divide in Germany?*

Besides, VAAs are online tools for Political Participation. By advising on voting and providing information, VAAs try to assist in the decision-making process by encouraging users to vote and participate in politics. In order to determine which population groups could benefit from VAAs mostly, the second sub-question identifies voters and non-voters and analyzes influential factors of participation behavior and VAA usage.

2. *Who are the voters/non-voters, and which population group has the highest potential for participation by using VAAs?*

The last sub-question examines the VAA users/non-users and their socio-demographic characteristics. This step will show whether Internet non-users, non-voters, and VAA non-users, are influenced by the same demographic factors and are therefore inhibited from participating politically.

3. *Who are the VAA users/non-users, and to what extent do their socio-demographic characteristics impact use/non-use?*

2 Theoretical Framework

The following chapter illustrates the theoretical framework of this thesis in order to provide a deeper insight into the phenomenon of Digital Divide, as well as electronic participation and Voting Advice Applications. First of all, the concept of the Digital Divide is defined and presented in its many facets. This will help to understand the causes and the multidimensionality of this phenomenon in order to analyze the difficulties of online participation by VAAs in more depth. Hereinafter, Political Participation, as a significant democracy value with various shapes will be demonstrated, to classify Voting Advice Applications as an instrument of Political Participation. Next to that, voter participation and the turnout gap in Germany for the federal election 2017 is presented as an offline participation instrument of representative democracy, in order to visualize identifiable groups of voters and the level of voter participation among those entitled to vote, as a strengthening element of democracy. Subsequently, two versions of Voting Advice Applications will be presented, belonging to the online participation instruments of representative democracy. This step is intended to illustrate the interaction of analog and digital participation instruments, focusing on differences in the user group and the reasons for usage. On the one hand, the participation tool, VAA, is particularly suitable for this purpose, since this tool aims to inform the population about the candidates and parties to enable them to decide on the election, which may ultimately lead to participation in the election. Consequently, this instrument reinforces democracy by supporting one of the crucial elements of representative democracy. On the other hand, the user group of the VAAs will demonstrate whether online procedures allow broad sections of the population to participate or whether social selectivity is demonstrated by the barrier "Digital Divide".

2.1 Digital Divide

The following section explains what the 'digital" in Digital Divide refers to, or in other words, from where a divide originates from, to understand the Digital Divide concept more explicitly. This context refers to information and communication technologies, which can be classified as a generic term for several technological applications such as telecommunications technologies, computer hardware and software, digital broadcasting technologies, and electronic information resources such as the World Wide Web (Selwyn 2004).

The plurality of technologies and their complexity becomes apparent when using the term digital for any provision of content by technologies. Concerning the Digital Divide phenomenon, this definition of ICTs indicates that a divide can be caused by each use of technology separately (Selwyn 2004:342). In the early stages of the 21st century, the use of ICTs was the defining basis for modernization and economic and social progress. Many theorists and politicians were convinced that the new computer and telecommunication technologies would transform countries into "knowledge economies" and "network societies" (Selwyn 2004:342). The strictly dichotomous conceptualization of the digital divide at this time - either one has access, or one has no access- is striking. This perspective points to a disregard for the digital divide in earlier times. The problem appears to be easily defined, and consequently easy to solve and overcome by providing ICTs. For a long time, research has focused on the accessibility of ICTs and access to the Internet to counteract the growing digital divide. However, much new research and data have confirmed that the gap is not closing but adopting a more complex shape by widening from the access aspect to usage and digital skills and therefore from Digital Divide to Digital Inequality (van Djik 2002,2012; van Deursen et al. 2011; Hargittai, DiMaggio 2001).

2.1.1 Definition of the term “Digital Divide”

The Digital Divide concept refers to a divide that results from the different opportunities for access and use of new media by segments of the population (Gleich 2004). The term "Digital Divide" became popular through the "Charter of Okinawa," the economic summit of the leading industrial nations (G8) in 2000, which decided to support developing countries on their way into the information society. As a result, information and communication technologies (ICT) were among the most critical factors influencing the formation and existence of 21st-century society. They were seen slowly as a global threat (Hartig-Girardoni, 2015). Moreover, there are various models and many discussions on the topic of the Digital Divide. Concerning the various factors influencing the Digital Divide, there are very different opinions. Discussed influencing factors are components of Internet access and usage and socio-demographic factors such as education, gender, and age. Most of the definitions of the Digital Divide have focused on the access to ICTs, but even if inequalities in access to digital media are becoming less pronounced, inequalities in usage remain (Cruz-Jesus et al. 2020; Van Deursen et al. 2015; Selwyn 2004; Norris 2001; Van Dijk 2005,2006; Yu 2011).

For the reasons given above, some definitions attempt to combine both aspects (accessibility and usage) in a meaningful way. Pippa Norris makes one of the attempts to come up with a

definition that encompasses both parts in the year 2001. Although this definition is almost 20 years old, it is still current and can explain different facets of a long-lasting phenomenon.

> *"[D]igital divide is understood as a multidimensional phenomenon encompassing three distinct aspects. The global divide refers to the divergence of Internet access between industrialized and developing societies. The social divide concerns the gap between the information-rich and information-poor in each nation. Moreover, finally, within the online community, the democratic divide signifies the difference between those who do and do not use the panoply of digital resources to engage, mobilize and participate in public life" (Norris 2001:3).*

This definition is particularly appropriate for this work because it emphasizes the Digital Divide's multi-dimensionality and addresses the phenomenon's different manifestations. It becomes clear that the "Digital Divide" should not be considered as one-dimensional since it is a multidimensional construct, referring to the macro, - (global) meso- (social) and micro- (demographic/democratic) levels of society.

The first dimension is the so-called "global divide". It describes the difference in Internet access between developing and industrialized countries. It is evident that access in developing countries can be guaranteed much later, if at all, and only with the help of industrialized countries. However, the differences will last for a long time, because they get access much later than industrialized countries and do not have the same economic means to reach the European standard (Norris 2001).

The second dimension takes place on the meso-level of society and is the so-called "social divide. This dimension focuses on the division of society into" information-haves" and" information- not haves". Pippa Norris' main concern about the Digital Divide was "that the underclass of the info-poor may become further marginalized in societies where basic computer skills are becoming essential for economic success", access to a good career and "educational opportunities, full access to social networks and opportunities for civic engagement" (Norris 2001:68). It becomes apparent that access alone is not sufficient to create an equal society since opportunities for usage of ICTS, determined by socio-demographic factors such as education, age, or gender, represent a much more complex problem (Norris 2001). Compared to the latecomers, the early adopters of innovation typically come from groups with higher socioeconomic status and higher education. Therefore, "[e]ducation, literacy, and social status provide access to the essential financial and information resources required to adapt flexibly to innovative technologies" (Norris

2001:71). Moreover, the existing social structure also plays a role because innovations in highly stratified societies will generally reinforce existing socioeconomic disparities (Norris 2001). This reinforcement of existing disparities results from the fact that new technologies or knowledge gained from the Internet lead to economic advantages, which means that the rich become even more productive, and the indigent population stagnates or relapses.

The last dimension is the democratic divide. It focuses on the way the Internet is used and emphasizes that various factors, such as socio-demographic factors like age, gender, or education, refer to the Internet not being used equitably (Norris 2000,2001). To identify the democratic divide more precisely, Norris analyzes the consequences of the new technologies for democracy and democratization. Its structural characteristics can define a representative democracy (Norris 2000). According to this, democracy includes pluralistic competition between party members, civil and political freedoms, and, most importantly, equal citizens' participation in the selection of representatives through free and fair elections. This definition focuses in particular on how democracies function through elections as the primary mechanism. To ensure that citizens understand the choices available to them and anticipate the consequences of their vote, the availability of multiple sources of information from governments, political parties, social groups, and the news media is essential. In order to make precisely these resources equally available to all citizens, it is essential to ensure that transparency of democracy exists and is present for each population group (Norris 2000). In this regard, VAAs are an excellent example of a democratic medium. They are a source of information that is used to inform citizens, to encourage them to vote, to give a brief and concise demonstration of the parties' positions on specific issues, and to indicate themselves what their possible political position might be. Thus, VAAs are a democratic tool designed for all population groups, but they do not reach every population group equally because of the existing social divides. Consequently, this can lead to democratic inequalities and disadvantaged groups of the population, which can not actively participate in public life politically (Norris 2000,2001).

Overall, the Digital Divide is a complex and multidimensional phenomenon, influencing different aspects of perspectives of social life through socio-demographic factors.

2.1.2 Drivers of Digital Divide

Technology has the power to deepen graves within societies and negatively impact society's sustainability by reinforcing social inequalities and preventing population groups, due to

various socio-demographic factors, from using technology equally and becoming part of the digital population. In order to understand the impact in today's society, four demographic segments were selected: age, education, and gender which are seen in the literature as drivers of the Digital Divide (Cruz-Jesus et al. 2020; Van Deursen et al. 2015; Selwyn 2004; Norris 2001; Van Dijk 2006; Yu 2011).

b1) Age

In most Digital Divide studies, age is a significant explanatory variable. Inequalities between age groups where older adults, characterized as digital-immigrants (Ballano et al. 2014; Prensky 2001) in comparison to younger adults, labeled as digital natives (Prensky 2001; Bennett et al. 2008; Wang et al. 2013) are less involved and skilled with digital media, is the so-called the 'grey divide' (Morris, Brading, 2007; Friemel 2016; Quan-Haase et al. 2018). According to this definition, people born into a digital family and grow up with ICTs are 'digital natives'. In contrast, people who learn ICTS usage later in life are 'digital immigrants'.

The 'grey divide' indicates that various age-related factors influence seniors +65 in ICTS usage and hinder their ability to use digital media. Lee et al. (2011) identify four factors influencing Internet usage among seniors: (1) "intrapersonal factors" such as self-efficacy and motivation, (2) "functional limitations" such as "intellectual abilities including logical reasoning and spatial orientation", (3) "structural limitations" such as costs and (4) "interpersonal limitations" such as the lack of support and help for the first steps of using ICTs (Lee et al. 2011:1235). Moreover, two groups of variables can be identified. Firstly, individual-level factors including gender, education, motivation, health and technical interest, and secondly, social factors such as support from outside, family status, and internet usage within a social network (Lee et al. 2011; Friemel et al. 2016).

Often it takes much time to learn something completely new and strange. One needs the interest, the motivation, the help, and effort to acquire the knowledge and ability. Many of the older generations have never learned to use technology and particularly the Internet, at school or work before retirement (Loges, Jung 2001). Moreover, various debilitating diseases and often being alone are influential factors that complicate Internet use. Although the Internet offers older people many new opportunities and independence, such as electronic health care support, they are not, or not efficiently using these advantages. In particular, the complexity and lack of support make it difficult to use ICTs (Niehaves, Plattfaut 2014; Loges, Jung 2001).

In contrast, the 'digital natives', the generation born roughly between 1980 and 1994, grew up in a world that is extensively filled with ICTs. They use digital toys as children, learn to use computers very early in school, use mobile phones with the Internet, play online games, listen to music and videos online, and communicate online (Prensky 2001). The 'digital natives' or ‘millennials' (Howe, Strauss 2000), the young and digitally affine group of the population, are a very positive example of the Internet's possibilities. Millennials can work online and have all the knowledge and skills required to take advantage of the Internet and ICTs multidimensionality (Benett et al. 2008; Prensky 2001). The early encouragement, both at school and home, widens the gap between older and younger people and the gap among younger people themselves.

b2) Gender

The gender Digital Divide reflects a particular type of inequality. It demonstrates that there are no cognitive differences between women and men in their ability to use ICTs (Cooper 2006; Dixon 2014). However, it is still evident today that technical knowledge and skills are often attributed to the male gender, and that gender influences the processes of appropriation of the Internet and corresponding digital spaces. In the sense of "Doing Gender", male actors are often more involved in technology-dependent scenes than female actors, who are also less encouraged in their socialization to take an interest in technology (Tillmann 2017; Witting 2018). Doing gender is thus understood as the social construction of gender and gender relations (Kennedy et al. 2003; Witting 2018).

The socialization of young girls and boys occurs in a world with existing gender stereotypes for ICTs, especially computers. According to this, the use of ICTs is a matter for men, because women do not understand technology as well as men do and react too emotionally to failure, which means that women allegedly cannot show the consistency to understand and use ICTs. This kind of gender-specific digital inequality is currently found mainly in developing countries, although the basic stereotyping of technology remains firmly rooted in European countries (Cruz-Jesus 2020).

The impact of gender stereotypes is often reinforced by how boys and girls are taught by their parents, teachers, institutions, and religious gender roles. Ultimately, these factors lead to girls experiencing high levels of computer anxiety, leading them to have a more negative attitude towards computers, which in turn reduces their willingness to approach computers. These negative attitudes harm their computer performance. Furthermore, women underestimate their online knowledge and skills compared to men. A gender-specific discrepancy in self-perception is evident even among those Internet users who have

objectively developed strong skills and have an in-depth knowledge of ICT (Hargittai, Shaw 2015; Hargittai, Shafer 2006). Besides, the knowledge that girls have a negative attitude towards computers and are hesitant to use them reinforces the stereotype that computers are for boys and not for girls (Cooper 2006, Dixon et al. 2015).

b3) Education

In the Digital Divide literature, educational differences among Internet users are often mentioned as a significant driver of the Digital Divide. According to several researchers, a person's educational level is decisive for using ICT, especially the Internet (Norris 2001; van Deursen et al. 2015; van Dijk 2005; Selwyn 2004). Related to the knowledge gap hypothesis, which is a fundamental concept of the Digital Divide theory, the unique role of knowledge and education is enlightened (Tichenor et al. 1970; Bonfadelli 2002). With the fast spread of media and internet usage, a general increase in population knowledge was expected. However, in reality, educational differences still exist and are even deepening. During this period, the knowledge gap hypothesis emerged, which states: "As information flows into a social system, segments of the population with higher socioeconomic status and or higher formal education tend to acquire this information more quickly than the lower-status and lower-education segments, so that the knowledge gap between these segments tends to increase rather than decrease" (Tichenor et al. 1970:159). According to this knowledge gap hypothesis, better-educated people are more likely to acquire published subjects, such as politics or economics, than less educated people. Besides, this hypothesis reflects the fact that persons with a higher level of education can be attributed a higher communication competence, a higher level of knowledge, more social relationships, a pronounced information orientation and a higher media usage (Tichenor et al. 1970; Bonfadelli 2002).

Considering the aspect of access, it becomes apparent that low education is poorly paid, and access to ICTs, powerful computers, and the Internet becomes more difficult than for high educated people. However, the differences in education are particularly evident at the second level of the Digital Divide. This is mainly a question of the manner of use (Van Deursen et al. 2015; Van Djik 2005, 2007; Hargittai, Hinnant 2008). Especially aspects like digital skills have a strong correlation to the educational level and the extent to which a user is promoted. Besides, the frequency of use, which can be increased in professions that work with ICTs, and use in schools, where the distinction between private and state schools, is very distinct.

Furthermore, education will continue to play a unique role in the future. Thus, digitally divided population groups will not benefit from ICTs in further education and new skills acquisition.

Populations with a high level of education are more willing to use the Internet than those with a low level of education because problems such as complexity are perceived as obstacles that cannot be solved independently (Norris 2001; van Deursen et al. 2015; van Dijk 2005; Selwyn 2004).

Besides that, some researchers believe that a threshold of education and skills is needed to accelerate the diffusion of ICT, as educational differences are seen as a considerable barrier to equal ICT, computer, and Internet usage (Kathuria, Oh 2018; Cruz-Jesus et al. 2016). In this respect, education can be the turning point for the Digital Divide by overcoming the complexity of ICTs and usage barriers (Cruz-Jesus et al. 2020; Pick, Nishida 2015).

2.1.3 Second-Level Divide

Following this, the near closure of the Internet access divide does not solve the Digital Divide's problem as a whole, but rather intensifies it. Differences in the level of competence and the preference for specific Internet applications show increasingly relevant effects in everyday life. It can be stated that the analysis of access differences was first carried out with a focus on physical access and has since moved on to the investigation of competence and usage inequalities. This development is known as the so-called second level divide (Hargittai 2002, DiMaggio 2004) or the deepening divide (van Dijk 2005). Here, the focus is less on the analysis of differences between onliner and offliner than on the analysis of different ways of use within the group of onliner (DiMaggio et al. 2004; Iske et al. 2007; Klein 2008; Zillien 2009; Hargittai, Hsieh 2013; Iske et al. 2016). Therefore, through factors such as skills and applications, attention is shifting away from the Digital Divide towards Digital Inequality. This transformation is particularly significant for this work because factors of inequality are investigated and analyzed in order to explain the impact of the Digital Divide leading to Digital Inequality on the usage of, and the access to VAAs. In this context, the second-level divide identifies five critical dimensions of Digital Inequality.

The first inequality relates to the "technical apparatus" (DiMaggio, Hargittai 2001:9). It illustrates that inferior equipment reduces the benefits that a user could derive from the Internet directly and indirectly. According to this, older software and slow connections prevent access to specific websites. It also highlights that Internet users are less likely to re-use the Internet because of the bad experiences they have had and are therefore less likely to acquire skills that enable them to take full advantage of the benefits that access can offer (DiMaggio, Hargittai 2001).

Moreover, Digital Inequality focuses on inequality in digital skills (DiMaggio, Hargittai 2001). A standard definition of digital skills is "the ability to operate hardware and software" (van Djik, Hacker 2003:319). The use of the Internet is an action, interaction, and transaction and provides a framework for investigating how the different skill levels are distributed among the social segments of the population and to what extent socio-demographic factors such as age, education, and gender have an impact on digital skills and internet usage.

Concerning gender and digital skills, the results are not coherent. On the one hand, it is claimed that men have more knowledge, especially digital expertise, about the Internet and its use because they have used the Internet at an earlier age and more often (Goulding, Spaces 2002; Schumacher, Morahan-Martin 2001; van Deursen, van Dijk 2011).
On the other hand, facts and figures have shown that men and women do not differ significantly in their online skills. However, women's self-assessed skills are significantly lower than those of men (Hargittai, Shafer 2006; van Deursen, van Dijk 2011; Cooper 2006; Dixon 2014). Therefore, there are no differences in Internet competence levels between men and women to learn and use Internet skills equally, regardless of gender.

Furthermore, "autonomy of use" is another dimension of inequality (DiMaggio, Hargittai 2001:10). This dimension states that people who have access to the Internet at work learn autonomy of use and become confident in the Internet's possibilities. As a result, the greater the autonomy of use, the higher the benefits for the user. Thus, if a person has access to the Internet only under supervision or in a community, the chances of independent usage are lower (DiMaggio, Hargittai 2001). Within this dimension, the age of the users also plays an enormous role. It is assumed that with increasing age, an increasing number of adults have lower Internet skills.
Regarding this point, the analysis by van Deursen and van Djik indicates that older people perform worse than the younger generations only in terms of operational and formal Internet skills. Therefore, it is essential to support the older population in their use of the Internet. However, they do not learn to use the Internet on their own and consequently feel challenged (van Deursen, van Dijk 2011; Hargittai 2002,2005).

Besides, the "availability of social support" is also an element of Digital Inequality (DiMaggio, Hargittai 2001:12). Accordingly, a user with weak skills caused by various socio-demographic factors should receive support from family, friends, or institutions to prevent frustration and bad experiences.

The last dimension is the inequality of use. Usage is mainly explained by digital skills, mostly related to the socio-demographic factors education and age. Among many other factors, such as social environment and emotional associations, education is once again emphasized. Closely related to the level of education are cognitive resources, which are primarily responsible for the differences in Internet use and digital skills between the various educational groups (De Haan et al., 2002; van Deursen, van Dijk 2011; Hargittai 2002,2005). Similarly, the experience already gained through long periods of use, such as studying or working, gives a lead. However, for groups with low education, the complexity of the Internet and ICTs remains an obstacle. As a result, the Internet opportunities are limited and, consequently, stagnating, so the gap is widening (van Deursen, van Dijk 2011; Goldin, Katz 2008; DiMaggio, Hargittai 2000; Hargittai 2001). Likewise, age causes variation and inequality of use. While younger people grow up with the Internet and use it in their daily lives, the older population's consumption is reduced to brief Internet research. Likewise, age causes variation and inequality of use. While younger people grow up with the Internet and use it in their daily lives, the older population's usage is reduced to brief Internet research due to a lack of skills.

2.1.4 Conclusion

All in all, the changing focus of the phenomenon of the Digital Divide, from access to usage, demonstrates the importance of digital knowledge and skills for participating in social life. Moreover, it is striking that socio-demographic factors like education, age, and gender are the most influential factors in the first and second levels of the Digital Divide. In this connection, the primary driver is the educational level, i.e., a decisive predictor, indicating the most substantial influence on digital skills and use. Therefore, even when access to the Internet is granted, the user's abilities and digital skills determine the purpose of Internet usage and to which extent the advantages of the Internet can be applied in different areas of life. Regarding VAA usage, the user needs access to the Internet and the skills to compute the website and the tool.

2.2 Political Participation

A further potential criterion for VAA usage is Political Participation. For this reason, the following chapter deals with Political Participation and its dimensions. Consequently, the theoretical framework will present participatory forms of representative democracies and

challenges. Moreover, this chapter will help to identify possible gaps in Political Participation that could have an impact on VAA usage.

Political Participation contains different levels, actors, and forms. It is a voluntarily undertaken activity by citizens to influence decisions at the various levels of the political system (Verba et al. 1987; Kaase, Marsch 1979; Teorrell et al. 2007; Voss 2014). In particular, voluntary engagement and the aim of participating in political decisions become the core of Political Participation. In this context, Political Participation is a multidimensional act that involves several online and offline actions. As noted by Huntington and Nelson, "the concept of Political Participation is nothing more than an umbrella concept which accommodates very different forms of action constituting differentiated phenomena" (Huntington, Nelson 1976:14). The definition of Political Participation is often defined very broadly, whereby the substantive focus is placed differently among every researcher. This also becomes apparent concerning the dimension and typology of Political Participation. For instance, Verba, Nie, and Kim used four dimensions of participation in their typology: "voting" (Verba et al. 1987:313), "campaign activity" (Verba et al. 1987:313) (working for political parties, membership, and organizations, donating money to parties or groups), "citizen-initiated contacts" (Verba et al. 1987 313) (contacting public officials via letters, e-mails), and "cooperative [or] communal activity" (Verba et al. 1987:314), including all forms of engagement that focused on issues in the local community. In comparison to Verba et al., Teorell et al. (2007) suggest a more extensive typology, presenting five dimensions: Electoral participation, consumer participation, party activity, protest activity, and contact activity. Here, it becomes evident that Political Participation can take different forms and offers theoretically various opportunities for each citizen to become politically active.

Considering the function of participation, two essential areas of theoretical assumptions are fundamentally identifiable. On the output side, participation should lead to an improved problem orientation and, consequently, improved policies (Voss 2014; Kersting 2014). On the input side, participation has the primary purpose of increasing political decisions' legitimacy by taking preferences and interests of all population groups into account (Kersting 2004, 2008, 2009; Voss 2014).

Moreover, reasons for political engagement and disengagement can be found at the micro-level. In this connection, socio-demographic aspects such as education, gender, or age engage political activities on the individual level. In contrast, target group-oriented policies and unequal opportunities for participation determine political activities at the political level. An example of political disengagement at the political level is the distinction between politically apathetic people and cynical people (Kersting 2014; De Vreese, Elenbaas 2008; van Deth 2000). While population groups with low education, high age, low political

knowledge, and skills feel neglected and unheard by the political system, developing an apathetic point of view towards politics, political cynicism is found among more highly educated population groups with a high level of civic engagement, feeling a lack of self-efficacy and powerlessness concerning to their cynical attitude (Kersting 2014).

Regarding the political engagement and interest of citizens, differences have traditionally been attributed to individual resources and skills. The almost endless number of studies at the micro-level have confirmed the relationships between political interest and education, age, and gender (Verba et al. 1987,1995; van Deth 2000, 2008; Kersting 2014; Teorrell et al. 2007; Solt 2008; Brady 2004; Coffé 2013; Coffé, Bolzendahl 2010; Wollak, McDevitt 2011). According to this, socio-demographic aspects are significantly influencing the interest, behavior, attitude, and engagement towards political activities and participation.

One of the most influential factors is education, an indicator of the level of political knowledge and political skills that people possess (Gaston 2004; Persson 2015; Berinsky, Lenz 2011; Glenn, Grimes 1968; Ekman, Amna 2012; Kersting 2014). Education is an ongoing factor that can increase and deepen so that complex structures and innovations can be grasped and analyzed more quickly. Additionally, education is an indicator of the ability to understand political structures, systems, and phenomena, which promotes political interest and participation (Gaston 2004; Persson 2015; Berinsky, Lenz 2011; Glenn, Grimes 1968; Ekman, Amna 2012; Kersting 2014).

Moreover, a second crucial socio-demographic factor at the individual level is gender. One of the confirmed results of empirical research is the observation that women are less interested in politics than men (Verba et al. 1997; Benett, Bennett 1989; Norris 2004; Ferrin et al. 2019; Coffé, Bolzendahl 2010; Kersting 2014). However, descriptive analyses revealed a gender gap in interest in local, national, and global political issues. Therefore, women are not less interested in politics but are interested in different fields of politics than men do. While women are more likely to be interested in local and domestic political issues (health, education, law), men are more likely to be interested in national and global politics. Generally, genetic or biological factors do not play a prominent role. Instead of a genetic bias, a social bias of political commitment is claimed to explain the differences between men and women, which can be attributed to historical gender stereotypes of societies (Bennett, Bennett 1989; Ferrin et al. 2019; Coffé, Bolzendahl 2010; Wollak, McDevitt 2011) In particular, women have lower expectations of their political potential as they are confronted with men-dominated political systems and gender stigma (Coffé 2013; Coffé, Bolzendahl 2010; Wollak, McDevitt 2011)

Furthermore, the factor age is also taken into account. Concerning age, it is noted that political interest typically increases from young adulthood to late middle age and decreases again with high age (Grasso 2014; Melo, Stockemer 2014; Glenn, Grimes 1968; Ekman, Amna 2012; Kersting 2014; Rowe 2014). However, age is driven by the socio-demographic factors of gender and education. Nowadays, due to their unique generation, older adults have a distinctive information background. In contrast, the youngest will have a completely different background of experience when they are older and will consequently act differently. It is not feasible to predict, based on today's figures regarding age or gender, what future generations' turnout will be. Each generation experiences different stages and social problems, shaped by different defining phases (Grasso 2014; Melo, Stockemer 2014). Concerning other forms of Political Participation except voting, the relationship between age and various forms of political engagement is frequently not linear. Although they are voting more often than younger people, they are less demonstrating or signing petitions than young people (Melo, Stockemer 2014).

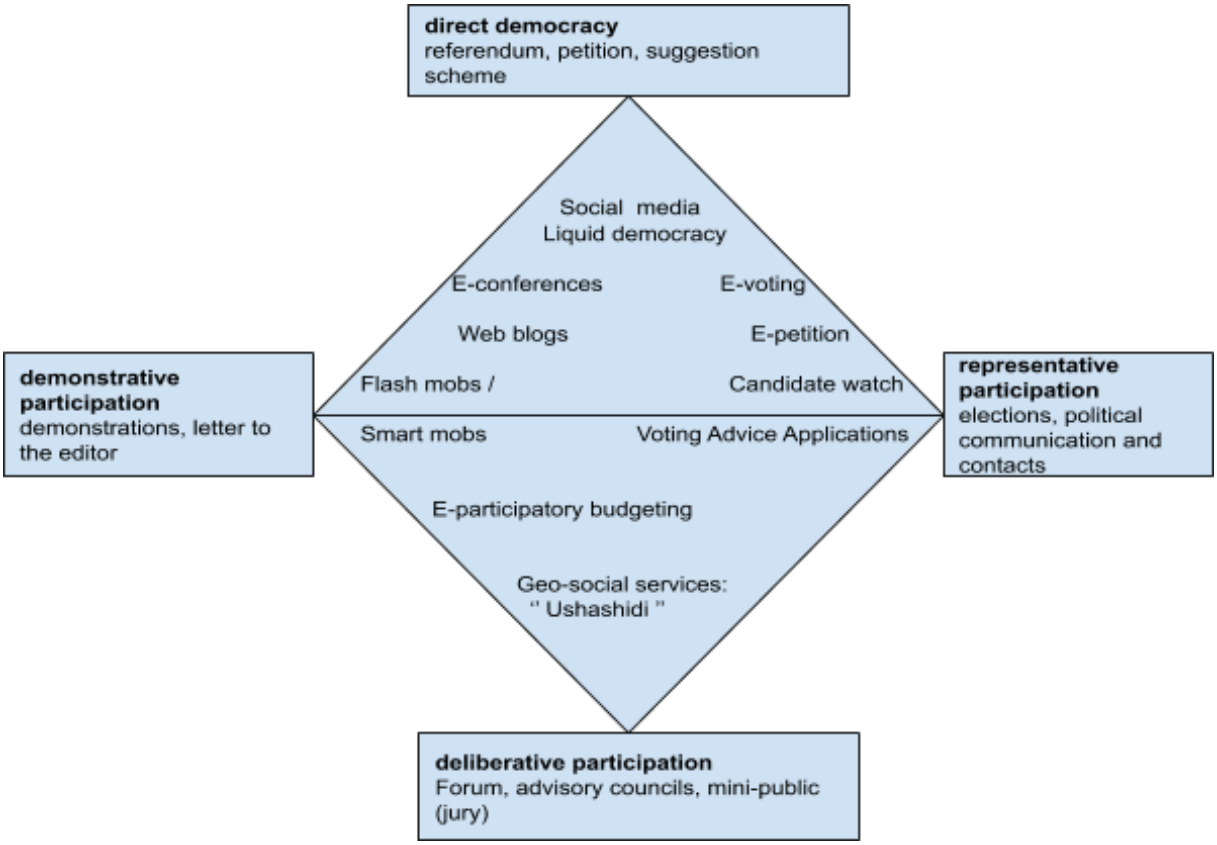
Notably, Political Participation is linked to various socio-demographic factors and skills, which require digital and multimedia skills in terms of electronic participation. As a novelty to digital skills, Political Participation demands verbal and civic skills. Verbal skills are the ability to express personal ideas and preferences, while civic skills include organizational skills or social interaction in groups (Voss 2014; Verba et al. 1995). Regarding electronic participation tools, verbal and civic skills are not mandatory for usage. However, these skills increase political interest through the exchange and could increase the probability of using online tools like VAAs.

Moreover, Political Participation can initially be divided into four areas of democratic participation, each containing different instruments: representative, direct, deliberative, and demonstrative or symbolic participation (Kersting 2014).

The crucial area of participation for this work is representative participation, both offline and online. This form of participation is strongly regulated in liberal democracies, like in Germany, and usually includes both constitutional and legal forms of participation, established at the national and local levels. Besides, representative participation instruments belong to the conventional forms of participation, both party- and person-oriented. The logic of representative democracy points out that the central aspect is determining representatives or delegates who guarantee the representation of interests according to the majority principle. This form of participation includes the possibility of contacting elected office-holders through various channels, as well as running for office or joining a party. However, an essential element is a participation in elections at different political systems, which can occur offline or online (Kersting 2014).

In addition to analog participation instruments, such as taking part in election campaigns, demonstrations, elections, advisory board meetings, or participation in citizens' decisions, digital participation instruments can be found in parallel. Examples of digital instruments are voting advice applications (VAAs) such as the Wahl-o-Mat and Wahl-Kompass in the representative area, e-petitions in the direct participation area, e-voting, e-conferences as a deliberative turn or the mobilization of demonstrations on the Internet via Facebook, Twitter or Instagram using hashtags, as an instrument of demonstrative democracy *(figure 1)*(Kersting 2014).

Figure 1:



Source: Kersting 2013

2.2.1 Voting Advice Applications

In times of digitalization, it is striking that the democratic space, formed by the political system and administration is no longer sufficient for the citizens (Kersting 2008,2014). Especially in Germany, a new wave of dissatisfaction concerning opportunities for Political Participation and electoral democracy has emerged (Kersting 2014). As a solution, new online instruments of Political Participation, democratic innovations, and dialogical participation facilities, such as VAAs like the Wahl-Kompass or the Wahlomat, were intended to help channel and restrain the dissatisfaction. At the same time, new information and communication technologies should also be used to introduce broad representativeness of interests and ideas into the political process to achieve target group-oriented policies and greater acceptance by citizens, politicians, and public administration (Kersting 2008,2014). One particular form of electronic participation is Voting Advice Applications.

VAAs are political online communication tools that have become increasingly popular in European countries and beyond in recent years. In this application, voters are assisted in their electoral choices by comparing their political preferences with the programmatic attitudes of political parties or candidates. In this process, VAA users are asked to fill out an online questionnaire, selecting positions on a variety of political statements. After comparing the user's answers with each party's positions or candidates on the various declarations, the application provides a result in the form of a ranking (figure 2) or a two-dimensional political space (figure 3), indicating the party or candidate with the closest match to the user's political preferences (Ladner, Pianzola 2010; Marschall, Garzia 2014; Fivaz, Nadig 2010; Gemenis, Rosema 2014).

Figure 2: Wahl-o-Mat outcome

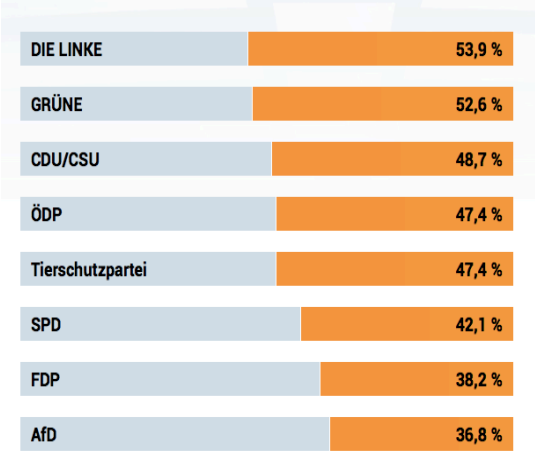
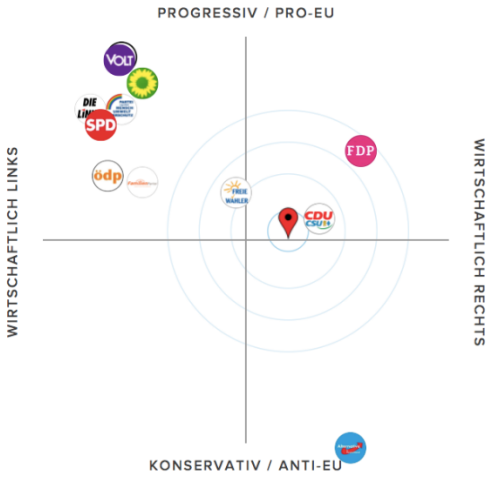


Figure 3: Wahl-Kompass outcome



The history of VAAs began in the late 1980s with the Dutch StemWijzer, which was developed in 1989 by the "Dutch Stichting Burgerschapskunde in collaboration with the Documentatiecentrum Nederlandse Politieke Partijen and the faculty of Political Management at the University of Twente" (Marschall Garzia 2014: 2). The first form of the VVA was a small book with 60 statements from party programs (Marschall Garzia 2014; Genemis, Rosema 2014). Hereafter, the first web-based VAA, StemWijzer, was published a few years later, during the parliamentary elections in 1998. In the following years, StemWijzer became the most used political application on the Internet, used by Dutch voters at election time. The success of StemWijzer made VAAs, a new type of political communication and participation tool, famous in other European countries. As a result, the VAA model was exported to Germany, where the Wahl-O-Mat was first used in 2002 and became the most used VAA globally (Marschall and Schmidt 2010; Marschall, Garzia 2014). Besides the Stemwijzer model, another Dutch team developed the Kieskompas. This VAA was conceptualized as an alternative to the Stemwijzer model, introducing "different methods for the positioning of the parties/candidates and the calculation" and presentation of the matching between the users and the political supply (Marschall, Garzia 2014:2). Similarly, the Kieskompas prototype was also applied in many other countries, such as France, Sweden, Turkey, and several Arab and South American countries, and also served as a prototype for the EU profiler in the 2009 European elections (Marschall, Garzia 2014). In Germany, the Wahl-Kompass is the German version of Kieskompas and is considered a scientific alternative to the Wahl-o-Mat.

All Voting Advice Applications are developed according to the same principle, but there are small differences in the method. A significant element of the method is the type of spatial model used to calculate the match and present the advice (Louwerse, Rosema 2014). For

example, the Wahl-Kompass represents the voters and parties in a two-dimensional political space, illustrating the closest match to the voters. When displaying the results of the Wahl-o-Mat, the parties are ranked according to the degree of agreement, which is visualized with bar charts (Louwerse, Rosema 2014; Gemenis, Rosema 2014; Fivaz et al. 2014). Moreover, differences in the selection of topics and statements are also visible. The German Wahl-O-Mat statements are formulated by a group of young voters, political scientists, journalists, statisticians, and representatives of the Federal Agency for Civic Education. After the group has identified and formulated a set of questions, answers are sought from the parties. Only those questions that prove to be sufficiently selective are selected for the final application. This step helps to ensure that the VAA helps the voters to find differences between the parties (Wagner, Ruusuvirta 2012). In comparison, during the Kieskompas procedure, Kieskompas employees inspect the parties' answers to the VAA questions to ensure that they are correct and enter into correspondence with the parties, if parties take an unusual position (Wagner, Ruusuvirta 2012; van Kamp et al. 2014).

Moreover, Voting Advice Applications have the specific goal of informing citizens about the relevant policy positions of political parties and motivating them to become politically active. Both intentions are significant parts of Political Participation. Above all, political knowledge is an essential resource for participation in the political sphere. Therefore, only citizens who have a basic understanding of politics can understand democratic and political processes and make decisions. Additionally, through the different points of view and statements of the parties and candidates presented at the end of the questionnaire, users can learn and analyze all parties' party positions on different social, societal, or economic issues. Also, while answering the questionnaire, they get to know the most important political issues and are stimulated to reflect through the questions. Some studies demonstrate that VAA users experience a political knowledge increase after VAA usage (Ladner 2012; Marschall 2005; Schultze 2014). However, the knowledge increase due to VAA usage depends on an individual's political efficacy, relating to the feeling of an individual being able to influence the political process and socio-demographic factors. In this context, studies present that VAAs have a relatively significant effect on younger VAA users and individuals with a lower educational level and a small effect on gender (Ladner 2012; Hirzalla et al. 2010; Kamoen et al. 2015). Concerning a different aim of VAAs, a positive effect on voter turnout, VAA usage facilitates the decision-making process, fosters electoral turnout and has, therefore, a small mobilizing effect (Gemenis, Rosema 2014; Marschall, Schmidt 2010; Fivaz, Nadig 2010; Ladner, Pianzola 2010, 2015; Ruusuvirta, Rosema 2009).

In addition to topics such as the impact of VAAs on voter turnout or political knowledge, the research on VAAs also focuses on the user profiles. Concerning the VAA user-groups, clear

tendencies become apparent. Data on the age distribution within the VAA users illustrate that the users are relatively young (Fivaz, Nadig 2010; Marschall 2014; Marschall, Schultze 2012; Van de Pol et al. 2014, Garcia 2010; Marschall, Schmidt 2010). In 2009, the data of the Wahl-o-Mat presented that more than 35% of the users were younger than 30 years, while over 60-year-olds only made up 7.1% of the total number of users. Similarly, clear trends were visible in terms of gender distribution and education. Here, the gender distribution within the population demonstrated that men are over-represented in all VAA user groups - but to varying degrees. In this regard, like a unique political event within the system, VAA versions and situational factors impact the share of male vs. female users (Marschall, Schmidt; Marschall 2014). Concerning the formal education level, various research studies show that VAA users have high education (high school diploma, university degree), belonging to the well-educated segments of the respective population (De Rosa 2010; Marschall, Schmidt 2010; Marschall 2014; Marschall, Schultze 2012; Van de Pol et al. 2014).

Besides socio-demographic factors such as age, education, or gender, a VAA user is also identifiable by personal political interest. This means that VAA users are part of the politically interested group. The Swiss VAA smartvote stated in 2007 that 79 percent of smartvote users have a rather high or high level of political interest (Fivaz, Nadig 2010). The German VAA Wahl-o-Mat classifies around 59 % of users as politically interested (Marschall, Schultze 2012).

In general, the typical VAA user seems to be young, male, highly educated, and politically interested. This pattern can be found in different countries with different political systems and VAA versions (Marschall 2014; Marschall, Schultze 2012; Van de Pol et al. 2014).

2.3 Hypotheses: Interaction of Digital Divide and Political Participation

The following chapter presents the state of research on socio-demographic factors and their impact on the Digital Divide and Political Participation in order to consequently introduce hypotheses for answering this thesis's central research question.

Theories of the Digital Divide demonstrate that three significant factors influence internet usage. The first variable is gender, distinguishing between men and women. The literature states that the use of digital media is a male issue. Reasons for this are firmly rooted gender stereotypes, which attribute specific characteristics and behavioral patterns to one gender, like technology to men, shaping the education of children up to late age. Furthermore, the

theoretical results demonstrate that a person's educational level is decisive for ICT and Internet use. Therefore, the education or knowledge gap is mainly a matter of the complexity of Internet use and the opportunities for usage, mostly promoted by educational institutions. Also, the last socio-demographic aspect of age indicates an apparent influence. The phenomenon of age divides society into digital natives and digital immigrants. The distinction underlines that the natives, i.e., the younger ones, are growing up in a digital and Internet dominated world. In contrast, the older groups of the population are confronted with something new and have to invest more effort to use the Internet to its full extent or have access to it.

The impact of the same variables, age, gender, and education is also analyzed on Political Participation. The research results reveal that the variables mentioned above primarily influence political interest and, consequently, impact voter turnout and Political Participation. Concerning gender, research reveals that women are less interested in politics than men because politics are male dominated. In contrast, the problem of gender stereotypes is influencing and restricting women's political activity again. Furthermore, the factor education demonstrates that higher educated people are more interested in politics than lower educated people since they can reconstruct and understand political structures, systems, and phenomena, which in turn promotes political interest and participation (Gaston 2004; Persson 2015; Berinsky, Lenz 2011; Glenn, Grimes 1968; Ekman, Amna 2012; Kersting 2014).

Comparing the effects of socio-demographic variables, both on Internet use and Political Participation, it becomes apparent that the factors education and gender have an impact on usage and participation. Consequently, two hypotheses can be assumed:

> *H1: Less educated people are less likely to use VAAs in Germany than highly educated people.*
>
> *H2: Men are more likely to use VAAs in Germany than women.*

The socio-demographic factor age is divided into three hypotheses to screen an assumed interaction between internet usage and political interest, impacting VAA usage.

The first hypothesis (H3) in this category deals with young people in Germany. It assumes that young people are more likely to use VAAs than older people, although they are not

politically interested. However, they are more familiar with ICTs and the Internet and therefore have the skills to use VAAs.

H3: In Germany, younger people are more likely to use VAAs than older people.

The next hypothesis (H4) deals with middle-aged people. It assumes that this group of the population uses VAAs most in Germany because they use the Internet and are also politically interested.

H4: In Germany, middle-aged people are more likely to use VAAs than younger and older people.

The last hypothesis (H5) regarding age suggests that the oldest of the German population are the least likely to use VAAs. Although they are politically interested, they do not have access to the Internet or have the internet skills to use online tools like VAAs.

H5: In Germany, older people are less likely to use VAAs than younger people.

3 Methods

The sub-questions and the hypotheses introduced so far contribute to finding a meaningful and innovative answer to this thesis's central research question: "To what extent do socio-demographic factors that explain the Digital Divide and Political Participation also explain the usage of VAAs?". In retrospect, the socio-demographic factors of age, education, and equity impact the use of the Internet, thus the Digital Divide and political interest, i.e., Political Participation. Overall, it must be examined to what extent socio-demographic factors also impact VAA use or non-use. In order to achieve this, the methodological approach of this work is presented below. In the following, the appropriate research design, case selection, operationalization, and data collection methods are described.

3.1 Case selection

In order to answer the research question, the German Federal Elections 2017 is examined. Especially the high turnout for this year's elections and the popularity of the German Voting

Advice Application are the main reasons for this selection. Furthermore, Germany is the area of research of choice due to its accessibility and pragmatism, since much high-quality data is available in different formats like the German Longitudinal Election Study GLES. The following section describes the unique features of the Bundestag elections 2017 in Germany to ensure that the case Germany and the Bundestag elections in 2017 was the appropriate decision.

The election for the 19th German Bundestag took place on September 24, 2017. It was particularly striking that, according to the final official result, voter turnout in the 2017 Bundestag elections reached 76.2%, representing an increase of 4.6 percentage points compared with the Bundestag elections four years earlier. The increased voter turnout indicates a political event that has mobilized several sections of society and aroused their political interest. In this context, the 2017 federal election's main topics were integration and immigration (Infratest dimap 2017). Until 2017, foreign policy issues had never decided on a Federal Election. However, this changed with the onset of the "refugee crisis" in Germany, 2015. The connection between refugees' arrival and the rise of the right-wing AfD is hard to deny and caused concern among many young people and German society. Although all age groups participated more strongly in the Federal Election 2017, the voters aged 21-24 years recorded the highest increase with 7.4 percent (Destatis 2018).

Another critical issue discussed social justice, which became the focus of voters' attention before the 2017 federal elections. The gap between rich and poor has widened in recent years, and while some Germans are satisfied with their social and financial situation, others are affected by poverty. This aspect is particularly interesting for this research because disadvantageous socio-demographic characteristics could potentially increase or decrease political participation through online participation tools, like VAAs.

Numerous new features of the German Federal Election aroused the interest of the media and research. So, high-quality data on voting behavior, Political Participation, and political opinion formation in 2017 have been produced and can be applied to answer the research question of this thesis.

3.2 Research design

The following section outlines the research design in order to provide an answer to the research question.

This research follows a descriptive-explanatory approach and examines the impact of socio-demographic factors, explaining the Digital Divide and Political Participation, on the use of VAAs. For this purpose, an existing survey, which provides high-quality data, will be

analyzed. This survey is conducted within the German Longitudinal Election Study (GLES), containing Wahl-o-Mat user data for the German Bundestag elections in 2017.
In addition to the Wahl-o-Mat/ GLES data obtained from the representative survey, the German Wahl-Kompass user data are used for the analysis. Therefore, this research examines data from two different German VAAs to generalize the results and address VAA design differences that may affect VAA user groups.

Wahl-o-Mat is the most popular and oldest VAA in Germany. It was first made available by the German Federal Agency for Civic Education in the run-up to the 2002 Federal Elections. It is a licensed spin-off of the Dutch VAA "StemWijzer". With a 3.6 million- times use, it reached a high number of users, which increased enormously in the following years. In 2017, the Wahl-o-Mat was used 15.7 million times and was, therefore, one of the most popular among the VAAs. Moreover, the Wahl-o-Mat is funded by the Federal Agency for Civic Education and is therefore heavily advertised. The choice was made for the Wahl-o-Mat since it reached many users in the previous elections in Germany and is intensively analyzed in VAA research. Unlike the Wahl-o-Mat, the Wahl-Kompass is a scientific university project developed by German and Dutch scientists in cooperation with Kieskompas. Additionally, the state does not finance the Wahl-Kompass, so it cannot be strongly and generally advertised.

The first step in answering the research question will be showing the Digital Divide in Germany and answering the first sub-question. Afterward, the turnout gap will be presented to demonstrate which groups of the society are voting and which groups have the most potential to be gained as a voter through VAAs. In contrast, the empowerment of specific groups will also become visible. The third step is presenting the Digital Divide under Wahl-o-Mat users and Wahl-Kompass users to provide an answer to the third sub-question and testify the hypotheses. For this purpose, GLES and Wahl-Kompass data will be used to create cross-tabulations and diagrams to visualize the VAA users, related to the three socio-demographic factors, age, gender, and education. In the next step, the VAA user data will be compared with Germany's census data to contrast the Wahl-Kompass and Wahl-o-Mat users and not users with the total population. After defining the user groups, GLES data and Wahl-Kompass data will be compared to each other to find similarities and differences regarding user groups and socio-demographic characteristics. In the discussion, the hypotheses will be tested and discussed regarding the theoretical background and the analysis. Subsequently, the results will be concluded to provide a meaningful answer to his research's central question.

3.3 Operationalization and Data Analysis

In order to perform the empirical analysis answering the sub-questions and testing the proposed hypotheses, the following section describes the chosen data, how they were collected and why these data are appropriate for this research.
First, this research deals with the first sub-question, namely the Digital Divide, and uses the data of the ARD/ZDF Online Study for the analysis. In 2017, the core data of the study series "Media and their Audience" was based on a representative dual-frame sample (landline: 60%, mobile: 40%) of a total of 2,017 German-speaking persons aged 14 and over in Germany. The interviews were conducted between the end of January and mid-April 2017 by GfK Media & Communication Research and analyzed the online behavior of different genders and age groups. Additionally, data from Initiative D21 2017 was used to investigate variable education. The population consists of the German resident population aged 14 and over living in private households, and the data was obtained through 20,424 face-to-face interviews from August 2016- July 2017. Furthermore, the second analysis examines the electorate in the 2017 German Federal Elections. The data for this is provided by the Federal Election Commissioner, a representative election statistic, and deals with socio-demographic characteristics of voters and non-voters. Moreover, to answer the third sub-question and the hypotheses, data from the representative GLES survey (N=11.901) and the direct user data of Wahl-Kompass (N=27.640) are used. Both data provide socio-demographic characteristics of the users and are therefore significantly appropriate for this study. Hence, the respondents and users are asked about their age or year of birth, their gender (male, female or not specified) and their school-leaving certificate (no certificate, Certificate of Secondary Education, General Certificate of Secondary Education or the qualification for university entrance) (Appendix).

The following section describes the chosen data, how they were collected, and why these data are appropriate for this research to perform the empirical analysis answering the sub-questions and testing the proposed hypotheses.

First, this research deals with the first sub-question, namely the Digital Divide, and uses the ARD/ZDF Online Study for the analysis. In 2017, the core data of the study series "Media and their Audience" was based on a representative dual-frame sample (landline: 60%, mobile: 40%) of a total of 2,017 German-speaking persons aged 14 and over in Germany. The interviews were conducted between the end of January and mid-April 2017 by GfK Media & Communication Research and analyzed the online behavior of different genders and age groups. Additionally, data from Initiative D21 2017 was used to investigate variable

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Finally, hypotheses will be tested by analyzing the percentage difference using cross-tabulations and visualizing them with diagrams to identify who the Wahl-o-Mat and Wahl-Kompass users and non-users are and to what extent socio-demographic factors have an impact on usage. Comparing the characteristics of internet non-users, non-voters, and VAA non-users will consequently demonstrate an interplay of internet usage and political interest as requirements for VAA usage.

4 Analysis

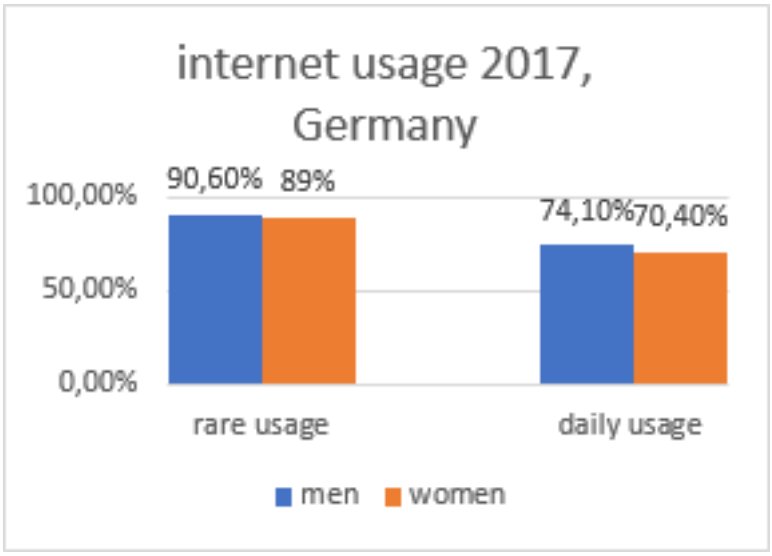
The following chapter will present the conducted analysis by indicating the answers to the introduced sub-questions (1.2).

4.1 Digital Divide, Internet user and non-user in Germany

In Germany, the discussion about the Digital divide has been intensively conducted since the late 1990s. In addition to politics, this issue is also being discussed in the economy, research, and mass media. In the following section, the first sub-question: "Who are the Internet users/non-users and to what extent is a Digital divide in Germany visible?" will be answered by examining Internet users and non-users in terms of socio-demographic characteristics and determining the existence of cleavages that disadvantage certain population groups. At the same time, it is also examined which media are used most by which users in order to classify variations in usage according to socio-demographic factors.

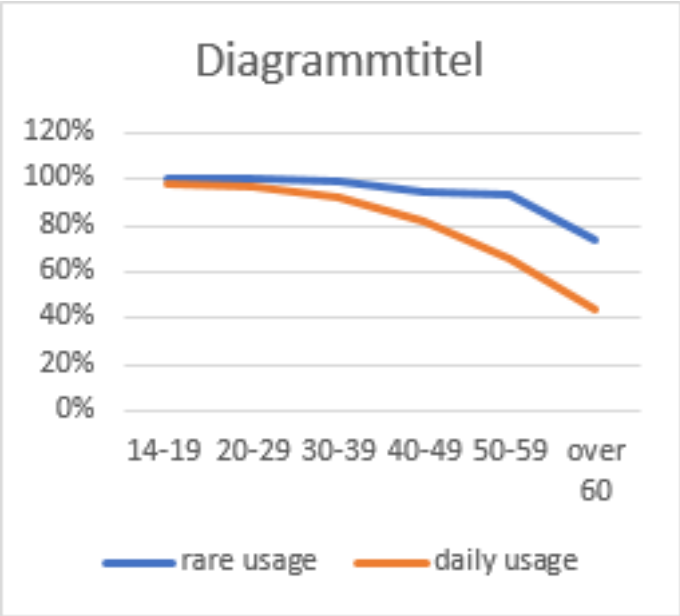
In 2017, 62.4 million (89.8 percent) of the German-speaking population aged 14 and over are frequent Internet users. Also, the daily Internet usage, which is calculated based on differentiated individual queries, has risen significantly up to 72.2 percent or 50.2 million people. According to the demographic groups, a differentiation demonstrates that in all decades up to the age of 59, well over 90 percent are online users. Especially men (74%) use the Internet daily more often than women do (70%) (rare usage men 90.6%, women 89%) (Table 1).

Table 1:



Source: ARD/ZDF- Onlinestudie 2017, n=2.017, in %

Table 2:



Source: ARD/ZDF- Onlinestudie 2017, n=2.017, in %

The distinction between users and non-users, known as the Digital Divide, is particularly striking when considering age. While more than 90% of those up to 39 years use the Internet daily for various activities, the number of those over 50 years decreases to 66% and those over 60 down to 44% (Table 2). It becomes evident that the Internet is used more frequently by men and younger people up to 39 years than older people over 60.

Generally, Internet usage reaches very high daily ratings (Table 3) in the age groups for up to 39 years. In each case, more than 90 percent are online every day. Among 40 to 49-year-olds, the corresponding figure is still more than 80 percent. At a significantly lower level, the 50-59-year-olds and those aged 60 and over are online daily (66 and 44%, respectively) (Table 3). Overall, the average daily Internet usage time is 149 minutes, i.e., almost two and a half hours. In this context, men use the Internet for almost 3 hours a day, while women report a two-hour use.

Additionally, there are distinct differences in the duration of use in terms of age. It is noticeable that 14-29-year-olds use the Internet for 4.5 hours a day, while 50-70-year-olds reach 1.5 hours, and those over 70 use the Internet for almost 40 minutes (Table 3).

Moreover, it is interesting to ask for what purposes the individual age groups use the Internet. For this purpose, the category of media-based Internet use summarizes all

audiovisual and text-based applications and asks the users about the platforms they use most often and the reasons for using them (Table 4). The younger target group indicates distinct patterns of behavior: 14 to 29-year-olds listen to 32 minutes of music daily, explicitly mentioning the platforms YouTube and Spotify, while over 50-year-olds listen to 2 minutes of music every day. Similar differences can also be seen in the use of YouTube since 14-29-year-olds spend 25 minutes a day on YouTube to watch videos and films, while over 50-year-olds use YouTube for 1 minute a day (Table 4). Nevertheless, significantly more than half of the young target group and one in four of the German population consume music and videos via YouTube.

Table 4: Internet usage 2017, Germany

	women	men	14-49	30-49	50-69	over 70
media usage	36	54	116	51	11	9
videos on Netflix etc.	8	12	28	11	2	0
viedos on Youtube etc.	5	10	25	5	1	1
videos on Facebook etc.	0	1	2	0	0	0
music on Spotify/ Youtube	13	20	52	15	2	4
online articles/blog	7	6	3	16	3	2
E-Mail, WhatsApp etc.	59	59	102	77	40	12
online shopping	14	18	14	22	20	2
online gaming	5	24	32	17	6	4
quick search for info.	32	37	43	46	30	12
surfing	6	12	17	12	7	1
other usage	71	87	103	93	58	18

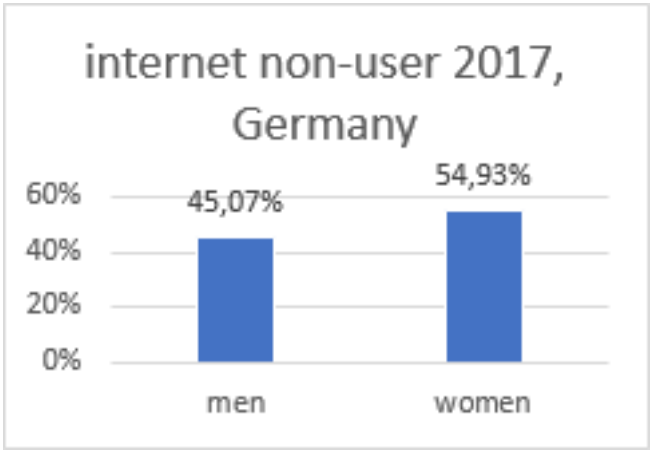
Source: ARD/ZDF- Onlinestudie 2017, n=2.017, in minutes

Data from the daily schedule, day-after-recall 5.00 to 24.00 hours: All online activities are summed up in 15-minute intervals and calculated to average values. All respondents are included into the calculation; those who did not use the Internet the day before the survey, with the value zero.

A further difference can be seen in individual communication, where no gender-specific differences can be found in terms of usage. However, in terms of daily reach, at 41%, significantly more women than men (33%) communicate daily. Almost one hour (59 min.) is spent on individual communication via the Internet. An above-average amount of time is spent by 14 to 49-year-olds on individual communication, with the under-30s again standing out with 102 minutes compared to the 30 to 49-year-olds with 77 minutes. It is also noticeable that although Facebook appeals not only to younger people (59% of 14-29-year-olds), but also to the middle age group (42% of 30-49-year-olds use it at least weekly), Instagram (51% of 14-19-year-olds) and Snapchat (43% of 14-19-year-olds) are mainly teenage domains *(Table 6)*.

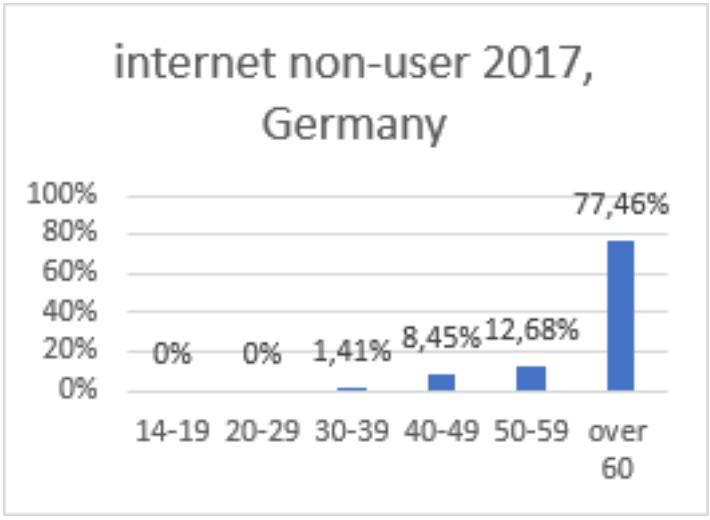
Various factors can explain the reasons for the differences in usage. One criterion examined for Internet usage is education. In this context, people with higher education (95%) use the Internet more often than people with low education (58%), as they are doing research or using media platforms at work. Therefore, it is stated that the working population (94%) uses the Internet more often than unemployed people or pensioners (65%). Considering the user profile (male, young, highly educated), German citizens who are female, over 60, with low education, do not use the Internet as often as the typical internet users and are therefore digitally excluded (Table 6,7). Thus, it becomes apparent that these socio-demographic factors influence the group of offliners (10%). In contrast, the main reasons for non-use include complexity, lack of benefit, or financial aspects (Initiative D21 2018).

Table 7:



Sources: ARD/ZDF- Onlinestudie 2017, n=2.017, in %

Table 8:



Sources: ARD/ZDF- Onlinestudie 2017, n=2.017, in %

In order not to remain at the first level of the Digital Divide, the second level of the divide, i.e., the use of the Internet, is analyzed below.

To clarify the knowledge in computer usage, and the understanding of digital terms, the respondents of the Initiative D21 study were asked about different terms and possible applications. The figures show that familiarity with the terms increases with increasing education. Moreover, age plays a significant role. The over-50s are outnumbered by the younger generations when it comes to digital technical terms. There are also apparent differences between the gender: For all the terms surveyed, men know more about them than women.

Furthermore, a considerable part of the population finds it difficult to participate in public discourse due to a lack of knowledge of the terms used. Although technical terms are used as a matter of course in the media and politics, they are only understood by very few. Although the necessary skills in computer applications continue to increase steadily among the population, the generation 50+ has not yet caught up, so that almost all skills decline significantly from this age. It is also apparent that working people make better use of the Internet and have higher application skills than non-working people, as they are not encouraged and supported at work. Another significant discrepancy can be seen between gender: Women rate their competence in all subjects lower than men. Especially when it comes to handling hardware, such as installing devices or networks, men are much more confident than women (Initiative D21 2018).

To sum up, offliners are often women, older than 60, and have a low education level. The main reasons for non-use are sociodemographic factors such as age, gender, or education and a knowledge gap in usage related to educational attainment.

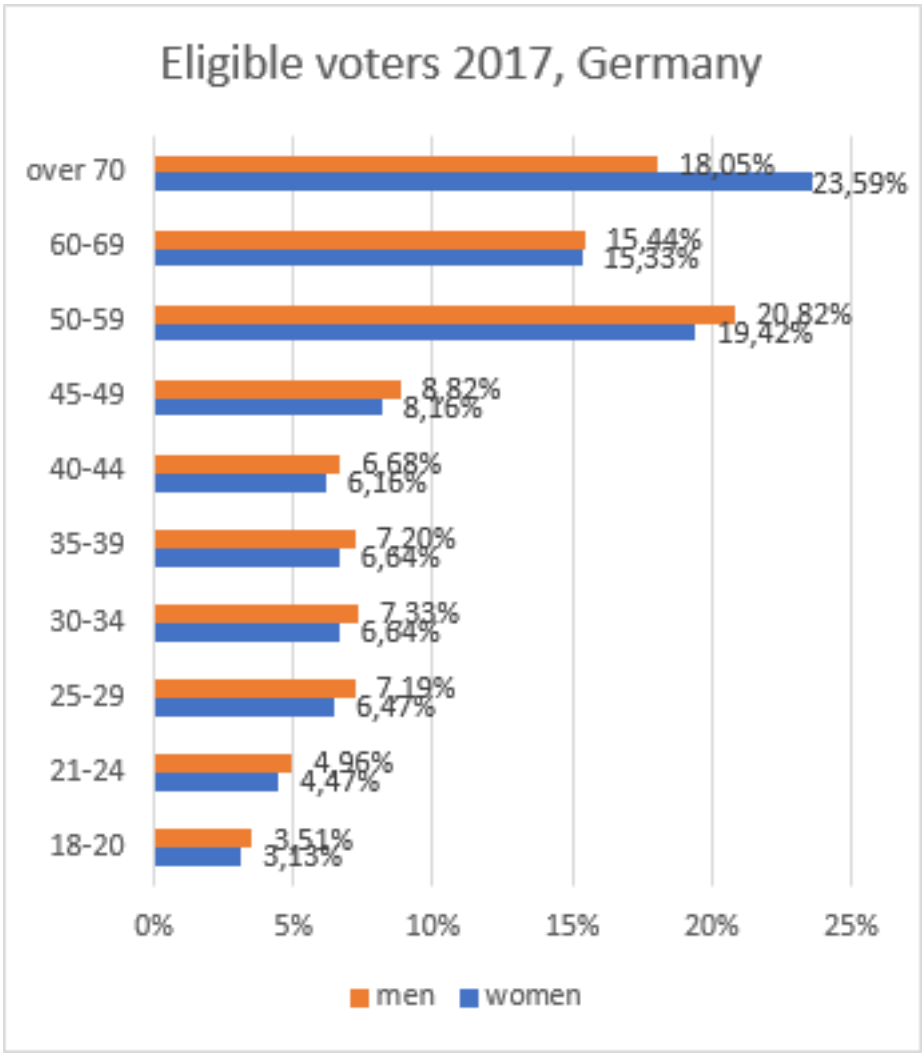
4.2 Turnout as Political Participation - German Federal Election 2017

Germany's development into an individualized, multicultural, and aging society has resulted in a crisis of integration and a crisis of political legitimacy (Kersting 2014). Political dissatisfaction, especially with political parties, manifested itself in all population groups (Kersting, Woyke 2012; Kersting 2014). In order to counteract this dissatisfaction, political forms of participation for a strengthened basis of legitimacy play a significant role. Here, elections are among the most significant examples of this and can be located in the representative area. At this juncture, the following section provides an answer to the second sub-question (1.2). It describes the electorate for the 2017 federal elections in Germany to determine the electors and the population groups with the highest potential for prospective

Political Participation through VAAs. Moreover, this step visualizes the non-voters and gives evidence for influential factors of Political Participation in Germany. That way, VAA users/non-users, and the voters/non-voters can be compared according to the influencing factors.

In 2017, 61.7 million German citizens were entitled to vote for the Federal elections in Germany. Among the electorate, the older population groups continue to dominate increasingly. The generation of 30 to 59-year-olds accounted for almost half (48.9%) of those eligible for the 2017 federal elections. Moreover, with almost 22.4 million, the generation over 60 years of age represented 36.3% of all potential voters and twice as high as the younger generation under 30 years of age. With 9.2 million, they represented only 14.8% of all voters (Table 9).

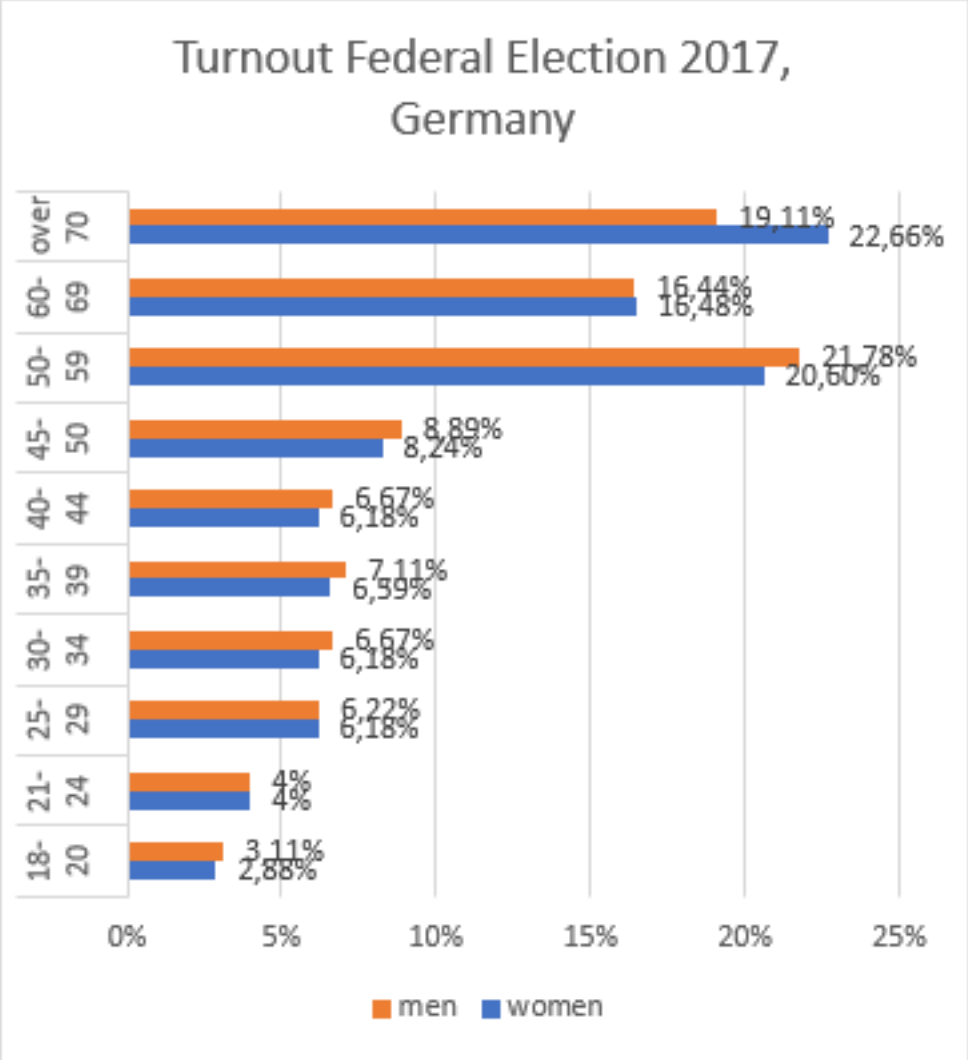
Table 9:



Source: Bundeswahlleiter 2017, in %

Looking at the electoral participants in terms of gender, slightly more men (76.3%) participated in the election than women (76%), although significantly more women than men are eligible to vote. Considering the age, it is evident that 18-39 years old people participate below the average, and those eligible to vote from 40-69 participate above average. Although 21-24-year-olds showed the most significant increase compared to the last election with 7.4%, they only participated below average with 67%. In contrast to this, 81% of the older population (60-69 years) and 75,8% of the over 70-group, participated in the Federal Election. The most striking fact is that more women over 70 are eligible to vote, but more men have participated in the election (72,5%; 80%). This contrasts with the fact that younger women vote more often than young men (Bundeswahlleiter 2018).

Table 10:



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Next to that, a study by the Press and Information Office of the Federal Government demonstrated that non-voters have a slightly below-average education. Additionally, most non-voters are employees, worker persons, or unemployed (BPA 2017). Besides, non-voters assess their living situation and the economic situation more negatively than the general German population because they feel excluded and neglected by the federal government. Besides, the majority of the interviewees associate themselves with the lower class (BPA 2017). Furthermore, it is striking that an essential defeatist attitude - i.e., the belief in the meaninglessness of elections - seems to be primarily related to socio-economic factors: the lower the level of education, the more pronounced is a feeling of powerlessness and the conviction that one's participation in the elections does not achieve anything.

All in all, the turnout in Germany has risen for the second year in a row. Despite the increase, it is clear that certain population groups are unrepresented because of socio-demographic factors, resulting in a deep gap between the highly educated and older people and the less educated and younger ones. Next to the voters, the typical non-voter of the Federal Election 2017 is female, under 30, and has a lower level of education.

4.3 Voting Advice Application Users

The third examined sub-question, presented in section 1.2, asks for socio-demographic characteristics of Wahl-o-Mat and Wahl-Kompass users and the extent to which these aspects factors influence the VAA usage.

The previous chapters of this thesis have demonstrated that socio-demographic factors like age, gender, and education impact Germany's Digital Divide. Accordingly, this section of the thesis will examine who the Wahl-o-Mat and Wahl-Kompass users and non-users are and whether the non-users have the same socio-demographic characteristics as the Internet non-users and non-voters. Additionally, since VAAs are an online Political Participation tool, the extent to which the Digital Divide influences VAA usage will be apparent. Subsequently, the

user distribution is compared with the census data for Germany. This comparison aims to testify how the user figures relate to the census data and whether the census can explain a less frequent use of, e.g., one gender. Finally, commonalities of users and non-users of the Wahl-o-Mat and Wahl-Kompass are compared to strengthen the statements and, if necessary, identify differences among VAA users.

4.3.1 German population

In the following, the German population over 18 years in 2017 is presented.

In 2017, a total of 82 792 400 million people was living in Germany. Observing the age distribution in Germany in 2017, it becomes evident that the demographic change has already arrived in Germany. The declining number of people in younger age groups and the increasing number of older people shift the demographic framework in an unprecedented way. The 18-28-year-olds account for 12.7%, while the 29-49-year-olds account for just under 27%. The distribution over 50 years is particularly striking (44.03%), with the 50-69 age group representing 28.4% of the total population, while those over 70 reach 15.7%. The given numbers highlight that Germany has an "old" population and that younger people (18-30) are underrepresented (Table 18). Furthermore, focusing on gender distribution in 2017, it becomes apparent that there were more women (50.7%) in the German population than men (49.3%) (Table 19). Moreover, the German population's educational level in 2017 indicates that most Germans have either a Certificate of Secondary Education (30.4%) or the university entrance (31.9). Groups without a school leaving certificate account for 4% of the population aged 15 and over, of which 3.6 are still students. The General Certificate of Secondary Education was achieved by 23.1% of the population. Overall, most of the German population has either a low or a high level of educational attainment (Table 20).

Overall, the German population comprises older people, mostly women and people with a high or deficient level of education.

4.3.2 Wahl-o-Mat user

Since the Wahl-O-Mat was first put online on the occasion of the election to the German Bundestag in 2002, the number of users has risen steadily. The Wahl-o-Mat was used 15.7 million times for the Bundestag elections in 2017 and aims to prepare as many people as possible for upcoming elections, support them in their decision-making process, and

ultimately encourage them to vote. In the following, the Wahl-o-Mat users will be presented to reveal the impact of the socio-demographic factors.

Based on the theoretical framework, three influential socio-demographic characteristics are identified - age, gender, and education. In the GLES study, a total of 11901 respondents provided an answer regarding Wahl-o-Mat use, stating that they had used the German VAA Wahl-o-Mat (38%). The analysis of the Wahl-o-Mat users reveals that more men (54.8%) than women (45.2%) have used the Wahl-o-Mat (Table 11). Compared to the census data, this is an unusual distribution, as the gender distribution in Germany is almost equal (Table 19). Furthermore, there is also a clear division in terms of age. Most of the VAA are in the middle age range of 29-49 years. Younger people between 18-28 years also use the Wahl-o-Mat much more frequently than those over 60 (table 12). All in all, it can be stated that Wahl-o-Mat users are younger than the average of the German population (Table 18).

The next characteristic is the level of education. According to existing literature, VAA users have a high level of education (De Rosa 2010; Marschall, Schmidt 2010; Marschall 2014; Marschall, Schultze 2012; Van de Pol et al. 2014). The Wahl-o-Mat users' data support these statements since 51.6% of the users have a qualification for university entrance, 34% a general Certificate for Secondary Education, 13% a Certificate for Secondary Education, and only 0.5% have no diploma (Table 13). Compared to the educational level of the overall population, the population group with a low level of education is underrepresented. Consequently, the majority of Wahl-o-Mat users have a high level of education (Table 20).

Therefore, the data indicate that the Wahl-o-Mat users are younger than the overall population, are highly educated and male.

Table 11:

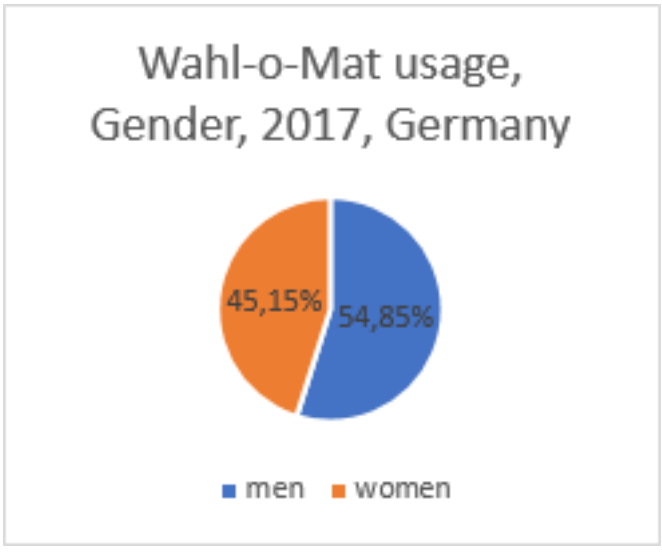


Table 12:

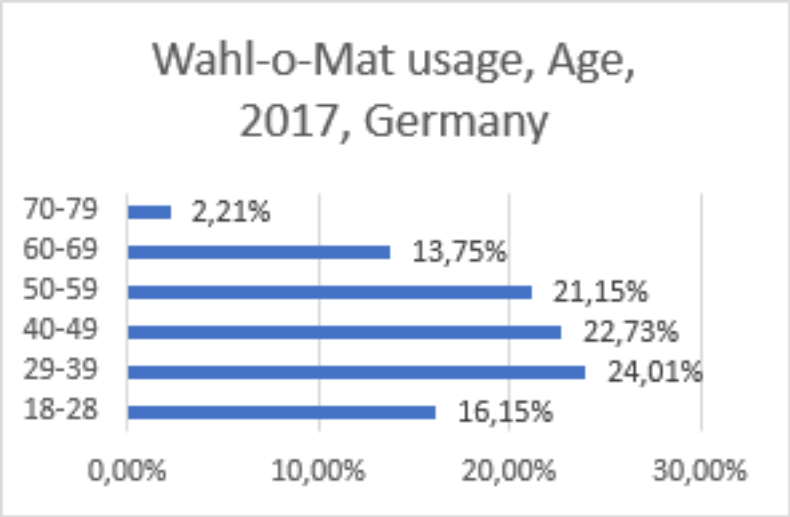
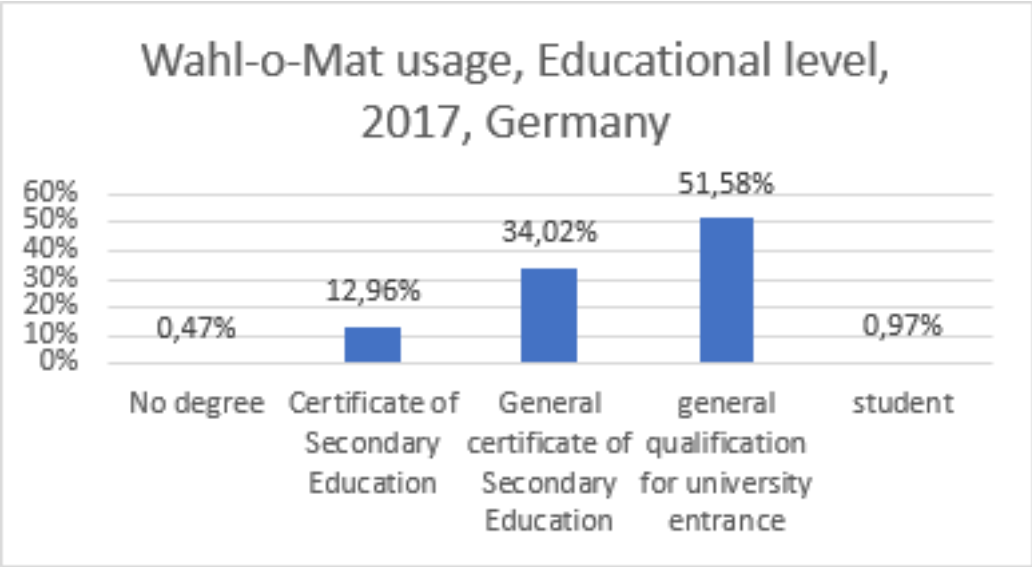


Table 13:



4.3.3 Wahl-Kompass user

The second VAA, which is analyzed in terms of user-profiles, is the Wahl-Kompass.

In total, 27,640 users provided information on personal data and political positions. Thereby, it becomes evident that the gender gap between men and women is significant, as 66.4% of

Wahl-Kompass users are men, and a further 32.7% are women (Table 15). Compared to the total population, it is noticeable that women are underrepresented (Table 19). The second socio-demographic factor to be analyzed is age. In this context, the higher the age, the less the Wahl-Kompass was used. According to the data, the Wahl-Kompass was mostly used by 18-28-year-olds (35,2%) and 29-39 aged (28,4), and least by 60-69 years old users (5,5%) over 70 years olds (1,8%). Although Germany shows a demographic change, demonstrating that Germany has an old population, Wahl-Kompass users are above average young (Table 18).

Moreover, regarding the appropriate educational level, the clear majority qualify for university entrance and thus have a high level of education (Table 17). Concerning the German population's educational level, 31,9% of the German population has a general qualification for university entrance. However, 30,4% of the German population has the lowest form of educational attainment, the Certificate of Secondary Education. Consequently, Wahl-Kompass users are highly educated.

All in all, the Wahl-Kompass user is male, significantly young and highly educated.

Table 15:

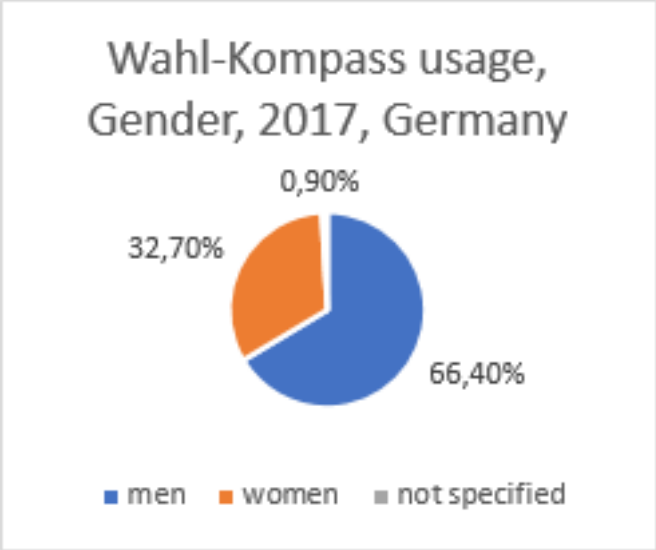


Table 16:

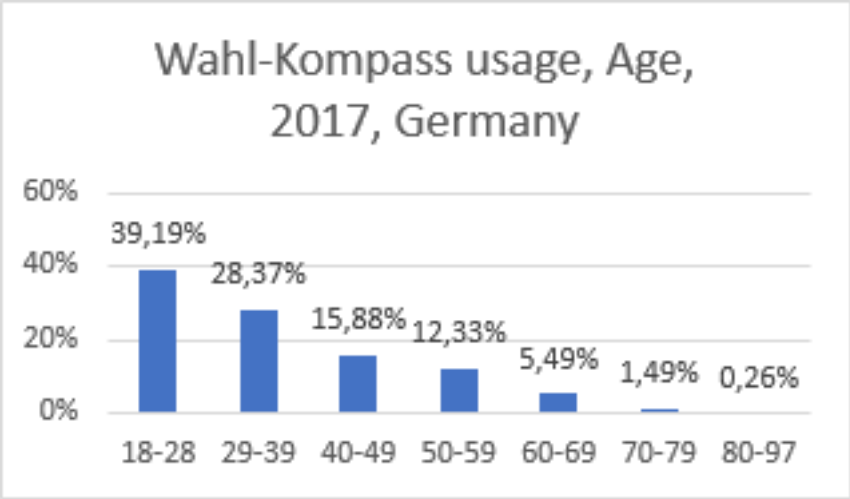
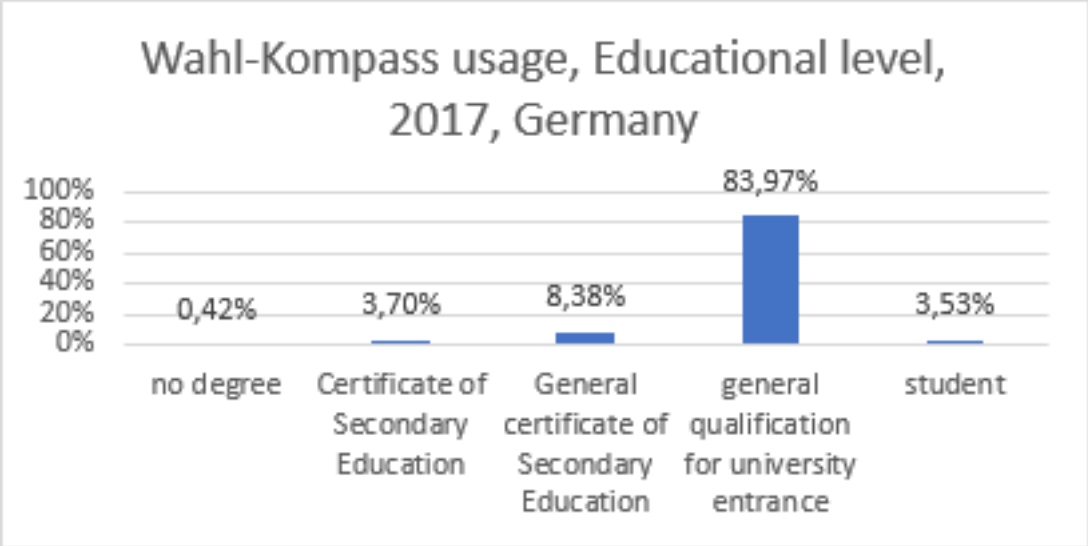


Table 17:



4.3.4 Comparison Wahl-o-Mat user and Wahl-Kompass user

This section of the thesis presents the similarities and differences regarding the socio-demographic factors of the Wahl-o-Mat and Wahl-Kompass users.

The first commonality is based on the gender of VAA users, which are predominantly male. In terms of the educational level, it becomes evident that VAA's tend to be used by more highly educated groups of the population, whereby the Wahl-Kompass users have a slightly

higher educational level than Wahl-Kompass users. However, it is noticeable that both VAAs have relatively little representation of the low-level educational qualifications in Germany. Nevertheless, the first differences can be noticed in terms of age. Wahl-Kompass addresses younger users (18-28) than the Wahl-o-Mat, addressing the age-group 29-49.

5 Discussion

The following discussion presents an outline of obtained results concerning the theoretical framework, which allows testifying the hypotheses of this research in order to formulate a meaningful answer to this thesis' central research question "To what extent do socio-demographic factors that explain the Digital Divide and Political Participation also explain the usage of VAAs?".

This thesis's previous chapters have elaborated that certain socio-demographic factors influence and limit the use of VAAs by influencing the Digital Divide and Political Participation. The theory states that age, education, and gender impact Internet use and prevent some parts of the population from using ICTs or the Internet correctly. The analysis regarding the Digital Divide and Political Participation in Germany demonstrates that the existing literature is generally transferable to the case of Germany.

In the following, the hypotheses are tested by relating them to the analysis of the sub-questions and to the theoretical framework.

H1: "Less educated people are less likely to use VAAs in Germany than highly educated people."

The answer to the first sub-question and the answer to the second sub-question demonstrate that the educational level has a significant impact on Internet use and political interest. It is noted that German people with a high level of education understand complicated technical steps of the Internet better than people with a low level of education. Accordingly, they also use the Internet more frequently in their everyday lives.

Furthermore, the literature and the analysis of the electorate in Germany indicate that political interest increases with a higher level of education. Consequently, people with a high level of education are better capable of understanding complex political structures, the electoral system, and its effects than less educated people.

Considering the fact that VAAs are made available online and require political interest to participate politically, the hypothesis will demonstrate to what extent both conditions are necessary for VAA usage. Therefore, Wahl-o-Mat and Wahl-Kompass users' educational background is analyzed to provide an answer to the first hypothesis.

In this regard, the results reveal that VAA users in Germany have a high level of education. In particular, Wahl-Kompass is exclusively used by people with at least a general qualification for university entrance. Consequently, lower educational levels are incredibly underrepresented. Possible reasons for these results include the fact that the Wahl-Kompass is a scientific university project used more frequently by young academics and is generally not heavily advertised, like the Wahl-o-Mat, which also has users with an intermediate level of education. Thus, it can be stated that results for the validity of this hypothesis are available since Wahl-o-mat and Wahl-Kompass users are, over average, highly educated.

H2: "Men are more likely to use VAAs in Germany than women."

The next significant factor is gender (H2). The analysis demonstrates that women in Germany use the Internet less than men. According to the literature, gender stereotypes determine a woman's self-confidence when dealing with technology, ICTs, and the Internet. Additionally, the entrenched social problem of gender stereotypes influences the attitude of women towards politics, so they are less interested in Political Participation than men. However, it should be mentioned that they are not much less interested in politics since they are interested in political areas that are not considered necessary by male-dominated politics. Therefore, in terms of gender, it can be stated that women use the Internet less and are less interested in politics, and therefore participate less in politics. On the contrary, in Germany men use the Internet more often and are more interested in politics than women. Concluding, the results of the analysis provide evidence for the correctness of this hypothesis since the majority of VAA users are men (66.4%, 54.8%).

H3: "In Germany, older people are less likely to use VAAs than younger people."

Besides gender and education, age has an impact on Internet use and Political Participation too. In order to analyze the influence of age on VAA usage, the factor age was divided into three categories: young, middle-aged, and old. This method was chosen to highlight the different impact of the same factor on Digital Divide and Political Participation, resulting in a different impact on VAA usage. The answers to the first and second sub-question reveal that

young age has a positive impact on Internet use but a negatively one on Political Participation. According to this, younger people in Germany use the Internet more often than older people but are less interested in politics than older people.

H4: "In Germany, older people are less likely to use VAAs than younger people."

The peculiarity of the older group of the German population is that with age, they become more interested and involved in politics, however they are unable to use or have access to the Internet as a new phenomenon in their lives. Consequently, even if they are interested in using new forms of Political Participation such as VAAs, they cannot do so as they do not have the skills to use the Internet, or do not have an Internet connection/computer at all.

H5: "In Germany, middle-aged people are more likely to use VAAs than younger and older people."

The reasons for the fifth assumption are based on the theoretical findings of the Digital Divide and Political Participation, which demonstrate that middle-aged people have the skills to use the Internet and are also interested in politics. In this respect, the results of the analysis support the theoretical findings, since in Germany middle-aged people participate most in politics and also use the Internet in many ways. With these two characteristics, the middle age group presents the optimal case for using VAAs, i.e. online Political Participation tools.

Lastly, the GLES data for the Wahl-o-Mat usage and the Wahl-Kompass user data are analyzed to answer hypotheses concerning the factor age. The results of the analysis provide evidence for the correctness of the hypotheses. At this juncture, the data analysis demonstrates that in Germany, young people use the VAAs more often than older people. In this context, Wahl-Kompass users are particularly noticeable, being used by very young users, whereas usage decreases with increasing age. This difference to the Wahl-o-Mat users is again attributable to the Wahl-Kompass design, which is a university project and, therefore, mostly used by young people.

Furthermore, it is noted that the older section of the German population uses VAAs rarely. This result can be explained by the theoretical findings, indicating different factors influencing Internet usage among seniors. In this connection, intrapersonal factors such as motivation and self-efficacy, functional limitations such as intellectual abilities, structural limitations such

as costs and also the lack of support and help for ICT usage, hinder the ability to use digital media. In addition to limited use, it should be mentioned that the older members of the population often have no access to ICTs. As pensioners, people in Germany have to manage with limited money and consider owning the Internet and advanced technology as a luxury. Even if the financial problem could be solved by free internet and computers, the limited education regarding digital media and skills remain.
Contrary to the older section of the German population, the middle-aged group represents the majority of the Wahl-o-Mat users. Considering the characteristics of middle-aged, it becomes obvious that for the use of VAAs, both Internet use and political interest must be present. If one of the characteristics is missing, the use of VAAs becomes more difficult or even impossible.

The review of the hypotheses presents that socio-demographic factors cause a Digital Divide of society into Internet users and non-users. Especially, due to low education, people are prevented from understanding complex structures and applications which are necessary for using the Internet. Moreover, non-users are characterized by stereotypes, ascribing the use of ICTs to men and confronted with the disadvantages that old age brings with it. As a result, old, low-educated people and women are disadvantaged and cannot participate politically through online VAAs. In the shift of society to a digital world, the socio-demographic factors mentioned above greatly influence social participation and exclude lower educated, female and old groups of society digitally.

In addition to the impact of socio-demographic factors on the Digital Divide, they also affect Political Participation. The complexity of political structures, issues, and electoral systems poses a hurdle for low-educated and politically uninterested people in Germany. Subsequently, they do not develop interest in understanding and participating in politics. Since VAA's are political online communication tools and are considered as a form of political online participation, if there is no political interest, VAAs are used rarely.

In summary, it can be stated that the level of education significantly influences internet usage and political interest as education allow the understanding of complex structures. Moreover, political interest is rising with increasing age, whereas internet usage is decreasing with increasing age since internet is something new whereas one is adjusted to politics over time. At least, women are influenced by stereotypes and therefore present a critical and insecure attitude towards politics and internet usage, resulting in less political interest and less internet usage. All in all, socio-demographic factors have a strong impact on Internet use and Political Participation, as they exclude and thus disadvantage certain groups of the population.

6 Conclusion

This thesis aims to examine to what extent the Digital Divide and also Political Interest can explain the non-use of VAAs and whether they are the consequence of the same causes. Considering that VAAs is an online tool, the first question that arose was about accessibility and use of the Internet.

Firstly, the theoretical findings of the phenomenon were presented to analyze the Digital Divide's problem. In doing so, the reasons for non-use were investigated, and it was found that the use of the Internet is influenced by age, gender, and educational level. Above all, the effects of a person's education are decisive for the use of the Internet, because the level of education simplifies the understanding of digital processes and enables in-depth reflection. Furthermore, Internet users and non-users were analyzed in terms of their sociodemographic characteristics to determine whether a digital divide in society is occurring in Germany. The results revealed that they match the theoretical findings by identifying a group of non-users (old, female, low education).

Next, it was analyzed who is politically involved and who is not. This sub-question was selected since VAAs are a means of Political Participation, which requires political interest. Consequently, the theoretical part of the study examined the factors impacting on Political Participation. Moreover, it was found that educational level, gender, and age have an impact on political interest and, thus, on participation. To examine the effects of these factors on Political Participation in Germany, I analyzed the voter turnout and the electorate of the 2017 federal elections. The analysis showed that non-voters could be defined as young, female, and low educated.

To determine the weighting of the conditions for VAA use and determine their necessity, the VAA users were analyzed according to the characteristics of age, education, and gender. This analysis demonstrates that both factors, i.e., internet usage and political interest, must be present in order to use VAAs. Therefore, if one factor, such as age, influences Internet usage, it consequently influences VAA usage. This interaction of political interest and the use of the Internet is particularly evident in the example of age because although older people are politically interested, they cannot use the online VAA due to a lack of skills. Therefore, they do not use VAAs. Young people, on the other hand, have digital skills but are not

politically interested. However, they are more likely to use VAAs than the oldest group of the German Population.

In contrast, the middle-aged population group, who is both politically interested and has digital skills, are mostly interested in VAA usage. According to the analysis of the Wahl-o-Mat users, middle-aged people use the Wahl-o-Mat most often. Furthermore, we can see the relative weighting of conditions with the VAA usage of the youngest. Although younger people are not politically interested, they are more likely to use VAAs, indicating that digital skills and Internet usage are more important than political interest.

Considering the previous chapters' findings, an answer to the initial research question can be provided in the following. The study's central research question is, "To what extent do sociodemographic factors that explain the Digital Divide and Political Participation also explain the usage of VAAs?'.

This research shows that socio-demographic factors negatively impact the Digital Divide and Political Participation, causing the same disadvantageous effects on VAA usage. Consequently, age, gender, and educational level determine the use of VAAs. As a result, VAAs cannot be used by everyone and only provide politically interested and educated people the opportunity to educate themselves further and consider their decision regarding the election. Moreover, the answer to the research question demonstrates that VAAs cannot fulfill their primary task as a means of participation for democratic voter participation. They do not address the population equally and discriminate against population groups that are already disadvantaged. Accordingly, online tools such as VAAs widen the Digital Divide and also the Political Participation gap. At this point, it should be mentioned that these observations apply exclusively to Germany and are not transferable to other countries.

Generally, it can be stated that VAAs have a high potential to promote voter participation as a form of Political Participation. However, the research has to concentrate on solutions to address each population group equally to provide a democratic Political Participation tool for everyone.

In the following, some approaches are presented to maximize the potential of VAAs in Germany.

Firstly, to counteract the influence of age, one could use the first version of the Stemwijzer and publish a printed VAA in national newspapers, so that access for the older population is

simplified. For the younger generation, politics needs to become more interesting, so that the motivation to deal with politics arouses. Furthermore, the simplified form of politics can solve the problem of education. This can be achieved by using VAAs on public television, explaining the topics and questions in a comprehensive way. Additionally, free ICT courses could be offered in terms of Internet use and digital skills, specially designed for older people and women, so that they feel comfortable and learn to use ICTs more freely. Moreover, gender-stereotypes could be counteracted by publicity campaigns and social projects. However, there is already evidence for a societal rethinking regarding stereotypes and gender equality.

In addition to the above-mentioned solutions to counteract the influential factors, media partnerships between VAA teams and the media can also be addressed.
VAAs are a medium between voters, parties, and the media. They guide through information from parties in statements, information to voters, and mass media. On the other hand, voters use VAAs to establish political contact with political parties and gather much information quickly. The mass media's role is particularly interesting in this study because only through them, VAAs are able to reach high numbers of users and future users. Moreover, mass media play an enormously important role in political communication, as they are used to present candidates, parties, party positions, and discussions. With the increasing use and popularity of the Internet, political communication has changed, becoming more diverse and complex through online means and applications. Voting Advice Applications are one of these impartial online campaigning applications (Krouwel et al. 2014).

The effects of media partnerships or mini-campaigns are presented by Wahl-o-Mat and Wahl-Kompass users. Since the Wahl-Kompass is a scientific university-project and does not receive state subsidies, it cannot be advertised in public. This leads to the fact that the Wahl-Kompass is used almost exclusively by educated and very young people, although they could also address any population group and gain new users. This could be achieved through specific and general advertising and media partnerships with national newspapers. Moreover, the implementation can be seen in the example of the Wahl-o-Mat, which is sponsored by the state, is mentioned in many newspapers, and can also be seen on television. The greater reach of the Wahl-o-Mat through more intensive media campaigns can also be noticed in the user community. Although specific groups represent a majority, such as middle-aged and educated, some other groups are represented too. Accordingly, the number of users is related to media partnerships. Nevertheless, the developers should first concentrate on making VAA use equally possible for everyone because otherwise, the barriers to usage will still exist.

All in all, this research has established that socio-demographic factors influence VAA use in Germany. Likewise, it is stated that the use of VAAs is only ensured by an interaction of Internet use and political interest. Above all, the interplay of Internet use and political interest is a new insight that is not found in the VAA literature in this form. Moreover, the VAA literature concentrates mainly on the mobilization effect, the vote choice, and the effects of VAA use on political knowledge. Most research is interested in the users of the VAAs and does not investigate why other population groups do not use VAAs. Therefore, I would recommend focusing on the VAA non-users to attain all groups of society in equal numbers so that prospectively, VAAs can help each of us to make the right choice.

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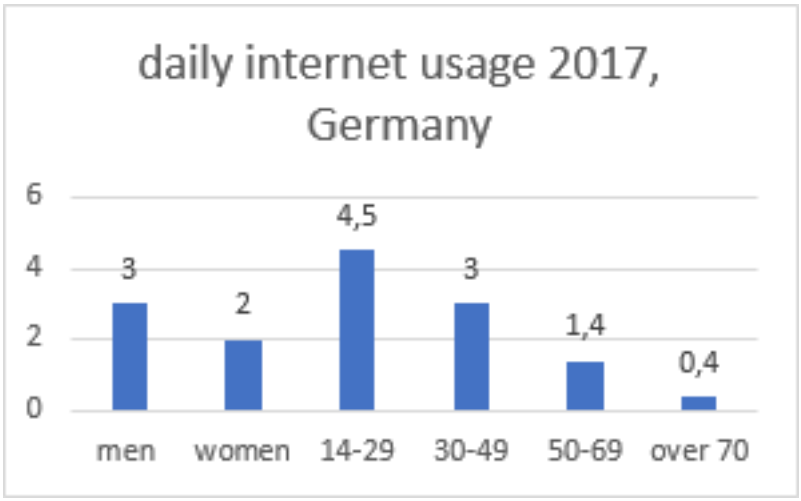
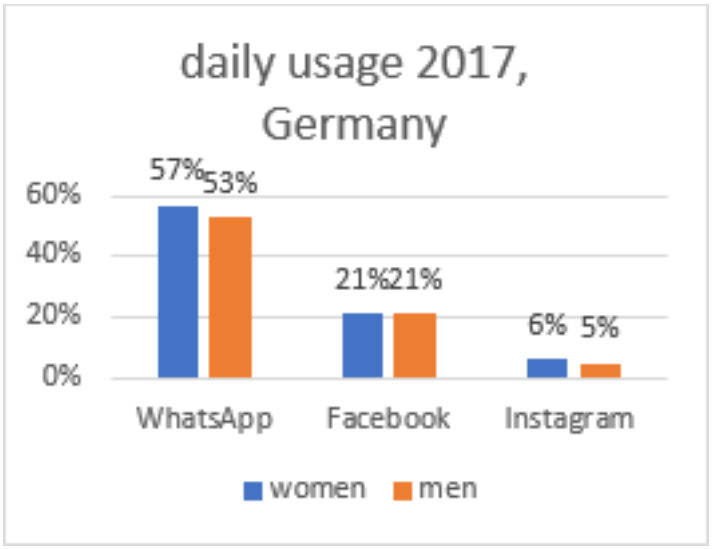
8 Appendix

Table 3:



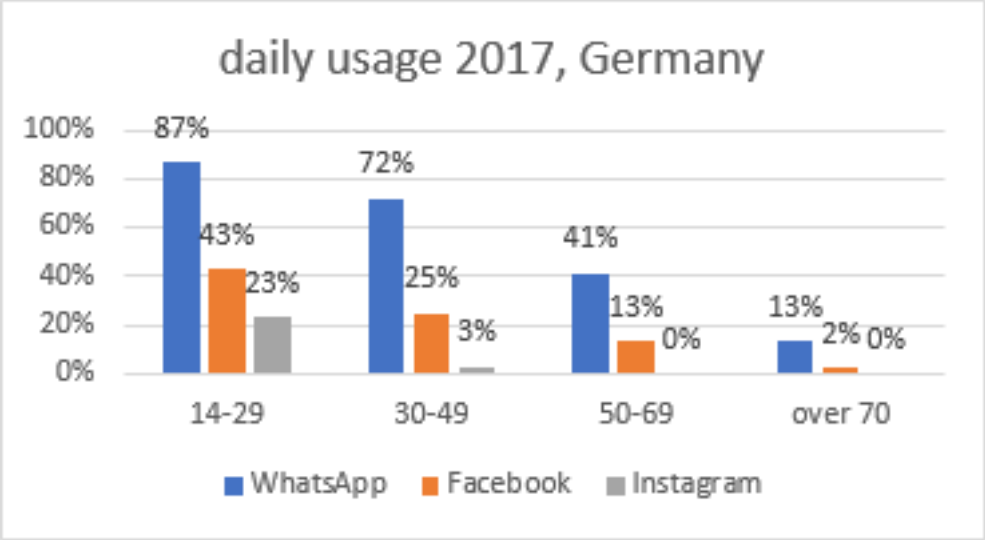
Source: ARD/ZDF- Onlinestudie 2017, n=2.017, in hours

Table 5:



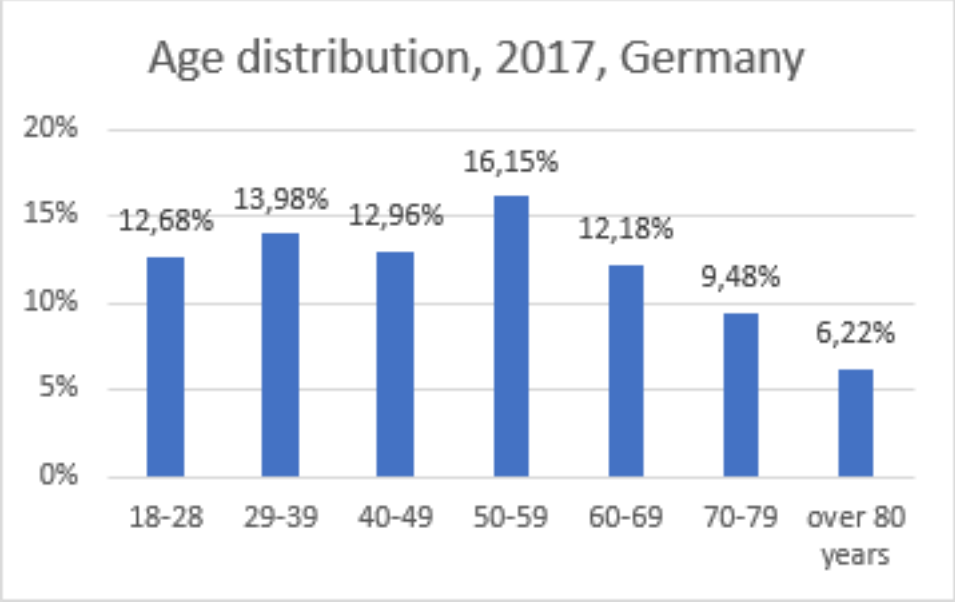
Sources: ARD/ZDF- Onlinestudie 2017, n=2.017, in %

Table 6:



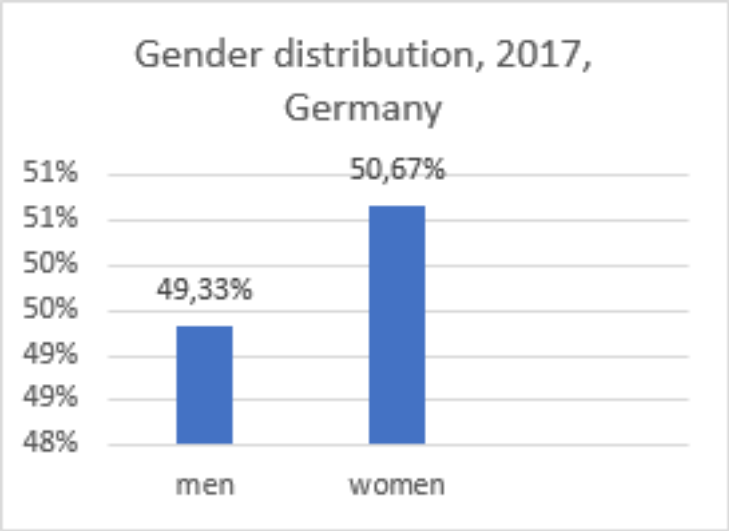
Sources: ARD/ZDF- Onlinestudie 2017, n=2.017, in %

Table 18:



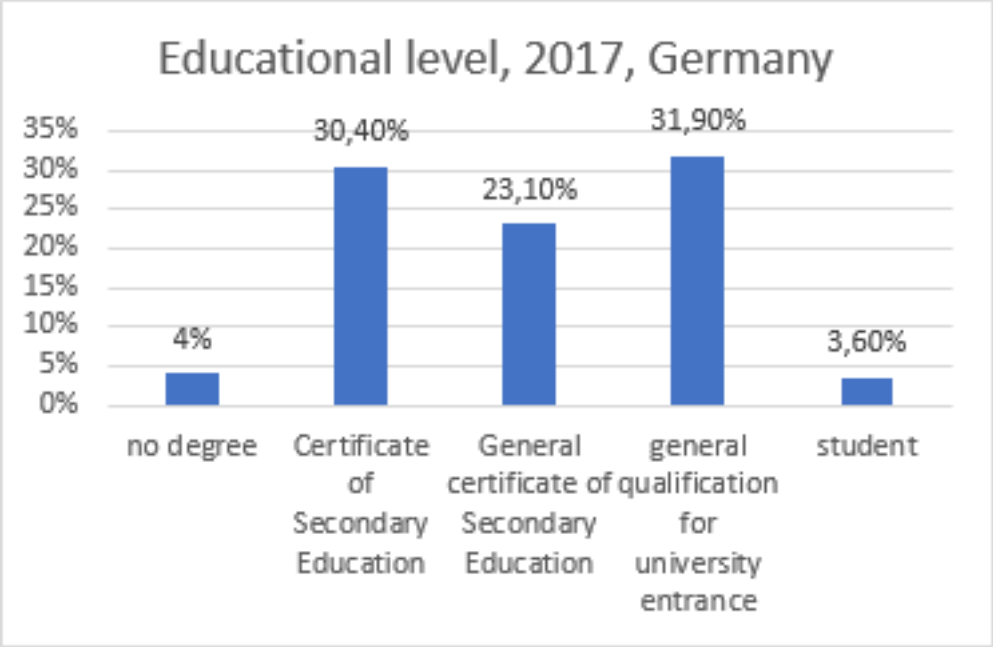
Source: Statistisches Bundesamt (Destatis), 2020 | status: 31.07.2020
Results based on the 2011 census - extrapolation of the German population

Table 19:



Source: Statistisches Bundesamt (Destatis), 2020 | status: 31.07.2020
Results based on the 2011 census - extrapolation of the German population

Table 20:



Source: Statistisches Bundesamt (Destatis), 2020 | status: 31.07.2020
Result of the microcensus. - People aged 15 years and over. In 2013 the results were changed to a new extrapolation framework. This is based on the current key figures of the current population update, which are based on the data of the 2011 census (cut-off date 09.05.2011)