How may I help you?

Factors Influencing the Preference for Instant Messaging Features of Social Networking Platforms in Public Service Delivery

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Master Thesis

University of Twente

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Abstract

Objective Even though a vast majority of Dutch governmental agencies utilizes instant messaging features of Social Networking Platforms (SNPs) as service channels, little to nothing is known about the factors that influence citizens' channel preferences for these channels. Without knowledge about these factors and preferences, it is difficult to successfully deploy a service channel, seeing as it unclear what citizens expect of the channel and in which situations citizens prefer to use the channel. Hence, the primary goal of this research is to establish to what extent five main factors, namely personal characteristics, computer self-efficacy, channel experience, task characteristics and perceived channel characteristics, influence citizens' channel preference for instant messaging features of SNPs, and to measure SNP channel preference.

Method An online questionnaire employing a scenario-based method using a 3 x 4 between-subjects design was conducted in the Netherlands (n = 193). Channel preference was measured by the nature of the interaction and the urgency of the task.

Findings The results show that computer self-efficacy significantly influences WhatsApp channel preference. Mobile self-efficacy has a positive influence on WhatsApp channel preference, while internet self-efficacy has a negative influence. Furthermore, the nature of the interaction seems to influence WhatsApp preference, seeing as WhatsApp channel preference scores are higher when citizens were asked to report a disruption in the public space. At last, age has a negative influence on the number of cues used via WhatsApp.

Contribution Governmental agencies can benefit from this research since it provides an insight into citizens' SNP channel preferences. This information can help governmental agencies to better employ instant messaging features of SNPs as service channels. Additionally, this study fills an important gap in current literature by focusing on instant messaging features of SNPs as service channels in public service delivery, a topic that has not been researched before.

Conclusion SNPs and their instant messaging features could possibly revolutionize the public service delivery industry, and could greatly benefit the quality and price of service. However, it appears that in order to be able to successfully deploy instant messaging features of SNPs as service channels, it is first necessary to inform citizens about the option to use instant messaging features of SNPs as service channels, and to steer them towards these channels. The results also suggest that there may be a digital divide regarding the way in which electronic channels are used.

Keywords Instant messaging features – Social Networking Platforms - Public service delivery – WhatsApp – Channel preference

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1 | Introduction

About three decades ago, Dutch governmental agencies deployed the first electronic service channels (i.e. websites) with the expectation that this would considerably improve the quality and price of service (Pieterson, Teerling, Klievink, Lankhorst, Jansen & Boekhoudt, 2007). This expectation was based on the idea that electronic channels bring forth major advantages for both governmental agencies and citizens. For governmental agencies, the deployment of electronic channels enables more efficient ways of working, and provides larger storage capacity for the storage of information (Ebbers, Pieterson & Noordman, 2008; Pieterson, 2009; Van Deursen, Van Dijk & Ebbers, 2006; Van Dijk, 2006). For citizens, major advantages entail round the clock service, a cheaper government and no more queuing or traveling for service (Pieterson et al., 2007; Van Deursen, Van Dijk & Ebbers, 2006). Governmental agencies also assumed that, because of these major advantages, electronic channels would replace more expensive traditional service channels (i.e. telephone and front desk), so that a more efficient service model could be established.

However, in the years that followed, it became clear that this assumption would not be met. Multiple researchers report that Dutch citizen still often contact governmental agencies via telephone or front desk, and that for certain tasks citizens even prefer these channels over websites (Ebbers, Jansen, Pieterson & Van De Wijngaert, 2016a; Pieterson, 2009). Even though the usage of governmental websites has skyrocketed, the usage of traditional channels remains high, meaning that governmental agencies have to maintain both websites and traditional channels (Pieterson, 2009). Thus, in order to improve their service model, governmental agencies had to continue to look for other technologies that could be utilized as service channels.

In the beginning of the 2010s, these technologies presented themselves in the form of Social Networking Platforms (SNPs). SNPs, such as for example Facebook and Twitter, are internet-based platforms with advanced technological features on which users can connect with other users from all over the globe (Wink, 2010). SNPs are suited to be service channels because they offer free instant messaging features that enable direct computer-mediated communication in a private setting. And because SNPs are already being utilized on a daily basis by a vast majority of the Dutch population (Emerce, 2017, February 16), it is convenient for citizens to acquire service via SNPs. Thus, governmental agencies decided to deploy SNPs and their instant messaging features as service channels. As of today, 99% of the Dutch municipalities are present on one or more SNP (Baldewsingh, 2017, August 29; Socialmediameetlat, 2016, October 6).

However, with the deployment of new service channels, new challenges arise. Because even though a vast majority of the Dutch governmental agencies now utilizes instant messaging features of SNPs as service channels, little to nothing is known about citizens' preferences for this new type of service channel. Without knowledge of these preferences, it is difficult to successfully deploy a service channel, seeing as it unclear what citizens expect of the channel and for what tasks citizens want to use the channel (Frambach, Roest & Krishnan, 2007; Fountain, 2001; Pieterson, 2009). Uncovering citizens' preferences in regard to instant messaging features of SNPs could thus benefit the service quality for citizens. In addition, preferences are said to be strong predictors of channel choice, and thus could help predict in which situations citizens choose to use instant messaging features of SNPs to get service or information (Ebbers et al., 2016; Pieterson & Van Dijk, 2007).

Following the above, this study aims to find the most important factors that affect citizens' channel preferences for instant messaging features of SNPs in a public service context, and to measure channel preference for SNPs. Seeing as no previous studies have focused on this new type of service channels in the context of public service delivery yet, this study could contribute to the scientific knowledge about citizens' channel preferences and the factors that influence them.

In the following chapter, theories and relevant literature are discussed. The third chapter of this study describes the used methodology. In the fourth chapter, the results of this study are presented. At last, in the fifth chapter, the discussion, limits of this research, future research suggestions and conclusions are discussed.

2 | Literature study

In this chapter, relevant literature is discussed to evaluate existing literature about channel preference and the related concept channel choice. At the beginning of this chapter, the terms channel and channel preference are discussed. Then, it is discussed why SNPs and their instant messaging features are fit to be service channels. Next, relevant channel choice and channel adoption theories are discussed. At last, the research model is discussed and presented.

2.1 Channel versus Medium

Throughout the years, the terms *channel* and *medium* have been used interchangeably in literature. Both terms are used to describe the way in which a message is sent by a source and obtained by a receiver (Pieterson et al., 2007). In this paper, the choice has been made to use the term *channel*, seeing as this is the preferred term in the service delivery context (Pieterson, 2009).

2.2 Channel Preference

A distinction can be made between channel *preference*, channel *choice* and channel *usage*. Channel preference refers to the behavioral intention to use a certain channel. Channel choice refers to the actual choice for a service channel, and channel usage refers to the usage of a channel to complete a certain task (Pieterson, 2009). This study will investigate channel preference for the following two reasons. First, as can be concluded from the results of Ebbers, Jansen and Van Deursen's (2016b) study, only a fraction of the Dutch population has used SNPs to get into contact with their local government, meaning that it would probably be too early to measure actual channel choice and channel usage. Second, as is also stated in the introduction, preferences are said to be strong predictors of channel choice and channel usage, insights into citizens' channel preferences could thus predict in which situations citizens would choose to use instant messaging features of SNPs to get service or information (Ebbers et al., 2016a; Frambach, Roest & Krishnan, 2007; Pieterson & Van Dijk, 2007).

2.3 Social Networking Platforms

The term Social Network refers to a structure of social connections made up by individuals, groups or organizations that is tied together by a specific type of linkage, such as a common interest, friendship, or passion (Abhyankar, 2011). Before the 1980s, social connections were only existent in an 'offline' setting, as the Internet was exclusively used to acquire information (Kaplan & Haenlein, 2010). Yet, this changed with the introduction of SNPs. SNPs integrated multiple online communication features in easy to use, 24/7 available and personalizable formats, and made it possible for people all around the world to get in contact with each other (Abhynkar, 2011; Boyd & Ellison, 2008; Wink, 2010).

At the beginning of the electronic Social Networking era, SNPs offered a rather limited number of features: to create an online profile, to visit other users' profiles and to send text messages to other users (Abhyankar, 2011; Wink, 2010). As of today in the 2010s, SNPs offer a much wider variety of features. The mobile messaging application WhatsApp for example lets users create infinite chat groups, send written and spoken messages, share pictures, videos, documents and

locations, and even gives users the possibility to call other users (WhatsApp, n.d.). This wide and growing variety of available features indicates that multiple forms of use and participation on SNPs are feasible (Brandtzæg, 2010; Brandtzæg & Heim, 2011; Preece & Shneiderman, 2009). This can be seen as a unique characteristic that differentiates SNPs from other service channels, such as the telephone or websites, because every user decides for themselves how, when and where they utilize instant messaging features of SNPs to get the service or information they need. Whether it be with textual, audio or visual cues, via a personal computer or mobile phone, at home or at work, SNPs offer multiple possibilities. SNPs as service channels can contribute to an enhancement of the transparency, interactivity, accessibility and openness of the government towards citizens (Bertot, Jaeger & Hansen, 2012; Bonsón, Torres, Royo, & Flores, 2012). SNPs could thus revolutionize the public service delivery industry, which is why it is of great importance to understand which factors influence citizens' preferences for SNPs.

2.3.1 Social Networking Platforms of the Dutch Governmental Agencies

In the Netherlands, most governmental agencies are present on the SNPs Facebook, Twitter, WhatsApp, YouTube and LinkedIn (Baldewsingh, 2017, August 29; Socialmediameetlat, 2016, October 6; Kok, 2013). However, it is important to note that these SNPs are used for different purposes. Seeing as YouTube does not offer an instant messaging feature, YouTube is not fit to be a service channel. While LinkedIn does offer an instant messaging feature via which users can communicate, LinkedIn is not seen as a service channel by most governmental agencies (Kok, 2013), most likely because LinkedIn's focus on professionals and work related matter limits its capabilities as a service channel. Hence, this paper will focus on the three most used SNPs that offer instant messaging features to all citizens, which are Facebook, Twitter and WhatsApp.

2.4 Theories of Channel Choice and Channel Adoption

Theories in the field of channel choice and channel adoption can provide important insights as to which factors influence citizens' preferences for instant messaging features of SNPs as service channels. Pieterson (2009) analyzed multiple theories that can be used to research preferences for service channels. Based on his research findings, three theories are selected that will be discussed in this study: Media Richness Theory (MRT), Channel Expansion Theory (CET) and Technology Acceptance Model (TAM). MRT will be discussed because of its considerable influence on channel choice theory. CET will be discussed seeing as this theory adds to MRT, and because this theory is supported by multiple studies. Lastly, TAM will be discussed as this theory is often used to explain why individuals choose to adopt programs, and because this theory has accumulated ample support in literature.

2.4.1 Media Richness Theory

MRT, developed by Daft and Lengel (1984), makes the assumption that when a person is completing a task, he or she wants to overcome uncertainty and equivocality. Uncertainty refers to the degree of absence information that is needed to complete a certain task (Galbraith, 1973). Equivocality means ambiguity, and refers to the possibility that there are multiple ways to interpret a message. When a message is equivocal/ambiguous, the message is hard to decode, and it is unclear what the sender of the message meant (Weick, 1979). Uncertainty can be solved by providing extra

information, but when a sender provides extra information, there is a chance that this may lead to more ambiguity.

In order to reduce both uncertainty and equivocality, MRT states that the right type of communication channel is required. To determine which channel fits the task at hand, MRT states that the sender of the message can look at the 'richness' of the channel (Daft & Lengel, 1984). Richness is defined as "*the potential information carrying capacity of data*" (Daft & Lengel, 1984, p.7). One can determine the richness of a channel by assessing four channel characteristics (Daft & Lengel, 1986): immediacy of feedback, number of cues, personalization and language variety.

Immediacy of feedback refers to the speed of feedback. When it is possible to immediately respond to a message, it becomes easier for the receiver of the message to find out what the sender meant with the message. This also works the other way around: for the sender, it becomes possible to check whether the receiver understood the message correctly, thus preventing misconceptions (Dennis & Kinney, 1998).

Number of cues refers to the way in which the message is delivered. This can be done via sound, text, images, video, and via non-verbal communication. Channels that enable the use of multiple cues, such as face-to-face communication, allow senders to attach extra information which could not have been acquired when, for example, the message was written (Dennis & Kinney, 1998).

Personalization refers to the ability of the channel to convey feelings and emotions and to the possibility to make the message personal to the receiver (Sevinc & D'Ambra, 2004). A highly personal message can help to closer the relationship between the sender and the receiver of the message, and can strengthen the message (Sheer & Chen, 2004).

Language variety refers to the possibility to communicate using rich and varied language, such as letters, numbers and emoticons (Daft & Lengel, 1984, 1986). Channels that offer the possibility to use rich and varied language make it easier for the sender of a message to convey a message.

Based on these four characteristics, channels can be ranked from most rich to less rich (lean) channels. Trevino, Daft and Lengel (1987) assessed nine types of channels based on the four characteristics, displayed in figure 1.

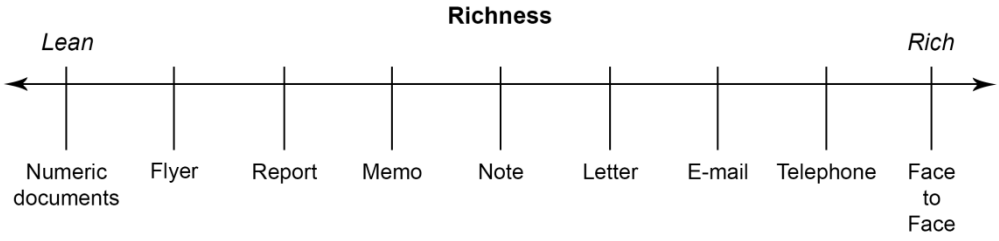


Figure 1 - Media Richness Theory - Daft and Lengel (1984)

Face-to-face communication is considered as being the richest communication channel. This is the case because it is possible to immediately provide feedback, to personalize the message completely, to use multiple cues and to adjust the language during a conversation. Numeric documents (e.g., computer output) are considered to be the leanest channel.

The main idea of MRT is thus that the task should match the channel. When assessing which channel matches the task at hand, one can look at the characteristics that determine channel

richness. The richness of a channel is regarded to be an unchangeable characteristic, seeing as the richness is based on the objective properties of the channel (Daft & Lengel, 1984, 1986).

2.4.2 Channel Expansion Theory

CET, developed by Carlson and Zmud (1994), was created with the sole purpose of extending MRT. When analyzing studies that empirically tested MRT, Carlson and Zmud (1994) found conflicting results, especially when MRT was used to describe electronic channels. The rank of electronic mail for example, was perceived to be higher according to users than described by MRT, implying that the users of electronic mail use the channel to send messages of high equivocality, even though electronic mail is perceived to be a relatively lean channel by MRT (Hiltz & Turoff, 1978; Kiesler, 1986; Rice & Love, 1987). According to CET, this is due to the fact that channels have objective characteristics (labeled as nominal channel richness) and subjective characteristics (labeled as perceived channel richness). The richness of a channel is a combination of the nominal richness and the perceived richness.

Nominal channel richness refers to the objectively-determined technological capacity of a channel to carry rich information (Carlson & Zmud, 1994). The nominal richness of a channel can be identified by using the four characteristics as proposed by Daft and Lengel's MRT (1984, 1986): immediacy of feedback, personalization, number of cues and language variety. Perceived channel richness refers to an individual's perception of the richness of a channel. The perceived richness of a channel can be identified by measuring an individual's experience with the channel, experience with the messaging topic, experience with the organizational context and experience with the co-participants of the conversation (Carlson & Zmud, 1994). Thus, an important difference between the nominal channel richness and the perceived channel richness is that the perception of channel richness will vary across users, based on a user's experience (Carlson & Zmud, 1994). CET is displayed in figure 2.

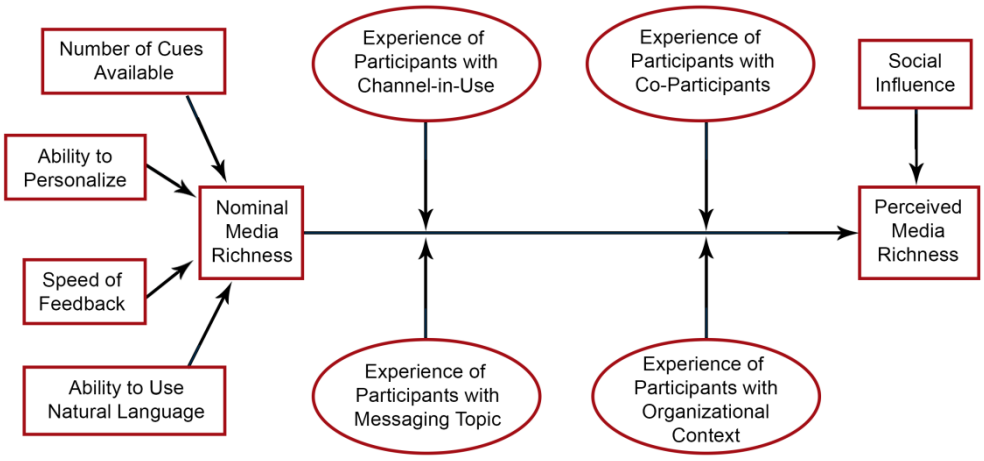


Figure 2 - Channel Expansion Theory - Carlson and Zmud (1994)

2.4.3 Technology Acceptance Model

The in 1986 introduced TAM is an extension of Fishbein and Ajzen's (1980) acclaimed Theory of Reasoned Action (TRA). TRA is a well-researched model that can be used to predict and explain an individual's behavior (Ajzen & Fishbein, 1980). Seeing as TRA is said to be "*designed to explain*

virtually any human behavior" (Ajzen & Fishbein 1980, p. 4), TRA is also applicable to the field of technological acceptance.

TAM can be used to determine why an individual chooses to adopt a certain program (Davis, 1986). The two main factors that are used to predict the adoption of a program are the perceived usefulness and the perceived ease of use of a program. Perceived usefulness can be defined as "*the degree to which an individual believes that using a particular system would enhance his or her job performance.*" (Davis, Bagozzi, & Warshaw, 1989, p.26). Perceived ease of use can be defined as "*the degree to which an individual believes that using a particular system would be free of physical and mental effort.*" (Davis et al., 1989, p.26). The perceived ease of use of a program is said to have a direct effect on perceived usefulness, seeing as a program that is easier to use will improve the performance of the user. Both the perceived ease of use and the perceived usefulness are said to be influenced by external factors, as inspired by TRA (Ajzen & Fishbein, 1980; Davis et al., 1989).

TAM states that the perceived ease of use and the perceived usefulness directly influence a user's attitude towards a program. Attitude is said to be a very important determinant of actual use, and can be defined as "*the degree of evaluative affect that an individual associates with using the target system in his or her job.*" (Davis et al., 1989, p.25). A user's attitude towards using the program in its turn influences the behavioral intention to use the program. Behavioral intention is defined as "*an indication of a person's readiness to perform a given behaviour*" (Fishbein & Ajzen, 1975, p.7). An individual's intention to perform a certain behavior is proven to be a strong predictor of actual behavior, and is thus also included in TAM (Kaissidis, Padeliadu & Sideridis, 1998).

When collecting data to prove the significance of the model, Davis et al. (1989) concluded that the perceived usefulness of a program has a strong direct effect on the behavioral intention to use a program. This effect was later added to TAM. The research model of TAM is displayed in figure 3.

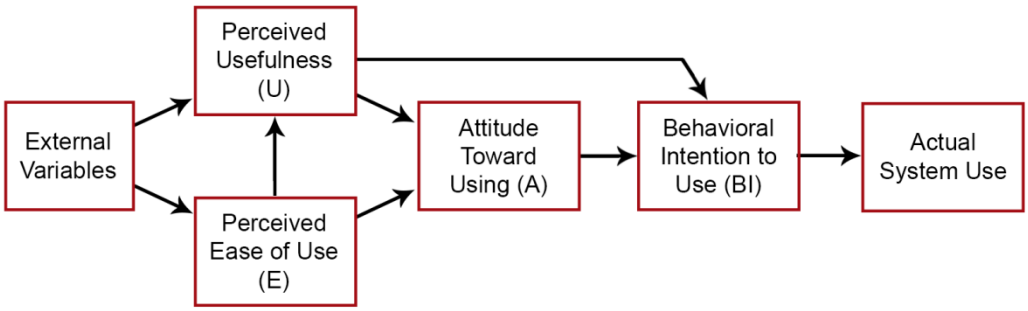


Figure 3 - Technology Acceptance Model – Davis, Bagozzi and Warshaw (1989)

2.5 Theories and Limitations

The previous section focused on three different theoretical approaches towards channel choice and channel adoption. Each of these approaches offers important insights on factors that influence channel preference for instant messaging features of SNPs. However, it is important to consider that MRT, CET and TAM were all created before SNPs became prominent. SNPs possess unique characteristics that differentiate them from traditional channels and other electronic channels, as is discussed earlier in section § 2.3. It is possible that because of these distinctive features, the theories can only partly be used to predict factors that influence channel preference for instant messaging

features of SNPs. Hence, it is necessary to discuss the predictability of each theory in relation with SNPs, as is done in the sections below.

2.5.1 Social Networking Platforms and Media Richness Theory

MRT proposes that an individual will select a channel based on the richness of the channel and on the equivocality and complexity of the task at hand. So far, MRT has been tested numerous times throughout the years, yielding both supporting and un-supporting results. Pieterson (2008) composed a meta-analysis of sixty studies to analyze which parts of MRT receive general support in literature. He reports that the notion of channel richness as proposed by MRT is only supported in studies covering traditional channels. In these studies, findings show that traditional channels each hold a different level of richness, and that this richness can be defined by measuring the four characteristics stated by Daft and Lengel (1986). However, studies report mixed results when trying to assess the richness of electronic channels, such as electronic mail or websites (Adams, Nelson & Todd, 1992; Carlson & George, 2004; Lee, 1994). Pieterson (2009) speculates that this is likely due to the fact that the richness of electronic channels is not dependent on an objective assessment of the four characteristics, but rather on a subjective assessment, seeing as the characteristics of the individual assessing the richness of the channel, such as personal characteristics, channel experience and computer self-efficacy, strongly influence the assessment (Carlson & Zmud, 1994; Ebbers et al., 2016; Pieterson, 2009). This suggests that the richness of SNPs is based on perceived channel characteristics, rather than the objective properties as proposed by MRT.

The second important notion of MRT is that individuals choose channels based solely on a rational fit between the task at hand and the richness of the channel. Based on multiple research findings, Pieterson (2009) concludes that this notion does not hold, seeing as it is unthinkable that a rational fit between task and channel holds in every situation. Pieterson states that presumably, there are multiple explanations of channel behavior other than the characteristics of the task, and thus that more variables need to be taken into consideration. According to Ebbers et al. (2016a), Pieterson (2009) and King and Xia (1997), personal characteristics and channel experience also influence the way an individual chooses a channel for a certain task. In the context of this study, this means that aside from task characteristics, other characteristics should be taken into account as well.

2.5.2 Social Networking Platforms and Channel Expansion Theory

CET proposes that when an individual's experience with a channel increases, the perceived richness of the channel increases as well. Even though CET has not received much empirical attention yet, multiple studies do support the notion that previous experiences have an influence on channel choice and channel use (e.g., Kiesler, Siegel, & McGuire, 1984; King & Xia, 1997; Pieterson, 2009). King and Xia (1997) conclude in their research that an individual's experience with a channel affects the perception of the appropriateness of a channel, especially when it comes to using electronic channels.

However, Trevino, Webster and Stein (2000) note that CET is not designed as a theory of channel choice: rather, CET focuses on the perception of a channel in an organizational environment. The four antecedents that measure a channel's perceived richness (an individual's experience with the channel, experience with the messaging topic, experience with the

organizational context and experience with the co-participants of the conversation), as proposed by Carlson and Zmud (1994), may thus be less fitting for research in the service industry context. Seeing as this study focuses on channel preference, channel experience is likely to be the most influential factor (King & Xia, 1997; Pieterson, 2009).

2.5.3 Social Networking Platforms and Technology Acceptance Model

TAM was developed to explain or predict the acceptance, adoption and usage of new technologies. Over the years, TAM has accumulated ample support in literature (Hu, Chau, Sheng & Tam, 1999; Venkatesh, 2000). Multiple studies concluded that TAM consistently explains a significant proportion of the usage behavior and intention (on average about 40%), and that the perceived usefulness of a program is the strongest determinant of usage intention (Choi & Chung, 2013; Venkatesh & Davis, 2000).

According to various scholars (Legris, Ingham & Collerette, 2003; Venkatesh & Davis, 2000), the predictive power of TAM could be improved greatly by including personal characteristics, especially when explaining and predicting the preference for SNPs (Choi & Chung, 2013). Examples of personal characteristics are education, age and gender. In addition, Venkatesh and Davis (2000) found that an individual's gained experiences with a program can also influence the perceived usefulness, seeing as an experienced user often has more knowledge of all the possible ways in which a program can be used. These findings suggest that in the context of SNPs, in addition to perceived ease of use and the perceived usefulness, personal characteristics and channel experience can be important determinants of channel preference as well.

2.5.4 Summarization of the Theories

In the table 1, the three discussed theories are compared on their basic assumptions regarding channel characteristics, decision making, channel use determinants and missing factors according to the literature. Pieterson (2009) provided the basis for this matrix.

	MRT	**CET**	**TAM**
Channel characteristics	Objective	Objective, subjective	Subjective
Decision making	Rational	Subjectively rational	Subjectively rational
Channel use determinants	Task, fixed channel characteristics	Task, channel perceptions, fixed channel characteristics, experience	Perceived usefulness, perceived ease of use, attitude, intention
Missing factors according to literature	Channel experience, computer self-efficacy, personal characteristics, perceived channel characteristics	Types of experience	Personal characteristics, channel experience

Table 1 - Comparison of the discussed theoretical approaches

2.6 Research Model

None of the theories are suited to explain channel preference in regard to instant messaging features of SNPs. It is assumable that this is the case because the theories were developed before electronic channels were deployed. Nevertheless, the theories still offer important fundamental insights that can be used in this study. Hence, the research model of this study is partly based on the discussed theories and partly based on more recent research findings concerning channel preference.

Because of several reasons, the choice has been made to focus solely on the SNP WhatsApp in this study. First, WhatsApp is entirely made for the purpose of instant messaging, and thus provides the opportunity to lay the focus completely on instant messaging (WhatsApp, n.d.). This will prevent confusion with other features, such as sharing public messages on timelines, which most SNPs offer aside from instant messaging features. Second, not much is known about the use of WhatsApp as a service channel in service delivery. While Facebook and Twitter have been the subjects of multiple researches, no research has been conducted yet that gives more insight into the preference for WhatsApp within service delivery. This section will discuss the main factors that influence channel preference in regard to the SNP WhatsApp.

2.6.1 Personal Characteristics

Multiple studies link electronic channel preference and channel usage to personal characteristics (e.g. Australian Government, 2005; Pieterson & Ebbers, 2008; Pieterson & Van Dijk, 2007; Reddick, 2005, 2010). According to Pieterson and Ebbers (2008), citizens that use governmental websites tend to be younger of age, higher educated and male. Reddick (2005) found that the elderly and lower educated prefer traditional service channels, such as the service desk and telephone. A possible explanation for this, as suggested by Ebbers, Pieterson and Noordman (2008), can be found in the study of Van Dijk (2005), who concluded that the elderly, women and the lower educated make less use of electronic channels because they lack the motivation, resources and skills to do so. This gap is often referred to as the digital divide, which entails the differential possession of physical internet access and digital skills among different population groups (Ebbers et al, 2016b).

It is of interest to test whether age, gender and education also influence channel preference for WhatsApp. Based on the findings of Pieterson and Ebbers (2008) and Reddick (2005), three hypotheses are formulated:

H1a: Age has a negative influence on citizens' channel preference for WhatsApp.
H1b: Education level has a positive influence on citizens' channel preference for WhatsApp.
H1c: Gender has an influence on citizens' channel preference for WhatsApp.

In 2011, Brandtzæg and Heim surveyed over five thousand users of four different SNPs to understand the factors that influence SNP participation. Their research findings suggest that age in particular has an influence on the way SNPs are used. Younger users make use of more cues: they upload text, audio and visual messages, while older users mainly send text messages and pay less attention to other available cues (Brandtzæg & Heim, 2011). It is interesting to see whether this is also the case for WhatsApp, seeing as differences among age groups can influence the way in which WhatsApp is used as a service channel. Thus, an additional hypothesis is formulated:

H1d: Age has a negative influence on the number of cues communicated via WhatsApp.

2.6.2 Task Characteristics

According to MRT and CET, task characteristics are important factors that can strongly influence the choice for service channels. Throughout the years, multiple scholars have found evidence supporting this claim (e.g., Barth & Veit, 2011; Pieterson & Ebbers, 2008; Pieterson, Teerling, & Ebbers, 2008; Pieterson & Van Dijk, 2004; Reddick, 2010). The task characteristics that are met with the most support in literature are the nature of the interaction and the urgency of the task.

According to Ebbers et al. (2016a; 2016b), the nature of the interaction can influence channel preference in public service delivery. Hence, the following hypothesis is formulated:

H2a: Nature of the interaction has an influence on citizens' channel preference for WhatsApp.

Concerning the urgency of the task, research findings of Ebbers et al. (2016a) and Pieterson (2009) show that when citizens perceive a situation to be urgent, it becomes more likely that citizens will choose to use the telephone. This because the telephone provides immediate feedback, which is not the case with WhatsApp:

H2b: Urgency of the task has a negative influence on citizens' channel preference for WhatsApp.

2.6.3 Computer Self-efficacy

Since the deployment of electronic channels as public service channels, multiple researchers have linked service channel preference and channel choice to computer self-efficacy (e.g., Albesa, 2007; Fulk, Schmitz & Steinfield, 1990; Gunawardena, 1995; Tu, 2002; Van Deursen & Van Dijk, 2008; Venkatesh & Davis, 2000). Computer self-efficacy can be defined as "*an individual's perceptions of his or her ability to use computers in the accomplishment of a task*" (Compeau & Higgins, 1995, p. 191). Study results of Wangpipatwong, Chutimaskul and Papasratorn (2005, 2008) show that the adoption of governmental websites can strongly depend on citizens' computer self-efficacy.

In regard to WhatsApp channel preference, computer self-efficacy can be considered to be a strong influential factor as well. For example, when a citizen believes he or she does not have the required computer skills to use WhatsApp to get service or information, it is not likely that the citizen will consider using WhatsApp as a service channel. In relation to WhatsApp, there are two aspects of computer self-efficacy that are of interest: internet self-efficacy and mobile self-efficacy. Internet self-efficacy is important because WhatsApp is only accessible with a working internet connection. Mobile self-efficacy is important because almost every WhatsApp user accesses WhatsApp via a mobile phone (AudienceProject, 2016; SmartInsights, 2018):

H3a: Internet self-efficacy has a positive influence on citizens' channel preference for WhatsApp.

H3b: Mobile self-efficacy has a positive influence on citizens' channel preference for WhatsApp.

2.6.4 WhatsApp Experience

As proposed by CET and concluded in section § 2.5, prior experiences that individuals have with a channel can influence the preference and choice for an electronic channel. However, it has not been researched yet whether this is also the case in relation with WhatsApp in a public service context.

Carlson and Zmud (1994) propose that when an individual's experience with a channel increases, he or she may discover more functionalities, and thus the richness of the channel increases. Hence, it is likely that experience with WhatsApp has a positive influence on citizens' WhatsApp channel preference. In accordance, the following hypothesis is formulated:

H4: WhatsApp experience has a positive influence on citizens' channel preference for WhatsApp.

2.6.5 Perceived Channel Characteristics

Perceived channel characteristics are subjective qualities of a channel. According to the discussed theories, the immediacy of feedback (MRT), personalization (MRT), language variety (MRT), number of cues (MRT), usefulness (TAM) and ease of use (TAM) are important characteristics that are thought to directly influence channel choice and channel usage. It is of interest to see whether these perceived channel characteristics also influence WhatsApp channel preference.

In regard to the four antecedents as stated by MRT, it can be said that WhatsApp offers the possibility to personalize messages, to use multiple cues and to use rich language. However, immediate feedback is not guaranteed. Based on these assessments, the following hypotheses are formulated:

H5a: The perceived immediacy of feedback of the channel has a negative influence on citizens' channel preference for WhatsApp.

H5b: The perceived personalization of the channel has a positive influence on citizens' channel preference for WhatsApp.

H5c: The perceived language variety of the channel has a positive influence on citizens' channel preference for WhatsApp.

H5d: The perceived number of cues of the channel has a positive influence on citizens' channel preference for WhatsApp.

Finally, when considering the perceived usefulness and perceived ease of use of WhatsApp, it can be argued that it is very likely that higher levels of perceived usefulness and perceived ease of use result in a higher preference for WhatsApp (Davis, 1986). The following hypotheses are formulated:

H5e: The perceived usefulness of the channel has a positive influence on citizens' channel preference for WhatsApp.

H5f: The perceived ease of use of the channel has a positive influence on citizens' channel preference for WhatsApp.

2.7 Research Question

In conclusion, following the literature study, there are five main factors that are believed to significantly influence WhatsApp channel preference: personal characteristics, computer self-efficacy, WhatsApp experience, task characteristics and perceived channel characteristics. However, considering the fact that research on the WhatsApp channel preference in public service delivery is lacking, it is not clear whether or how these factors influence citizen's preferences for WhatsApp. Hence, this research addresses the following main research question:

RQ: *To what extend do (a) personal characteristics, (b) computer self-efficacy, (c) WhatsApp experience, (d) task characteristics and (e) perceived channel characteristics influence citizens' channel preference for WhatsApp in a public service delivery context?*

The conceptual research model is displayed below (figure 4).

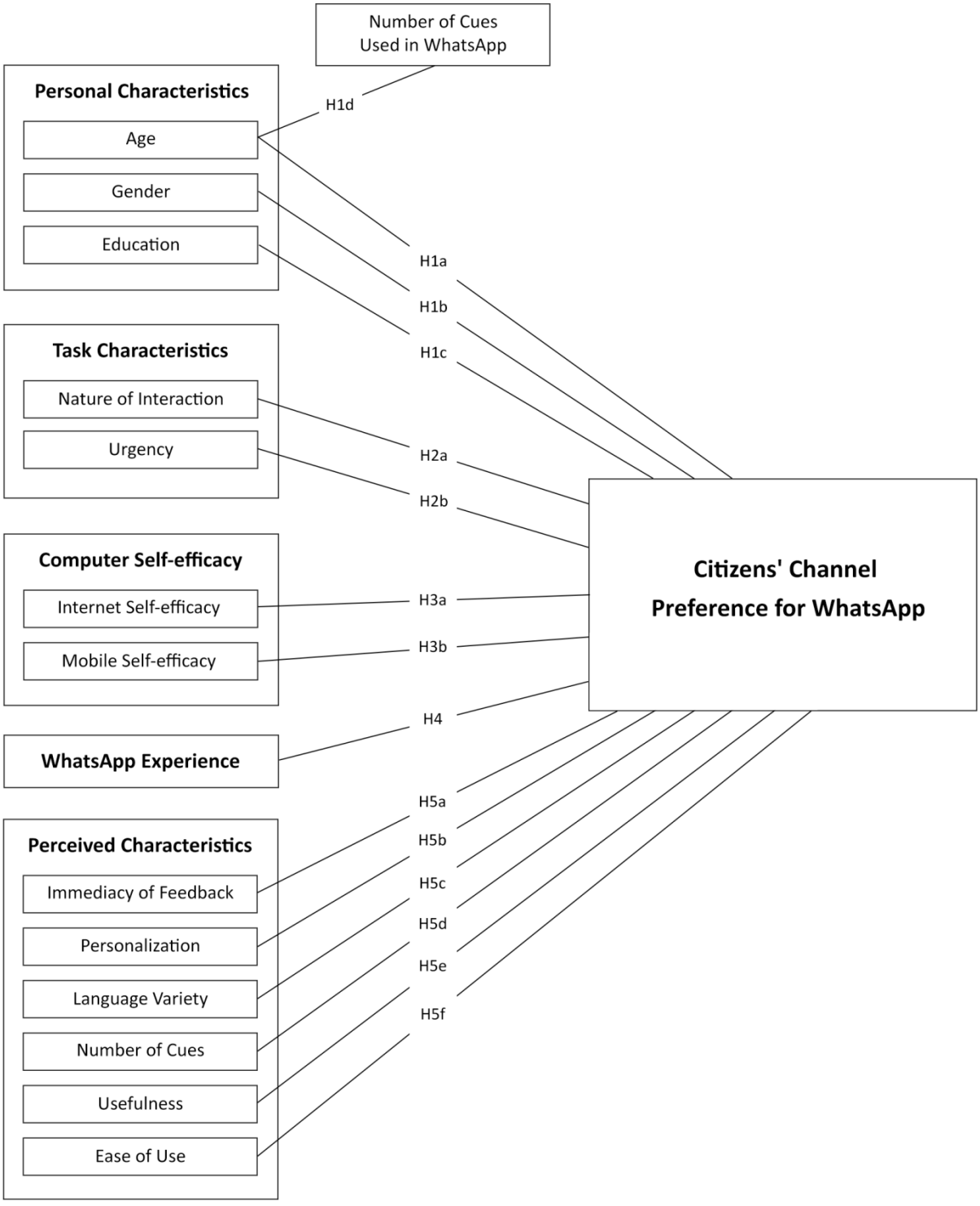


Figure 4 - Conceptual research model

3 | Methods

In this chapter, the research design and research methods are explained. Moreover, it is explained why certain research choices were made, which participants participated, what the procedure was and how the pilot study was executed.

3.1 Research Design

The primary goal of this research is to establish to what extent personal characteristics, computer self-efficacy, WhatsApp experience, task characteristics and perceived channel characteristics influence citizens' channel preference for WhatsApp in a public service delivery context. This was examined with a quantitative research method, seeing as quantitative research methods are particularly suitable for measuring the strength of the relationship between variables (Dooley, 2001; Shaughnessy, Zechmeister & Zechmeister, 2011). Furthermore, the choice has been made to make use of an online questionnaire, because this is an efficient method for collecting respondents from large, potentially diverse, samples (Shaughnessy, Zechmeister & Zechmeister, 2011). To ensure that the items used in this questionnaire are reliable, existing scales were used where possible. The questionnaire was written in the Dutch language.

3.2 Pilot Study

In order to identify item defects and to determine whether the scales and manipulations used in the questionnaire would be interpreted as intended, a pilot study was conducted. The pilot study was held among twenty-two participants. Five of the twenty-two participants were asked to say everything that comes to mind out loud while filling in the questionnaire.

The data from the pilot study was used to adjust the questionnaire. As a result, two items were deleted because they were not interpreted correctly by the participants. Three items were deleted because they had a negative influence on the reliability of the scales. In addition, an extra control question was added at the end of the questionnaire: "*Were you aware of the fact that most municipalities in the Netherlands can also be reached via WhatsApp?*".

3.3 Instruments

WhatsApp Channel Preference

The dependent variable WhatsApp channel preference is measured with a scenario-based research method. Within this method, respondents are confronted with multiple short scenarios in which certain factors are manipulated (Morrison, Stettler, & Anderson, 2004). The choice has been made to employ this method because by reading scenarios, the respondent is more involved in the situation compared to regular questionnaires, therefore better reflecting real life channel preference (Ebbers et al., 2016; Karren & Barringer, 2002). In addition, this approach enables assessment of multiple important factors that influence channel preference. In regard to this study, the factors that are manipulated within the scenarios are the task characteristics urgency and the nature of the interaction. The scenarios were written in the Dutch language.

Urgency was measured in three different ways: a high level of urgency, low level of urgency and scenario's in which urgency was not manipulated. This last category was included as a control group to see whether urgency actually influences channel preference.

Regarding the nature of the interaction, Ebbers et al. (2016b) make a distinction between four different natures of interactions, namely registration, advice, status and transaction. However, because it is not possible to execute transactional or registration tasks via WhatsApp, the choice has been made to focus on four different natures of interaction: advice, information, status and reporting. An example scenario is: "*You notice that a lamppost in your street is broken: the light does not work anymore. You want to report this to your municipality so that they can repair the lamppost.*"

After each scenario, to measure channel preference, the respondent was asked to report on a 5-point Likert scale ranging from very unlikely to very likely how likely it was that they would use the front desk, the telephone, a governmental website and WhatsApp to solve the scenario.

For this study 12 scenarios were created, of which an overview can be found in table 2. Respondents were not confronted with all of the scenarios, seeing as this would negatively influence the length of the questionnaire and the cognitive load. Hence, the choice was made to form different groups of scenarios. Each group consisted of three scenarios, in which three different manipulations of urgency and nature of interaction were represented. Each respondent was randomly assigned to one of the four groups. The twelve scenarios, written in the Dutch language, and the groups can be found in Appendix A.

	Manipulation	**Example**
Nature of interaction	Advice	"... you need to apply for a permit, but you do not know how..."
	Information	"... you want more information about the road work in your street..."
	Reporting	"... you notice that a lamppost in your street is broken: the light does not work..."
	Status	"... you are moving within your municipality, and you want to know whether your municipality has already processed your change of address..."
Urgency	Urgent	"… you are in a hurry…"
	Not urgent	"… you are not in a hurry…"

Table 2 – Example of the manipulations per characteristic

Personal Characteristics

To measure the personal characteristics age, gender and education, three generic questions, such as "*What is your age?*", were used. In order to determine whether the data is representative for the Dutch population, the scales and items were made compatible with the measurements of the Dutch Central Bureau for Statistics (CBS, 2018).

Task Characteristics

As stated above, the task characteristics urgency and the nature of the interaction were measured using a scenario-based research method.

Computer Self-efficacy

To measure internet self-efficacy, a scale consisting of four items derived from the study of Ebbers et al. (2016a) was used. An example item for internet self-efficacy is "*I know a lot about the use of the Internet.*". To measure mobile self-efficacy, four items derived from the studies of Ebbers et al. (2016a) and Van Deursen, Helsper and Eynon (2016) were used. An example item for mobile self-efficacy is "*Installing apps on a mobile phone is not a problem for me.*". The items were measured with 5-point Likert scales, ranging from totally disagree to totally agree.

WhatsApp Experience

WhatsApp experience was measured with five items derived from Carlson and Zmud's (1999) study. An example item would be "*I have a lot of experience with WhatsApp*". The items were all evaluated on a 5-point Likert scale, ranging from totally disagree to totally agree.

Perceived Channel Characteristics

The perceived channel characteristics immediacy of feedback, personalization, language variety and number of cues were assessed with items derived from Ferry, Kydd and Sawyer's (2001) media richness index, which has accumulated ample support in literature (D'Urso & Rains, 2008). This index consists of multiple sub scales divided over the four sub dimensions of media richness. The scales were adjusted so that they would make sense in the setting of WhatsApp. Immediacy of feedback was measured with three items, an example item is "*With WhatsApp I can send and receive information quickly.*". Personalization was measured with three items, for example "*On WhatsApp I can make my feelings and emotions clear to others.*". Language variety was also measured with three items, an example item is "*I think that WhatsApp offers enough symbols and emoticons.*". Number of cues was measured with one item, being "*I think that WhatsApp offers enough functions.*".

In order to measure perceived ease of use, a scale consisting of three items adapted from Lee and Koubek's study (2010) was implemented. An example item is "*I find WhatsApp easy to use.*". Perceived usefulness was also measured with a scale consisting of three items adapted from Lee and Koubek's study (2010), an example item being "*I find it useful to use WhatsApp.*". All items were measured with 5-point Likert scales, ranging from totally disagree to totally agree.

3.3.1 Validity

A factor analysis (Varimax rotation) was performed to test the construct validity. The analysis showed five components. The items used for WhatsApp experience all form one construct, as is the same for immediacy of feedback. The items of personalization and language variety load in the same construct. The items of ease of use and usefulness also load in the same construct. The items used for internet self-efficacy and mobile self-efficacy each load in different constructs, but also overlap with each other. This can be explained by the fact that both constructs measure computer self-efficacy, and by the fact that the internet is also an important aspect when using a mobile phone. No items had to be deleted according to the results of the factor analysis.

3.3.2 Reliability

The Cronbach's Alpha (α) value per scale was calculated to test the internal consistency. In general, for a scale to be deemed as reliable, α has to be at least 0.65 or higher (Butts, Lance & Michels, 2006; Loewenthal, 1996). An overview of all the α values per construct is provided in table 3. The table indicates that the α value for the construct language variety lies below 0.65, and that the α value cannot be improved by deleting or recoding items. Thus, the construct language variety had to be excluded from this study.

	N of items	Cronbach's Alpha (α)	α if item is deleted
WhatsApp Experience	5	0.87	0.83, 0.83, 0.84, 0.84, 0.87
Immediacy of Feedback	3	0.92	0.91, 0.87, 0.87
Personalization	3	0.65	0.51, 0.55, 0.59
Number of Cues	1	-	-
Language Variety	3	0.59	0.51, 0.51, 0.44
Usefulness	3	0.83	0.75, 0.79, 0.76
Ease of Use	3	0.84	0.75, 0.80, 0.79
Internet Self-efficacy	4	0.83	0.77, 0.80, 0.78, 0.80
Mobile Self-efficacy	4	0.90	0.81, 0.83, 0.85, 0.91

Table 3 - Cronbach's Alpha (α) values

3.4 Procedure

The questionnaire was administered into Qualtrics, an online survey tool. In the introduction of the online questionnaire, information was given about the subject of the study. The introduction also included information about the guaranteed anonymity of the respondent, the estimated duration of the study (seven minutes) and the chance to win a gift card if the respondent completed the survey. Control questions were implemented to guarantee that the respondent had read these terms and to check whether the respondent was eighteen years or older.

In the second part, respondents were asked to fill in the scales constructed for the variables personal characteristics, computer self-efficiency, WhatsApp experience and perceived channel characteristics. To make sure that the respondents use WhatsApp, a control question was added at the beginning of this part: "*Do you use WhatsApp?*".

In the third part, the respondents were shown three scenario's, as described in section § 3.3. Respondents then had to answer the questions concerning channel preference.

In the fourth and last part of the questionnaire, the control question "*Were you aware of the fact that most municipalities in the Netherlands can also be reached via WhatsApp?*" was shown. After answering this question, respondents were thanked for completing the questionnaire and were asked to fill in their electronic mail address if they wanted to win a gift card. The participants needed 7 to 9 minutes to complete the whole questionnaire.

3.5 Recruitment and Participants

Recruitment

The online questionnaire was distributed in multiple ways. First off, a flyer was randomly delivered to 1.000 households. The flyer provided information about the subject of the research and contained

a link to the online questionnaire. Due to practical limitations, it was not possible to distribute the flyer nationally, which is why the choice was made to distribute the flyer in the municipality of Leeuwarden. In 2017, the population count of the municipality of Leeuwarden was 108.667. 51% of the population is female (CBS, 2017). Concerning age, all age groups are of similar size in comparison to the Dutch population (CBS, 2017). Thus, in regard to gender and age, the population of the municipality of Leeuwarden is representative for the Dutch population. Unfortunately, information regarding the education level was not available. Second, people were recruited by the researcher by engaging with people on the streets and at their home. At last, the network of the researcher was used to reach potential respondents.

Participants

The population of this research consists of citizens that are eighteen years or older and use WhatsApp. The data was collected in a time period of three weeks, from the 3th of April till the 24th of April, in 2018. After this period, 203 responses were collected. However, 10 respondents had to be excluded from the study, either because they filled in the survey too fast, were younger than eighteen or did not use WhatsApp, leaving a sample of n = 193.

The socio-demographic variables of the respondents were compared with the latest data from the Central Bureau for Statistics (2018) to see whether the sample is representative for the Dutch population (table 4 on the next page). This analyses shows that females are overrepresented when looking at gender. In regard to age, it becomes clear that younger respondents in the age category of 18 till 25 are overrepresented. At last, when looking at education, it shows that respondents with a lower education level are underrepresented.

In some cases, it is possible to use a weighting factor to correct the distribution of the sample. Based on the data of Central Bureau for Statistics (2018), weighting factors were calculated, which can be found in Appendix B. The mean of the weighting factors is 1.35, with a standard deviation of 0.91. The calculated weighting factors for the age group 35 till 45 years (2.15), and the weighting factor for the lower educated group (3.56), are relatively high. The weighting factors for the age group 18 till 25 years (0.37), and the higher educated group (0.56), are relatively low. Seeing as the sample size is limited, applying a weighting factor would result in too extreme adjustments of the sample. Because of this, the choice has been made to not make use this method. As a result of this decision, this research should be regarded as indicative.

		Dutch population			Sample		
		Education level			Education level		
Gender	**Age**	**Low**	**Middle**	**High**	**Low**	**Middle**	**High**
Male	15 – 25	3,8%	3,1%	0,6%	0,0%	17,3%	26,9%
	25 – 35	1,2%	3,2%	3,1%	0,0%	1,9%	13,5%
	35 – 45	1,3%	3,0%	2,9 %	0,0%	1,9%	5,8%
	45 – 55	2,0%	3,8%	3,0%	0,0%	7,7%	19,2%
	55 – 65	2,2%	3,2%	2,5%	7,7%	3,8%	17,3%
	65+	3,9%	3,6%	2,5%	9,6%	3,8%	17,3%
Female	15 – 25	3,2%	3,2%	0,9%	0,0%	23,6%	45,7%
	25 – 35	0,8%	2,7%	3,8%	0,0%	5,7%	17,1%
	35 – 45	1,1%	2,9%	3,2%	0,7%	0,7%	7,1%
	45 – 55	2,0%	4,0%	2,8%	1,4%	7,1%	18,6%
	55 – 65	2,9%	3,1%	1,9%	2,1%	2,1%	8,6%
	65+	7,0%	3,1%	1,4%	1,4%	1,4%	2,9%

Table 4 - Age, gender and education level of the Dutch population and sample (CBS, 2018)
Does not add up to 100% due to rounding differences

The respondents were asked to report for what reasons they use or have used WhatsApp. The results are shown in table 5. Nine respondents (4,7%) use or have used WhatsApp to communicate with a governmental agency.

Reason	**N**	**%**
To communicate with family	186	96,4%
To communicate with friends	185	95,9%
To communicate with colleges	147	76,2%
To communicate with companies	18	9,3%
To communicate with governmental agencies	9	4,7%

Table 5 - Reasons behind WhatsApp Use

At the end of the questionnaire, respondents were asked whether they were aware of the fact that most municipalities in the Netherlands can be reached via WhatsApp. The results show that the majority of the sample (72.5%) did not know that most municipalities can be reached via WhatsApp (table 6).

Knowledge	**N**	**%**
Did know that WhatsApp is available as a service channel	53	27,5%
Did not know that WhatsApp is available as a service channel	140	72,5%
Total	193	100%

Table 6 – Knowledge about the availability of WhatsApp as a service channel

The mean scores and standard deviations of the variables WhatsApp experience, immediacy of feedback, personalization, number of cues, usefulness, ease of use, internet self-efficacy and mobile self-efficacy were calculated. The results can be observed in table 7. The variables were measured on a 5 point Likert scale. Aside from the perceived channel characteristics personalization

and number of cues, all mean scores are higher than 4,30. This implies that in general, the respondents see WhatsApp as a channel that is capable of providing immediate feedback. The respondents also believe that they are experienced with WhatsApp, and believe that WhatsApp is useful and easy to use. Respondents are also positive about both their internet and mobile skills.

Variable	Mean	SD
WhatsApp Experience	4,30	0,68
Immediacy of Feedback	4,48	0,66
Personalization	3,69	0,70
Number of Cues	3,85	0,60
Usefulness	4,27	0,63
Ease of Use	4,39	0,59
Internet Self-efficacy	4,33	0,64
Mobile Self-efficacy	4,37	0,74

Table 7 - Mean scores and standard deviations of independent variables

Scale of 1–5, 1 = totally disagree and 5 = totally agree. N = 193

4 | Results

In this chapter, the results of the statistical analyses are discussed. First, the overall preferences for the four channels are presented. Second, the results of a correlational analysis are discussed. Third, statistical assumptions for regression analysis are tested. Fourth, most hypotheses are tested using a multiple linear regression analysis (MLRA). Fifth, the remaining hypotheses that could not be tested using MLRA are discussed. At last, an overview of the hypotheses is given.

4.1 Overall Channel Preference

The overall preferences for the channels were calculated (table 8). Overall preference for the telephone ($\bar{y}$ = 3,79) was highest, closely followed by the website ($\bar{y}$ = 3,77). Overall preference for the front desk ($\bar{y}$ = 2,46) and WhatsApp ($\bar{y}$ = 2,30) is considerably lower.

Channel	Mean ($\bar{y}$)	SD
Telephone	3,79	1,03
Front Desk	2,46	1,19
Website	3,77	1,09
WhatsApp	2,30	1,34

Table 8 - Mean scores and standard deviations of channel preferences
Scale of 1–5, 1 = very unlikely and 5 = very likely

4.2 Correlations

In this section, the correlation coefficients of the variables are presented. First, the assumption of normality was tested to determine whether a parametric or non-parametric version of correlation analysis should be used. To test this assumption, the skewness and kurtosis values of the variables were calculated. When assessing the skewness and kurtosis values (see Appendix C), it seems to be the case that the data for all the independent variables is skewed to the right, and that the data for the dependent variable is skewed to the left. To confirm this, normal Q-Q plots of the variables were plotted and studied, which reveal that the data is indeed skewed.

When data is not normally distributed, it is sometimes possible to transform the data to fit a normal distribution. However, transforming data is not always desirable, as it can bring forth complications and errors (Field, 2013; Games, 1984; Gao, Mokhtarian & Johnston, 2008). Various transformations (square root, logarithm, Box-Cox) were executed and tested, but without results. Hence, the choice was made to use a non-parametric test to measure the correlation coefficients (Field, 2013). The correlations between variables were tested with the Kendall's Tau b test.

When assessing the correlation coefficients (table 9 on the next page), it becomes clear that all coefficients with the dependent variable WhatsApp channel preference lie between r = -0,300 and r = 0,300. Cohen (1988) considers coefficients between 0.100 – and 0.300 to be weak. These values of r indicate thus that there is a weak correlation between the independent variables and the dependent variable. For this study, this implies that there is a lower likelihood that the independent variables have a significant effect on the dependent variable.

Keeping this in mind, it appears that overall, the independent variables ease of use (r = 0,205), usability (r = 0,195) and mobile self-efficacy (r = 0,194) have the strongest significant

correlation with WhatsApp channel preference. Age (r = -0,166), WhatsApp experience (r = 0,176), immediacy of feedback (r = 0,172), personalization (r = 0,141) and number of cues (r = 0,157) also have a significant correlation with WhatsApp channel preference. Gender, education and internet self-efficacy do not have a significant correlation with WhatsApp channel preference.

Correlations	1	2	3	4	5	6	7	8	9	10	11	12
1 Gender	1											
2 Age	-,245**	1										
3 Education	,094	-,170*	1									
4 WhatsApp Experience	,103	-,485**	,050	1								
5 Immediacy of Feedback	,060	-,267**	-,006	,473**	1							
6 Personalization	,152*	-,254**	,073	,381**	,385**	1						
7 Number of Cues	,124	-,222**	,017	,383**	,604**	,334**	1					
8 Usefulness	,140*	-,321**	-,120	,458**	,537**	,370**	,433**	1				
9 Ease of Use	,117	-,338**	-,063	,531**	,622**	,433**	,546**	,664**	1			
10 Internet Self-efficacy	,118	-,451**	,138*	,468**	,374**	,230**	,342**	,307**	,422**	1		
11 Mobile Self-efficacy	,088	-,471**	,080	,528**	,437**	,251**	,374**	,366**	,473**	,605**	1	
12 WhatsApp Preference	-,033	-,166**	,004	,176**	,172**	,141*	,157*	,195**	,205**	,049	,194**	1

Table 9 - Kendall's Tau b regression matrix

***** Correlation is significant at the 0.01 level (2-tailed).***

**** Correlation is significant at the 0.05 level (2-tailed).***

4.3 Assumptions for Model Testing

Before the model can be tested with a regression analysis, it is important that several assumptions are met. In this section, four main assumptions of MLRA are tested and discussed.

4.3.1 Assumption of Multicollinearity

Multicollinearity exists when two or more predictors strongly correlate with each other. Significant multicollinearity can be a great threat to MLRA (Field, 2013). To test whether multicollinearity forms a treat in this study, a correlational test (Kendall's Tau b) was performed (table 9). This test reveals that no correlation coefficient exceeds the threshold of r > 0,800, and thus that there is no treat of multicollinearity.

An additional test to see whether multicollinearity exists in the data is to measure the variance inflation factor (VIF), which should not exceed the threshold of 5, and to measure the tolerance statistic, which should exceed the threshold of 0.2 (Field, 2013). The tests reveal that none of the variables have VIFs that lie above the threshold of 5, and that no variables have a lower tolerance value than 0.2. Hence, there is no threat of collinearity.

4.3.2 Assumption of Multivariate Normality

Multivariate normality refers to the assumption that the residuals in the model are normally distributed. When the sample size is small, a lack of multivariate normality can impair confidence intervals and significance tests of a MLRA (Field, 2013).

To assess the multivariate normality of the data, the kurtosis and skewness values of the standardized residuals were calculated. These findings show that the kurtosis (-0,872) and skewness (0,483) values are higher than the standard error, which implies that the residuals are not normally distributed. In addition, the Kolmogorov-Smirnov and the Shapiro-Wilk statistics were also calculated. These tests both show a p value of $p < 0,000$, which means that the residuals are not normally distributed. To confirm these findings, Mardia's test of multivariate kurtosis was performed, which resulted in c.r. > 1,96, which indicates significant non-normality of the residuals.

When residuals are not normally distributed, it is sometimes possible to achieve a more normal distribution by deleting outliers (Bagley & Mokhtarian, 2002). First, an attempt was made to improve the distribution by deleting standardized residual outliers with a score of 3 or higher, which resulted in the removal of four records. However, this did not significantly improve the multivariate normality. Secondly, another method of deleting outliers was followed by calculating the Cook's distance and deleting outliers with a Cook's distance of 1,5 or higher. This resulted in the deletion of one record, which also did not benefit the multivariate normality significantly.

Another method to counter non-multivariate normality is to transform the data. Various transformations (square root, logarithm, Box-Cox) were executed and tested. However, the tests of multivariate normality still revealed that the data remained non-normal.

According to Hoyle and Panter (1995), and Gelman and Hill (2006), the multivariate normality assumption is rarely met in practice, and generally does not severely affect obtained results when the sample size is adequate. However, to avoid a possible effect of not normally distributed residuals, one can choose to use robust estimation methods (Hoyle & Panter, 1995), such as bootstrapping (Field, 2013; Fox, 2002). Thus, bootstrapping will be used.

4.3.3 Assumption of Homoscedasticity

The assumption of homoscedasticity entails that the variance of the residual terms around the regression line is constant for all values of the predictor value. When the variances are unequal, there is said to be heteroscedasticity. As is the case with multivariate normality, a lack of homoscedasticity will also impair confidence intervals and significance tests (Field, 2013).

The assumption of homoscedasticity was measured by plotting Q-Q plots, which revealed a random pattern of residual terms. This means that the assumption of homoscedasticity is met.

4.3.4 Assumption of Linear Relationship

The assumption of linear relationship entails that, in order for MLRA to generate optimal results, each independent variable should have a linear relationship with the dependent variable. This assumption was tested by plotting multiple scatterplots between each independent variable and the dependent variable. An assessment of the regression lines of each scatterplot reveals that all the independent variable, except for gender, have a linear relationship with the dependent variable WhatsApp channel preference, and thus the assumption of linear relationship for these variables is met. Gender will be measured using the non-parametric Mann-Whitney U test, as is discussed in section § 4.6.

4.4 Model Testing

The model was tested using MLRA in the statistical software package SPSS 23.0. Seeing as the research model of this study solely focuses on the direct relationship between the independent variables and the dependent variable, MLRA is capable to test the research model (Field, 2013). The sample size of this study is adequate for MLRA. To account for the non-multivariate normality of the data, bootstrapping is performed.

In table 10 and 11, the results of the MLRA with WhatsApp channel preference as the dependent variable are shown. The independent variables that were used as predictor variables in the MLRA are age, education, WhatsApp experience, immediacy of feedback, personalization, number of cues, usefulness, ease of use, internet self-efficacy and mobile self-efficacy. The variables nature of interaction, urgency and gender are not included in the MLRA. These variables were measured with other statistical analysis, which are discussed in the next sections.

The adjusted R^2 value is 0,092, which means that 9,2% of WhatsApp channel preference is accounted for by the predictors in the model. Two variables are significantly related to WhatsApp channel preference, namely internet-self efficacy and mobile self-efficacy. There is a negative relation between internet self-efficacy and WhatsApp channel preference (β = -0,282). There is a positive relation between mobile self-efficacy and WhatsApp channel preference (β = 0,276). For the other predictor variables, no significant relation was found (p > 0,050).

Variable	R	R^2	Adj. R^2	F-value	p
Model fit	0,374	0,140	0,092	2,884	0,002

Table 10 - Model statistics Bootstrapped Multiple Linear Regression
Results are based on 1000 bootstrap samples

Variable	B	β	t-value	p
Age	-0,043	-0,054	-0,581	0,566
Education	0,061	0,079	1,031	0,293
WhatsApp Experience	0,148	0,067	0,587	0,559
Immediacy of Feedback	-0,143	-0,059	-0,556	0,543
Personalization	0,067	0,034	0,407	0,680
Number of Cues	0,006	0,003	0,033	0,963
Usefulness	0,213	0,091	0,840	0,404
Ease of Use	0,430	0,164	1,272	0,133
Internet Self-efficacy	-0,594	-0,282	-2,610	0,004
Mobile Self-efficacy	0,544	0,276	2,383	0,006

Table 11 - Regression coefficients Bootstrapped Multiple Linear Regression
Results are based on 1000 bootstrap samples

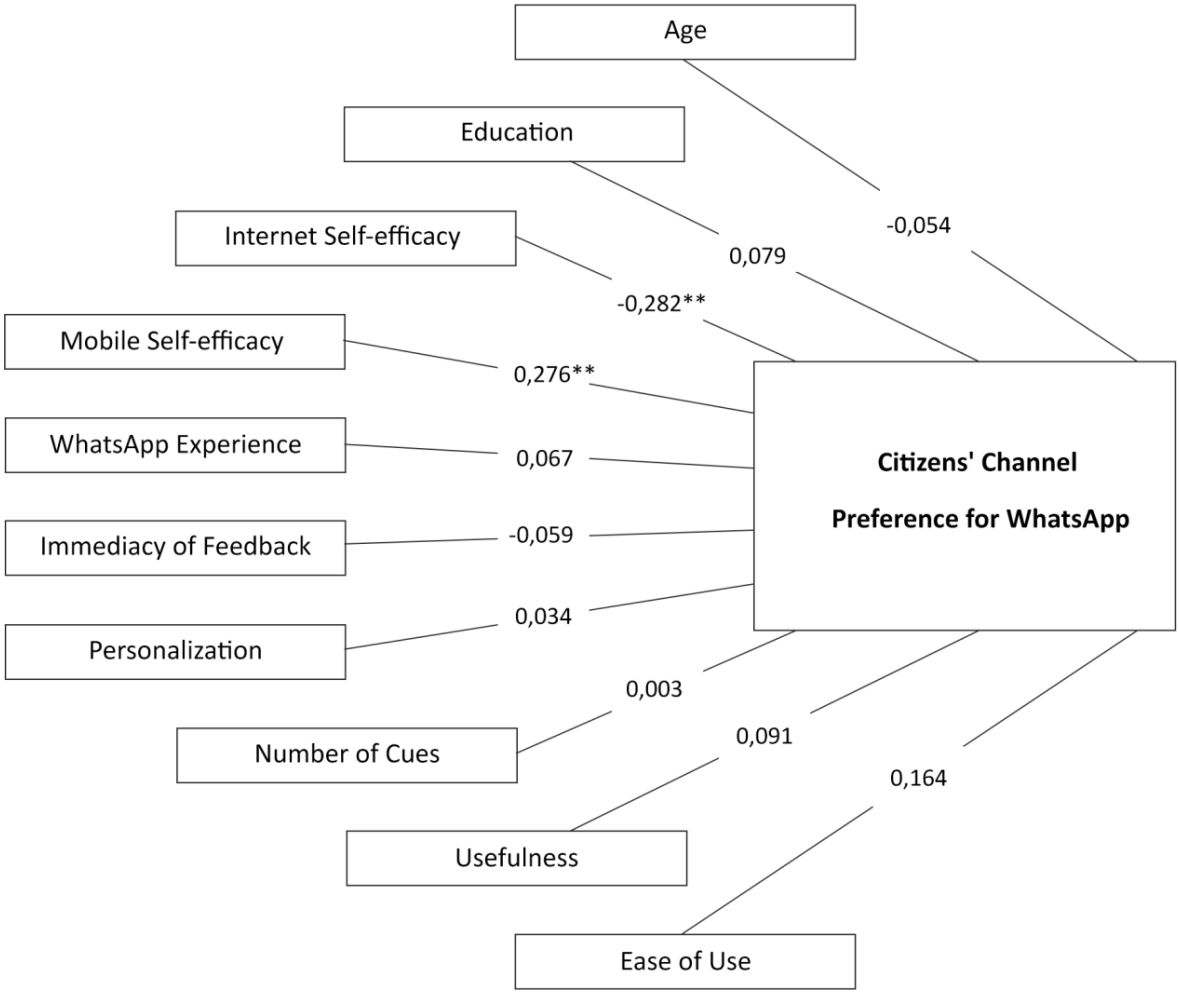


Figure 5 - Results for the MLRA with path coefficients
***p < .05 **p < .01**

4.5 Effects of Task Characteristics on WhatsApp Channel Preference

Seeing as the task characteristics nature of interaction and urgency were measured with a scenario-based research method, it was not possible to include the task characteristics in the MLRA. Hence, a different analysis was executed: the task characteristics are measured by assessing mean scores and boxplots.

Nature of Interaction

Upon assessing the scores per interaction type (see table 12 on the next page), there seems to be a relation between nature of the interaction and channel preference for the four different channels. When respondents were faced with a situation in which they needed a status update or advice, the preference for WhatsApp declines, whereas the preference for the telephone and the front desk increases. Preference for governmental websites also declines for the interaction type status, whereas it increases for the interaction type advice.

To examine whether the nature of the interaction has an effect on WhatsApp channel preference, boxplots were plotted (see figure 6 on the next page). These boxplots reveal that there is a notable difference in WhatsApp channel preference between the different interaction types. It seems that for the interaction mode advice, citizens have the lowest preference for WhatsApp.

	Information		Reporting		Status		Advice	
Channel	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
Telephone	3,54	1,48	3,60	1,56	4,16	1,29	3,86	1,32
Front desk	2,15	1,43	1,98	1,42	2,76	1,57	2,96	1,58
Website	4,06	1,35	3,74	1,50	3,27	1,58	4,00	1,30
WhatsApp	2,40	1,57	2,42	1,57	2,24	1,46	2,16	1,41

Table 12 - Mean scores and standard deviations for channel preference based on nature of interaction
Scale of 1–5, 1 = very unlikely and 5 = very likely. N = 147

Urgency

Upon assessing the mean scores presented in table 13 below, there seems to be no relation between urgency and WhatsApp channel preference. The urgency of the situation however does seem to influence channel preference for the telephone, front desk and website. In situations of high urgency, respondents' preference for traditional channels increases, whereas the preference for governmental websites declines.

To examine whether urgency has an effect on WhatsApp channel preference more closely, boxplots were plotted (see figure 7). These boxplots reveal that there is a nonentity difference in WhatsApp channel preference between the different levels of urgency. Only for the situations in which the urgency was not manipulated does it seems to be the case that citizens' channel preference for WhatsApp is lower.

	No Urgency		High Urgency		Low Urgency	
Channel	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
Telephone	3,58	1,48	4,15	1,32	3,64	1,44
Front desk	2,29	1,51	2,70	1,57	2,39	1,56
Website	3,94	1,33	3,55	1,55	3,81	1,49
WhatsApp	2,23	1,47	2,39	1,52	2,28	1,52

Table 13 - Mean scores and standard deviations for channel preference based on urgency
Scale of 1–5, 1 = very unlikely and 5 = very likely. N = 193

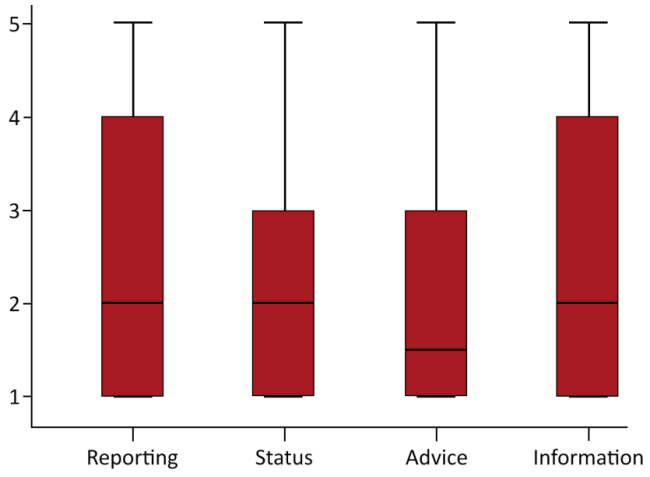


Figure 7 – Effect Nature of Interaction on WhatsApp channel Preference

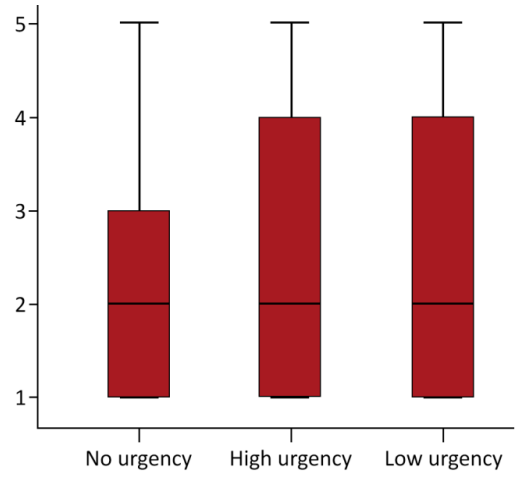


Figure 6 – Effect Urgency on WhatsApp channel Preference

4.6 Effects of Gender on WhatsApp Channel Preference

Seeing as gender did not have a linear relationship with WhatsApp channel preference, the choice has been made to analyze gender separately to see whether there is a significant difference in WhatsApp channel preference between males and females. Because the data is not normally distributed, a non–parametric test, namely the Mann-Whitney U test, was executed. The results can be found below in table 14.

From this data, it can be concluded that there is no significant difference in WhatsApp channel preference between males and females (U = 3336, p = 0,540). However, it should be noted that the female group is almost three times larger (n = 136) than the male group (n = 52). The differences in group size may have influenced the results.

Variable	Mean Rank	U	W	Z	p
Males	98,35				
Females	93,03				
Model		3336	12652	-0,612	0,540

Table 14 - Mann-Whitney U test - Differences WhatsApp channel preference between genders
136 females, 52 males

4.7 Effects of Age on Number of Cues used with WhatsApp

An additional scale was included in the online questionnaire to test whether age has an influence on the number of cues used with WhatsApp. To test the effect of age on the number of cues used with WhatsApp, Welch's ANOVA was performed (see Appendix B). Welch's ANOVA shows that there is a significant effect of age on the number of cues used (p = 0,000). There is a significant difference between the group young adults (18 till 35) with the adults (35 till 55) and seniors (55+). Young adults make significantly more use of text messages, emoticons, images, videos, animations (GIF) and audio messages on WhatsApp in comparison to adults and seniors. Adults make significantly more use of text messages, emoticons and images than seniors. However, there is no significant difference between adults and seniors considering the use of videos, animations (GIF) and audio messages on WhatsApp.

4.8 Overview of Hypotheses

In table 15 on the next page, an overview of the hypotheses of this study is given. Hypotheses h1a, h1b, h3a, h3b, h4, h5a, h5b, h5d, h5e and h5f were tested using MLRA. Hypothesis h2a and h2b were tested by investigating the boxplots. H1c was tested with the Mann-Whitney U test, and H1d was tested with Welch's ANOVA. Because the scale for language variety was not sufficient for further analysis, this study could not test H5c.

Hypothesis		β	p	Validation
H1a	Age has a negative influence on WhatsApp channel preference.	-0,054	0,566	Rejected
H1b	Education level has a positive influence on WhatsApp channel preference.	0,079	0,293	Rejected
H1c	Gender has an influence on WhatsApp channel preference.	x	0,540	Rejected
H1d	Age has a negative influence on the number of cues communicated via WhatsApp.	x	x	Supported
H2a	Nature of the interaction correlates with WhatsApp channel preference.	x	x	Supported
H2b	Urgency of the task has a negative influence on WhatsApp channel preference.	x	x	Rejected
H3a	Internet self-efficacy has a positive influence on WhatsApp channel preference.	-0,282	0,004	Contradicted
H3b	Mobile self-efficacy has a positive influence on WhatsApp channel preference.	0,276	0,006	Supported
H4	WhatsApp experience has a positive influence on WhatsApp channel preference.	0,067	0,559	Rejected
H5a	Perceived immediacy of feedback has a negative influence on WhatsApp channel preference.	-0,059	0,543	Rejected
H5b	Perceived personalization has a positive influence on WhatsApp channel preference.	0,034	0, 680	Rejected
H5c	Perceived language variety has a positive influence on WhatsApp channel preference.	x	x	x
H5d	Perceived number of cues has a positive influence on WhatsApp channel preference.	0,003	0,963	Rejected
H5e	Perceived usefulness has a positive influence on WhatsApp channel preference.	0,091	0,404	Rejected
H5f	Perceived ease of use has a positive influence on WhatsApp channel preference.	0,164	0,133	Rejected

Table 15 - Overview of the hypotheses

5 | Discussion

The primary goal of this research is to establish to what extent personal characteristics, computer self-efficacy, WhatsApp experience, task characteristics and perceived channel characteristics influence citizens' channel preference for WhatsApp in a public service delivery context. In this chapter, first, the results per factor and the research question are discussed. Second, the theoretical and practical implications of this research are given. Third, suggestions for future research are discussed. Fourth, the limitations of this study are presented. At last, a conclusion is given.

5.1 Discussion

Personal characteristics

According to the discussed literature, age, gender and education can influence electronic channel preference and channel choice in public service delivery. Nevertheless, this study did not find a significant relation between age, gender or education and WhatsApp channel preference.

A possible explanation is that the cited studies are several years old. It is plausible that throughout the years, the digital divide related to the adoption of electronic channels in public service has become less relevant (Ebbers et al., 2016a, 2016b).

Another explanation may be that a digital divide among different population groups has less impact on the adoption of WhatsApp, and possibly other instant messaging features of SNPs as well, than it has on the adoption of governmental websites. Governmental websites are often considered to be complicated, seeing as they offer large amounts of information, making it difficult for citizens with inadequate digital skills to find the information they need. In addition, it is extra difficult for citizens to learn how to utilize governmental websites, seeing as most governmental websites are only needed occasionally (Van Dijk, Ebbers & Van de Wijngaert, 2014). However, when citizens use instant messaging features of SNPs to get service or information they are not presented with these problems, because SNPs offer the option to ask questions via a simple user interface and because most SNPs are being used on a daily basis (Emerce, 2017, February 16).

Even though no significant relation was found between personal characteristics and WhatsApp channel preference, this study did find evidence that supports hypothesis 1d, "*Age has a negative influence on the number of cues communicated via WhatsApp.*" Young adults make significantly more use of all the cues (i.e. emoticons, images, animations) that WhatsApp has to offer, which is in line with the results of Brandtzæg and Heim's study (2011). In a public service delivery context this implies that adults and seniors may struggle with the usage of certain features.

Interestingly, this implies that, while there may not be a digital divide regarding the adoption of WhatsApp as a service channel, there may be a digital divide regarding the way in which WhatsApp is used. The paper of Ebbers et al. (2016b) discusses a similar idea. They found that, while digital skills do not significantly influence the adoption of electronic channels, digital skills do influence satisfaction of electronic channel usage. The better a citizen's digital skills are, the more satisfied he or she will be with electronic channels. In the case of WhatsApp, and possibly other instant messaging features of SNPs as well, this suggests that younger adults may experience more satisfaction while using WhatsApp as a service channel. As such, aside from channel adoption and channel preference, research on channel choice and the digital divide should also focus on channel usage and channel satisfaction.

Task characteristics

In this study, the task characteristics nature of interaction and urgency were measured with a scenario-based research design.

As for the nature of interaction, WhatsApp channel preference is highest for the interaction type reporting, and lowest for the interaction type advice. Possibly, this can be explained by the differences between the interaction types. In regard to reporting, the respondents were told to report a broken lamppost by contacting their municipality. In this scenario, an answer (besides maybe a confirmation that the message had been received) from the municipality was not necessary. In the scenario of advice however, the respondent had to ask for advice about a permit, and thus the respondent needed an answer from the municipality in order to solve the scenario. It could thus be possible that when citizens do not necessarily require an answer from their municipality, they tend to have a higher preference for WhatsApp.

Nevertheless, it is possible that these results were influenced by an individual's task experience (Carlson & Zmud, 1994, 1999), which was not measured in this research. It is possible that some of the respondents already had experience with or knowledge of the tasks at hand, which may have influenced their channel preference. This can be explained with the results of the studies of Pieterson (2009) and Ebbers et al. (2016a), who, among other things, have investigated the influence of a person's habits on channel choice. They state that when a person has used a channel before to complete a certain task and that when this experience was positive, there is a high possibility that the person will choose that channel again to solve a similar task in the future, purely out of habit. This could have influenced WhatsApp channel preference, seeing as it could have steered respondents into preferring other channels that they have used before over WhatsApp.

Concerning urgency, this study did not find a significant relationship between the urgency of the task and WhatsApp channel preference. It is possible that, because urgency is measured using a scenario-based research design, the artificial feeling of urgency could not represent urgency as it would be experienced in real life. A more qualitative research approach is needed to test whether this is the case, or to confirm that urgency does not have an influence on WhatsApp channel preference.

Computer Self-efficacy

The results show that there is a significant relation between internet self-efficacy and WhatsApp channel preference. Interestingly, internet self-efficacy appears to have a negative influence on WhatsApp channel preference, which contradicts hypothesis 3a. A negative relation implies that when a citizen's perception of his or her internet skills is positive, it is less likely that he or she will prefer WhatsApp as a service channel. A possible explanation is that citizens that have confidence in their internet skills rather choose to use governmental websites instead of WhatsApp or other instant messaging features of SNPs. A regression analyses (see Appendix E) of the data of this study shows that indeed, internet self-efficacy has a significant positive relation with website channel preference (bootstrapped linear regression, R^2 = 0,129, β = 0, 365, p = 0,001). However, seeing as the goal of this study was to measure WhatsApp channel preference and not website channel preference, this result should be interpreted with caution.

Mobile self-efficacy appears to have a significant positive effect on WhatsApp channel preference, which is in line with hypothesis 3b. This implies that the more positive a citizen's

perception is of his or her mobile skills, the more likely it is that he or she will prefer WhatsApp as a service channel. Assumedly, this is the case because often, the only device via which WhatsApp is accessed is a mobile phone (AudienceProject, 2016). Thus, if someone believes he or she does not have the needed mobile skills to use WhatsApp as a service channel, it is logical that he or she will choose to use a different service channel instead.

WhatsApp Experience

The results of this study show no significant relation between WhatsApp experience and WhatsApp channel preference. These results are inconsistent with previous research that found significant evidence that channel experience influences channel preference and channel choice for electronic channels (Kiesler, Siegel, & McGuire, 1984; King & Xia, 1997; Pieterson, 2009). Most likely, this inconsistency is due to the fact that all of these studies focused on channel preference and channel choice in relation to websites or electronic mail, which differ from instant messaging features of SNPs in multiple ways. Hence, it could be possible that in the case of WhatsApp and other instant messaging features of SNPs, other factors than channel experience have greater influence.

Arguably, the results relating to experience as an overall concept could also have been influenced by the fact that this study only included channel experience. According to CET, there are multiple types of experience aside from channel experience that can influence channel preference or channel choice, such as task experience and previous service experiences (Carlson & Zmud, 1994, 1999). Hence, it would be premature to state that experience has no effect on WhatsApp channel preference before other types of experience are also taken into consideration.

Perceived Channel Characteristics

No significant relation was found between the perceived channel characteristics immediacy of feedback, language variety, personalization, number of cues, usefulness or ease of use and WhatsApp channel preference. At least three plausible explanations exist to explain why this research found no significant relation between the perceived channel characteristics and WhatsApp channel preference.

One explanation is that both MRT and TAM were not developed to measure channel preference. MRT focusses on channel choice, and TAM focusses on channel adoption. As is argued in the beginning of this paper, there is a difference between channel preference, channel choice and channel usage.

A second explanation is that only a part of TAM was used in this study to predict channel preference. Aside from perceived usefulness and perceived ease of use, TAM states that external variables and attitude towards using a channel can influence channel adoption as well. Perhaps it is possible that the effects of perceived usefulness and perceived ease of use on channel adoption, or channel preference, can only be witnessed when these other factors are also taken into consideration.

A third explanation is that TAM and MRT were developed before SNPs were created. It is possible that the proposed channel characteristics do not influence channel preference for WhatsApp or other instant messaging features of SNPs. In an era in which more and more services are moved to the online realm, citizens might attach more value to other characteristics, such as social cues or social presence.

Research Question

This research did not succeed in creating a model that could adequately predict WhatsApp channel preference. The extensive study of Pieterson (2009) offers an explanation. His study shows that habits and prior experiences are the most important factors that influence citizens' channel preference and channel choice. Most citizens (in this study 95,3%) do not have habits or prior experiences yet with WhatsApp as a service channel, which could explain why WhatsApp channel preference is remarkably low in comparison to other service channels. Meaning that perhaps, if this study is repeated later on in time when citizens did create experiences and habits with WhatsApp as a service channel, this research could yield different results.

For now, a more short term approach would be to focus channel marketing efforts (see Pieterson & Johnson, 2011) towards informing citizens about the possibility to use WhatsApp as a service channel, considering the fact that only a small part of the respondents (27,5%) knew that it is possible to contact municipalities via WhatsApp. Because, if citizens do not know that WhatsApp is an available service channel, the chance of choosing WhatsApp as a service channel is almost nonexistent. The next step would then be to steer citizens towards using WhatsApp as a service channel. Then, when citizens start to use the channel, experiences that may ultimately lead to new habits, are created.

5.2 Theoretical and Practical Implications

The main goal of this research is to give an insight into the channel preferences of Dutch citizens in regard to instant messaging features of SNPs and to predict these preferences by analyzing personal characteristics, computer self-efficacy, WhatsApp experience, task characteristics and perceived channel characteristics. Seeing as previous studies on channel preference mainly focus on traditional channels or governmental websites, this study adds to the existing literature by analyzing a new type of service channel.

In addition, this study also adds to the existing literature of channel choice and MRT, CET and TAM. The results of this study imply that, possibly for different reasons, the theories are not suited to predict WhatsApp channel preference. Seeing as all the three theories were developed before SNPs became prominent, it may be necessary to develop new theories which also take new electronic channels into account. This is necessary because, as is argued in this paper, SNPs greatly differ from other electronic channels.

This study also brings forth practical implications for governmental agencies, seeing as the discussed literature points out that instant messaging features of SNPs offer many opportunities that can greatly improve the service quality of public service delivery. By understanding the factors that influence channel preference for SNPs, governmental agencies can anticipate why and for what reason citizens choose to use SNPs to get service or information. In turn, this information can be used to improve channel strategies and service quality.

At last, this research also presents an opportunity regarding the knowledge of citizens about the availability of service channels. More than seventy percent of the respondents did not know that it is possible to contact a municipality via WhatsApp. Hence, in order to be able to successfully employ instant messaging features of SNPs as service channels, it is necessary to better inform citizens about the availability of these channels.

5.3 Suggestions for Future Research

There are four main suggestions for future research. Firstly, it would be interesting to test whether social presence has an influence on SNP channel preference in public service delivery. Social presence is defined by Gunawardena (1995) as "*the degree to which a person is perceived as a 'real person' in mediated communication.*", and is linked to online channel preference by multiple scholars (e.g. Chen & Yen, 2004; Gunawardena, 1995; Tu, 2000, 2002; Tu & McIsaac, 2002). There is a vast possibility that social presence can influence SNP preference in the public service context, seeing as citizens' problems can be highly ambiguous. Research suggests that when a problem is ambiguous, it is important for the sender and receiver of the message to be able to confirm whether the interpretation of the send message is correct (Ebbers et al. 2008). This is not possible via a website, because a website lacks direct interaction. Instant messaging features of SNPs do offer possibilities to directly interact, however, if a citizen perceives instant messaging features of SNPs to be low in social presence, chances are he or she would choose for the front desk or telephone instead. Social presence was not included in this research due to practical limitations.

A second suggestion is to test whether the discussed factors in this paper influence channel preference for other SNPs (e.g. Facebook Messenger or Twitter's direct chat) and to see if there are differences between the channels. Gaining insights into possible differences between SNPs can help improve the service quality and multi-channel strategies of municipalities. Most papers about channel preference do not make a distinction between the different types of SNPs, which is why it is still unclear what the differences are between the SNPs in public service delivery.

A third suggestion for future research is to investigate the influence of underlying relationships between variables on channel preference. For example, Ebbers et al. (2016b) have found results that indicate that digital skills can influence channel satisfaction. The results of Pieterson's (2009) study suggest that channel experience strongly influences the perceived characteristics of a channel. By mapping these underlying relationships, the model of channel preference can be enhanced. Due to a lack of resources, this was not possible in this study.

A fourth and last suggestion is to repeat this study later on in time. This research was executed in a time when not many citizens (in this research less than thirty percent) knew that WhatsApp is an available service channel to get in contact with the government. As a result not many citizens (in this research less than five percent) had used WhatsApp as a service channel before. It would be interesting to see whether this research would yield different results when it is executed several years later, when possibly more citizens have knowledge of and have used WhatsApp to get into contact with the government.

5.4 Limitations

Several limitations need to be addressed. The first limitation pertains to the representativeness of this study. The lack of representativeness for the Dutch population may have influenced the results of this study.

The second limitation is the generalizability of the scenario findings. Scenarios provide the possibility to examine factors that predict channel preference under rigidly controlled conditions that remain unaffected by other unpredicted factors that complicate research in real-life settings. However, this can also be seen as a weakness of scenario-based designs, as this may limit their

generalizability. A more qualitative method could confirm whether the results found in this study are actually applicable to real-life settings

The third limitation is that the questionnaire was only available online. As a result, people that do not know how to use the internet were excluded from this study, which could have influenced the results.

The fourth and last limitation of this study concerns the scale used to measure language variety. The scale was deemed unreliable, even though an existing and supported scale was used to measure language variety. Possibly, the translation of the scale from English to Dutch could have led to a different interpretation of the scale's items.

5.5 Conclusion

In conclusion, this research was able to provide important insights about citizens' channel preference for WhatsApp, and possible about other SNPs as well. First, as is argued in this paper, SNPs and their instant messaging features could possibly revolutionize the public service delivery industry, and would greatly benefit the quality and price of service. Second, it appears that in order to be able to successfully deploy instant messaging features of SNPs as service channels, it is first necessary to inform citizens about the option to use instant messaging features of SNPs as service channels, and to steer them towards these channels. Last, while there may not be a digital divide regarding the adoption of electronic channels, there may be a digital divide regarding the way in which electronic channels are used.

References

Abhyankar, A. (2011). Social networking sites. *SAMVAD*, 2, 18-21.

Adams, D. A., Nelson, R. P., & Todd, P. A. (1992). Perceived usefulness, ease of use, and usage of information technology: A replication. *MIS Quarterly, 16*(2), 227-247.

Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behaviour.* Englewood Cliffs, New Jersey: Prentice Hall.

Albesa, J. G. (2007). Interaction channel choice in a multichannel environment, an empirical study. *International journal of bank marketing, 25*(7), 490-506.

AudienceProject (2016). Device Study 2016 App Usage Across the Nordics. Retrieved from www.audienceproject.com

Australian Government (2005). *Australians' use of and satisfaction with e-government services.* Barton, Australia: Commonwealth of Australia.

Bagley, M. N., & Mokhtarian, P. L. (2002). The impact of residential neighborhood type on travel behavior: A structural equations modeling approach. *The Annals of Regional Science, 36*(2), 279-297.

Baldewsingh, R. S. (2017, August 29). Voortzetting WhatsApp (open letter). *Gemeente Den Haag.* Retrieved from https://denhaag.raadsinformatie.nl/document/5614996/2/RIS297705%20Voortzetting%20WhatsApp?_sp=f87148b9-c3dd-4042-beb0-873902e2c2ac.1505126052379

Barth, M., & Veit, D. (2011). Electronic service delivery in the public sector: Understanding the variance of citizens' resistance. *System Sciences (HICSS), 2011 44th Hawaii International Conference on System Sciences*, 1-11.

Bertot, J. C., Jaeger, P. T., & Hansen, D. (2012). The impact of polices on government social media usage: Issues, challenges, and recommendations. *Government Information Quarterly, 29*(1), 30–40.

Bonsón, E., Torres, L., Royo, S., & Flores, F. (2012). Local e-government 2.0: Social media and corporate transparency in municipalities. *Government information quarterly, 29*(2), 123-132.

Boyd, M. D., & Ellison, N. B. (2008). Social network sites: Definition, history, and scholarship. *Journal of Computer-Mediated Communication, 13*(1), 210-230.

Brandtzæg, P.B. (2010). Towards a unified media-user typology (MUT): a meta-analysis and review of the research literature on media-user typologies. *Computers in Human Behavior, 26*(5), 940-956.

Brandtzæg, P. B., & Heim, J. (2011). A typology of social networking sites users. *International Journal of Web Based Communities, 7*(1), 28-51.

Butts, M. M., Lance, C. E., & Michels, L. C. (2006). The sources of four commonly reported cutoff criteria: What did they really say? *Organizational Research Methods, 9*(2), 202–220.

Carlson, J. R., & George, J. F. (2004). Media appropriateness in the conduct and discovery of deceptive communication: The relative influence of richness and synchronicity. *Group Decision and Negotiation, 13*(2), 191-210.

Carlson, J. R., & Zmud, R. W. (1994). Channel expansion theory: A dynamic view of media and information richness perceptions. *Academy of Management Best Papers Proceedings 1994*, 280-284.

Carlson, J. R., & Zmud, R. W. (1999). Channel expansion theory and the experiential nature of media richness perceptions. *Academy of management journal, 42*(2), 153-170.

CBS (2017). Bevolking; ontwikkeling in gemeenten met 100 000 of meer inwoners. Retrieved at July 17 2018 from: http://statline.cbs.nl/StatWeb/publication/?VW=T&DM=SLNL&PA=70748NED&D1=0,2,4,16,18,20,22,24&D2=a&D3=0&D4=a&D5=l&HD=090707-1905&HDR=T&STB=G4,G2,G1,G3

CBS (2018). Bevolking; onderwijsniveau; geslacht, leeftijd en migratieachtergrond. Retrieved at April 29 2018 from ttps://opendata.cbs.nl/statline/#/CBS/nl/dataset/82275NED/table?dl=8392

Chen, K., & Yen, D. C. (2004). Improving the quality of online presence through interactivity. *Information & Management, 42*(1), 217-226.

Choi, G., & Chung, H. (2013). Applying the technology acceptance model to social networking sites (SNS): Impact of subjective norm and social capital on the acceptance of SNS. *International Journal of Human-Computer Interaction, 29*(10), 619-628.

Cohen, J. (1988). *Statistical analysis for the behavioral sciences* (second edition). Hillsdale, USA: Lawrence Erlbaum.

Compeau, D. R., & Higgins, C. A. (1995). Computer self-efficacy: Development of a measure and initial test. *MIS quarterly*, 189-211.

Daft, R.L., & Lengel, R.H. (1984). Information richness: a new approach to managerial behavior and organizational design. In: Cummings, L.L. & Staw, B.M. (Eds.), *Research in organizational behavior 6*, 191-233. Homewood, IL: JAI Press.

Daft, R. L., & Lengel, R. H. (1986). Organizational information requirements, media richness and structural design. *Management Science, 32*(5), 554-571.

Davis, F.D. (1986). *A technology acceptance model for empirically testing new end-user information systems: theory and results*. Doctoral dissertation. MIT Sloan School of Management, Cambridge, MA.

Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User acceptance of computer technology: a comparison of two theoretical models. *Management science, 35*(8), 982-1003.

Dennis, A.R., & Kinney, S.T. (1998). Testing Media Richness Theory in New Media: The Effects of Cues, Feedback, and Task Equivocality. *Information Systems Research. 9*(3), 256–274.

Dooley, K. (2001). *Social research methods* (fourth edition). Upper Saddle River, New Jersey: Prentice Hall.

D'Urso, S. C., & Rains, S. A. (2008). Examining the scope of channel expansion: A test of channel expansion theory with new and traditional communication media. *Management Communication Quarterly, 21*(4), 486-507.

Ebbers, W. E., Jansen, M. G., Pieterson, W. J., & Van de Wijngaert, L. A. (2016a). Facts and feelings: The role of rational and irrational factors in citizens' channel choices. *Government information quarterly, 33*(3), 506-515.

Ebbers, W. E., Jansen, M. G., & Van Deursen, A. J. A. M. (2016b). Impact of the digital divide on e-government: Expanding from channel choice to channel usage. *Government information quarterly, 33*(4), 685-692.

Ebbers, W. E., Pieterson, W. J., & Noordman, H. N. (2008). Electronic government: Rethinking channel management strategies. *Government Information Quarterly, 25*(2), 181-201.

Emerce (2017, February 16). Social media in 2017: de laatste statistieken. Retrieved from; https://www.emerce.nl/research/social-media-2017-laatste-statistieken

Ferry, D. L., Kydd, C. T., & Sawyer, J. E. (2001). Measuring facts of media richness. *Journal of Computer Information Systems, 41*(4), 69-78.

Field, A. (2013). *Discovering statistics using IBM SPSS statistics* (fourth edition). London, United Kingdom: Sage.

Fishbein, M., & Ajzen, I. (1975*). Belief, attitude, intention, and behavior: An introduction to theory and research.* Reading, MA: Addison-Wesley.

Frambach, R. T., Roest, H. C., & Krishnan, T. V. (2007). The impact of consumer internet experience on channel preference and usage intentions across the different stages of the buying process. *Journal of interactive marketing, 21*(2), 26-41.

Fountain, J. E. (2001). Paradoxes of Public Customer Service. *Governance: An International Journal of Policy and Administration, 14*(1), 55-73.

Fox, J. (2002). Bootstrapping regression models: An R and S-Plus companion to applied regression. Retrieved June 8, 2018, from http://cran.r-project.org/doc/contrib/Fox-Companion/appendix-bootstrapping.pdf

Fulk, J., Schmitz, J., & Steinfield, C. W. (1990). A social influence model of technology use. In J. Fulk & C. W. Steinfield (Eds.), *Organizations and communication technology*. Newbury Park / London / New Delhi: Sage Publications.

Galbraith, J. R. (1973). *Designing complex organizations*. London, United Kingdom: Addison-Wesley.

Games, P. A. (1984). Data transformations, power, and skew: A rebuttal to Levine and Dunlap. *Psychological Bulletin, 95*(2), 345–347.

Gao, S., Mokhtarian, P., & Johnston, R. (2008). Nonnormality of data in structural equation models. *Transportation Research Record: Journal of the Transportation Research Board*, 116-124.

Gelman, A., & Hill, J. (2006). *Data analysis using regression and multilevel/hierarchical models* (first edition). Cambridge, United Kingdom: Cambridge university press.

Gunawardena, C. N. (1995). Social presence theory and implications for interaction and collaborative learning in computer conferences. *International journal of educational telecommunications, 1*(2), 147-166.

Hiltz, S.R., & Turoff, M. (1978). *The network nation: Human communication via computer*. Reading, MA: Addison-Wesley.

Hoyle, R. H., & Panter, A. (1995). Writing about structural equation models. In R. H. Hoyle (Eds.), *Structural equation modeling: Concepts, issues, and applications,* 158-176. Thousand Oaks, CA: Sage.

Hu, P. J., Chau, P. Y., Sheng, O. R. L., & Tam, K. Y. (1999). Examining the technology acceptance model using physician acceptance of telemedicine technology. *Journal of management information systems, 16*(2), 91-112.

Kaplan, A. M., & Haenlein, M. (2010). Users of the world, unite! The challenges and opportunities of Social Media. *Business horizons, 53*(1), 59-68.

Karren, R. J., & Barringer, M. W. (2002). A review and analysis of the policy-capturing methodology in organizational research: Guidelines for research and practice. *Organizational Research Methods, 5*(4), 337–361.

Kiesler, S. (1986). The hidden messages in computer networks. *Harvard Business Review, 64*(1), 46-40.

Kiesler, S., Siegel, J., & McGuire, T. W. (1984). Social psychological aspects of computer-mediated communication. *American Psychologist, 39*(10), 1123-1134.

King, R. C., & Xia, W. (1997). Media appropriateness: Effects of experience on communication media choice. *Decision Sciences, 28*(4), 877-910.

Kok, D. (2013). *Sociale gemeenten: De kracht van nieuwe media* (first edition). Delft, The Netherlands: Eburon.

Lee, A. S. (1994). Electronic mail as a medium for rich communication - an empirical investigation using hermeneutic interpretation. *MIS Quarterly, 18*(2), 143-157.

Lee, S., & Koubek, R. J. (2010). The effects of usability and web design attributes on user preference for e-commerce web sites. *Computers in Industry, 61*(4), 329-341.

Legris, P., Ingham, J., & Collerette, P. (2003). Why do people use information technology? A critical review of the technology acceptance model. *Information & Management, 40*(3), 191–204.

Loewenthal, K. M. (1996). *An introduction to psychological tests and scales.* London, United Kingdom: UCL Press Limited.

Morrison, R. L., Stettler, K., & Anderson, A. E. (2004). Using vignettes in cognitive research on establishment surveys. *Journal of Official Statistics Stockholm, 20*(2), 319–340.

Pieterson, W. J. (2009). *Channel choice: Citizens' channel behavior and public service channel Strategy.* Doctoral dissertation. Enschede: University of Twente.

Pieterson, W. J., & Ebbers, W. E. (2008). The use of service channels by citizens in the Netherlands: Implications for multi-channel management. *International Review of Administrative Sciences, 74*(1), 95-110.

Pieterson, W. J., & Johnson, Z. (2011). Multi-Channel Management: Recent Developments in PES and E-Government: Analytical Paper. *PES to PES Dialogue, The European Commission Mutual Learning Programme for Public Employment Services*, 1-36.

Pieterson, W. J., Teerling, M., & Ebbers, W. E. (2008). Channel perceptions and usage: Beyond media richness factors. *Lecture Notes in Computer Science, 5184*, 219-230.

Pieterson, W. J., Teerling, M., Klievink, B., Lankhorst, M., Janssen, M., & Boekhoudt, P. (2007). *Multichannel Management: De stand van zaken.* Enschede: Telematica Instituut.

Pieterson, W. J., & van Dijk, J. A. G. M. (2007). Channel choice determinants: An exploration of the factors that determine the choice of a service channel in citizen initiated contacts. *ACM International Conference Proceeding Series, 228*, 73–182.

Preece, J., & Shneiderman, B. (2009). The reader-to-leader framework: Motivating technology-mediated social participation. *AIS transactions on human-computer interaction, 1*(1), 13-33.

Reddick, C. G. (2005). Citizen-initiated contacts with government: Comparing phones and websites. *Journal of E-government, 2*(1), 27-53.

Reddick, C. G. (2010). Comparing citizens' use of e-government to alternative service channels. *International Journal of Electronic Government Research, 6*(2), 54–67.

Rice, R. E., & Love, G. (1987). Electronic emotion: Socioemotional content in a computer-mediated communication network. *Communication research, 14*(1), 85-108.

Sevinc, I., & D'Ambra, J. G. (2004). Extending media richness theory: the influence of a shared social construction. In: T. Leino, T. Saarinen & S. Klein, (Eds.), *Proceedings of the Twelfth European Conference on Information Systems, Turku School of Economics and Business Administration, Turku, Finland.* 1767-1779.

Shaughnessy, J. J., Zechmeister, E. B. & Zechmeister, J.S. (2011). *Research methods in psychology* (first edition). New York City, New York: The McGraw-Hill Companies.

Sheer, V. C., & Chen, L. (2004). Improving media richness theory: A study of interaction goals, message valence, and task complexity in manager-subordinate communication. *Management Communication Quarterly, 18*(1), 76-93.

SmartInsights (2018, March 28). Global social media research summary 2018. Retrieved from https://www.smartinsights.com/social-media-marketing/social-media-strategy/new-global-social-media-research/

Socialmediameetlat (2016, October 6). Gemeenten op social media: minder snel, meer actie. Retrieved from http://www.socialmediameetlat.nl/?p=670

Stevens, J. P. (1984). Outliers and influential data points in regression analysis. *Psychological Bulletin, 95*(2), 334.

Kaissidis, A., Padeliadu, S., & Sideridis, G. D. (1998). Comparison of the theories of reasoned action and planned behaviour. *British Journal of Educational Psychology, 68*(4), 563-580.

Trevino, L., Lengel, R., & Daft, R. (1987). Media symbolism, media richness, and media choice in organizations. *Communication Research, (14),* 553-574.

Trevino, L. K., Webster, J., & Stein, E. W. (2000). Making connections: Complementary influences on communication media choices, attitudes, and use. *Organization Science, 11*(2), 163-182.

Tu, C. H. (2000). On-line learning migration: from social learning theory to social presence theory in a CMC environment. *Journal of network and computer applications, 23*(1), 27-37.

Tu, C. H. (2002). The measurement of social presence in an online learning environment. *International Journal on E-learning, 1*(2), 34-45.

Tu, C. H., & McIsaac, M. (2002). The relationship of social presence and interaction in online classes. *The American journal of distance education, 16*(3), 131-150.

Van Deursen, A. J A. M.., Helsper, E. J., & Eynon, R. (2016). Development and validation of the Internet Skills Scale (ISS). *Information, Communication & Society, 19*(6), 804-823.

Van Deursen, A. J. A. M., & Pieterson, W.J. (2006). The internet as a service channel in the public sector. *Paper presented at the ICA Conference, Dresden, Germany.*

van Deursen, A. J. A. M, & Van Dijk, J. A. G. M. (2008). Using online public services: a measurement of citizens' operational, formal, information and strategic skills. In *International Conference on Electronic Government*, 195-206. Springer, Berlin, Heidelberg.

Van Deursen, A. J A. M., Van Dijk, J. A. G. M., & Ebbers, W. E. (2006). Why E-Government usage lags behind: Explaining the gap between potential and actual usage of electronic public services in the Netherlands. *Lecture Notes in Computer Science, 4084*, 269-280.

Van Deursen, A. J. A. M., & Van Dijk, J. A. G. M. (2009). Improving digital skills for the use of online public information and services. *Government information quarterly, 26*(2), 333-340.

Van Dijk, J. A. G. M. (2006). *The Network Society : Social Aspects of New Media Network Society* (Second edition). London, United Kingdom: Thousand Oaks.

Van Dijk, J. A. G. M. , Ebbers, W. E., & Van de Wijngaert, L. A. (2014). E-Government. *The International Encyclopedia of Digital Communication & Society*, Wiley.

Venkatesh, V. (2000). Determinants of perceived ease of use: Integrating control, intrinsic motivation, and emotion into the technology acceptance model. *Information systems research, 11*(4), 342-365.

Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management science, 46*(2), 186-204.

Wangpipatwong, S., Chutimaskul, W., & Papasratorn, B. (2005). A Pilot Study of Factors Affecting the Adoption of Thai eGovernment Websites. *The International Workshop on Applied Information Technology, Bangkok, Thailand,* 15-21.

Wangpipatwong, S., Chutimaskul, W., & Papasratorn, B. (2008). Understanding Citizen's Continuance Intention to Use e-Government Website: a Composite View of Technology Acceptance Model and Computer Self-Efficacy. *Electronic Journal of e-Government, 6*(1).

Weick, K. E. (1979). Educational organizations as loosely coupled systems. *Administrative Science Quarterly, 21*, 1-19.

WhatsApp (n.d.). Features. Retrieved at October 18 2017 from https://www.whatsapp.com/features/

Wink, D. M. (2010). Social networking sites. *Nurse educator, 35*(2), 49-51.

Appendices

Appendix A – Questionnaire

Introduction

Goedendag, hartelijk dank voor uw deelname aan dit onderzoek. Het doel van dit onderzoek is om meer te weten te komen over **hoe u contact heeft met uw gemeente**. Meerdere vragen zullen gaan over de chatdienst **WhatsApp**. Met uw gegevens kunnen we het contact tussen u en uw gemeente aanzienlijk verbeteren.

Wanneer u deze vragenlijst volledig invult, **maakt u kans op een bol.com bon** t.w.v. €20,-. Er worden **twee bonnen** verloot. Aan het eind van de vragenlijst kunt u uw e-mailadres hiervoor invullen.

Het onderzoek zal ongeveer 7 minuten duren. Er zal betrouwbaar met uw gegevens worden omgegaan en de resultaten worden geheel **anoniem** verwerkt.

Nogmaals hartelijk dank!

Britt van der Wal, student Communication Science, University of Twente

Control questions

Q0.1 Ik ben 18 jaar of ouder.
- Ja
- Nee

Q0.2 Ik heb de introductie gelezen en weet dat mijn antwoorden anoniem blijven.
- Ga verder naar de enquête

Opmerking: Wanneer de respondent jonger is dan 18 jaar zal de enquête beëindigt worden

Items Personal Characteristics

Q1 Wat is uw geslacht?

- Man
- Vrouw

Q2 Hoe oud bent u?

- 18–25 jaar
- 25–35 jaar
- 35–45 jaar
- 45–55 jaar
- 55–65 jaar
- 65 jaar of ouder

Q3 Wat is uw hoogst voltooide opleiding?

- Lbo, vso (lts, leao, vbo, huishoudschool, ambachtsschool)
- Vmbo, lwoo (inclusief theoretische leerweg)
- Mavo (ulo, mulo)
- Havo (mms)
- Vwo, gymnasium, atheneum, (hbs, lyceum)
- Mbo (mts, meao, middenstandsdiploma, pdb, mba)
- Hbo (hts, heao, kweekschool, associate degree)
- Universitaire opleiding, inclusief postdoctorale opleidingen en promotieonderzoek

Q4 Maakt u gebruik van WhatsApp?

- Ja, ik maak gebruik van WhatsApp
- Nee, ik maak geen gebruik van WhatsApp

Opmerking: Wanneer 'Nee' geselecteerd wordt wordt de enquête beindigt
Opmerking: Wanneer 'Ja' geselecteerd wordt zal de respondent alle vragen beantwoorden

Q5 Om welke reden(en) gebruikt u WhatsApp?

- Om contact te houden met vrienden
- Om contact te houden met familie
- Om contact te houden met collega's
- Om contact te zoeken met bedrijven
- Om contact te zoeken met de overheid
- Voor WhatsApp Buurtpreventie
- Anders, namelijk –open veld-

Q6 Hoe vaak maakt u gebruik van de volgende WhatsApp functies?

- Sturen van tekst
- Sturen van emoticons
- Sturen van afbeeldingen
- Sturen van animaties (GIFs)
- Sturen van audioberichten
- Sturen van video's

Opmerking: De respondent wordt gevraagd om bij elke functie op een schaal van 1 tot 5 aan te geven hoe vaak de functie gebruikt wordt. De schaal: 1 = Nooit, 2 = Bijna nooit, 3 = Soms, 4 = Vaak, 5 = Zeer vaak

Items Channel Experience

Q7 Ik heb veel ervaring met WhatsApp.

- Helemaal mee oneens
- Mee oneens
- Niet eens/niet oneens
- Mee eens
- Helemaal mee eens

Q8 Ik ben kundig met WhatsApp.

- Helemaal mee oneens
- Mee oneens
- Niet eens/niet oneens
- Mee eens
- Helemaal mee eens

Q9 Ik begrijp hoe ik de meeste functies van WhatsApp moet gebruiken.

- Helemaal mee oneens
- Mee oneens
- Niet eens/niet oneens
- Mee eens
- Helemaal mee eens

Q10 Ik voel me comfortabel met het gebruiken van WhatsApp.

- Helemaal mee oneens
- Mee oneens
- Niet eens/niet oneens
- Mee eens
- Helemaal mee eens

Q11 Ik vind dat ik een beginneling ben met WhatsApp.

- Helemaal mee oneens
- Mee oneens
- Niet eens/niet oneens
- Mee eens
- Helemaal mee eens

Items Perceived Channel Characteristics

Immediacy of feedback

Q12 Met WhatsApp verzend en ontvang ik snel informatie.

- Helemaal mee oneens
- Mee oneens
- Niet eens/niet oneens
- Mee eens
- Helemaal mee eens

Q13 Met WhatsApp kan ik snel reageren op berichten van anderen.

- Helemaal mee oneens
- Mee oneens
- Niet eens/niet oneens
- Mee eens
- Helemaal mee eens

Q14 Door WhatsApp ben ik in staat om snel berichten te sturen naar anderen.

- Helemaal mee oneens
- Mee oneens
- Niet eens/niet oneens
- Mee eens
- Helemaal mee eens

Personalization

Q15 Op WhatsApp kan ik aan anderen duidelijk maken wat mijn gevoelens en emoties zijn.

- Helemaal mee oneens
- Mee oneens
- Niet eens/niet oneens
- Mee eens
- Helemaal mee eens

Q16 Op WhatsApp kan ik mijn taalgebruik aanpassen aan de persoon met wie ik chat.

- Helemaal mee oneens
- Mee oneens
- Niet eens/niet oneens
- Mee eens
- Helemaal mee eens

Q17 Ik vind WhatsApp een persoonlijk kanaal.

- Helemaal mee oneens
- Mee oneens
- Niet eens/niet oneens
- Mee eens
- Helemaal mee eens

Language variety

Q18 Op WhatsApp heb ik keuze uit genoeg symbolen en emoticons.

- Helemaal mee oneens
- Mee oneens
- Niet eens/niet oneens
- Mee eens
- Helemaal mee eens

Q19 Op WhatsApp heb ik geen moeite om uit te drukken wat ik precies bedoel.

- Helemaal mee oneens
- Mee oneens
- Niet eens/niet oneens
- Mee eens
- Helemaal mee eens

Q20 Op WhatsApp kan ik gebruik maken van humor.

- Helemaal mee oneens
- Mee oneens
- Niet eens/niet oneens
- Mee eens
- Helemaal mee eens

Number of cues

Q21 WhatsApp biedt voor mij genoeg functies aan. (Functies zijn bijvoorbeeld het versturen van foto's of audioberichten)

- Helemaal mee oneens
- Mee oneens
- Niet eens/niet oneens
- Mee eens
- Helemaal mee eens

Usefulness

Q22 Ik vind het nuttig om WhatsApp te gebruiken.

- Helemaal mee oneens
- Mee oneens
- Niet eens/niet oneens
- Mee eens
- Helemaal mee eens

Q23 Door WhatsApp is het voor mij makkelijker om contact te (onder)houden met anderen.

- Helemaal mee oneens
- Mee oneens
- Niet eens/niet oneens
- Mee eens
- Helemaal mee eens

Q24 Door WhatsApp kan ik op een efficiënte manier communiceren met anderen.

- Helemaal mee oneens
- Mee oneens
- Niet eens/niet oneens
- Mee eens
- Helemaal mee eens

Ease of use

Q25 Ik vind WhatsApp gemakkelijk om te gebruiken.

- Helemaal mee oneens
- Mee oneens
- Niet eens/niet oneens
- Mee eens
- Helemaal mee eens

Q26 Ik vond het makkelijk om te leren hoe WhatsApp werkt.

- Helemaal mee oneens
- Mee oneens
- Niet eens/niet oneens
- Mee eens
- Helemaal mee eens

Q27 Ik vind WhatsApp prettig om te gebruiken.

- Helemaal mee oneens
- Mee oneens
- Niet eens/niet oneens
- Mee eens
- Helemaal mee eens

Items Computer Self-efficacy

Internet self-efficacy

Q28 Het gebruiken van het internet is geen probleem voor mij.

- Helemaal mee oneens
- Mee oneens
- Niet eens/niet oneens
- Mee eens
- Helemaal mee eens

Q29 Ik vind dat het moeilijk is om het internet te gebruiken.

- Helemaal mee oneens
- Mee oneens
- Niet eens/niet oneens
- Mee eens
- Helemaal mee eens

Q30 Ik weet veel over het gebruiken van het internet.

- Helemaal mee oneens
- Mee oneens
- Niet eens/niet oneens
- Mee eens
- Helemaal mee eens

Q31 Ik kan het internet gebruiken zonder hulp van anderen.

- Helemaal mee oneens
- Mee oneens
- Niet eens/niet oneens
- Mee eens
- Helemaal mee eens

Mobile self-efficacy

Q32 Het gebruiken van een mobile telefoon is geen probleem voor mij.

- Helemaal mee oneens
- Mee oneens
- Niet eens/niet oneens
- Mee eens
- Helemaal mee eens

Q33 Ik weet hoe ik Apps kan installeren op een mobile telefoon.

- Helemaal mee oneens
- Mee oneens
- Niet eens/niet oneens
- Mee eens
- Helemaal mee eens

Q34 Ik vind het makkelijk om Apps te gebruiken op een mobile telefoon.

- Helemaal mee oneens
- Mee oneens
- Niet eens/niet oneens
- Mee eens
- Helemaal mee eens

Q35 Ik weet hoe ik op een mobile telefoon de locatie (GPS functie) uit kan zetten.

- Helemaal mee oneens
- Mee oneens
- Niet eens/niet oneens
- Mee eens
- Helemaal mee eens

Items Task Characteristics (Scenario's)

S1	**Melding + geen urgentie**
	Je merkt op dat een lantaarnpaal in je straat kapot is: het licht brandt niet meer. Je wilt dit melden bij je gemeente, zodat zij de lantaarnpaal kunnen repareren.
S2	**Melding + hoge urgentie**
	Je merkt op dat een lantaarnpaal in je straat kapot is: het licht brandt niet meer. Je wilt dit melden bij je gemeente, zodat zij de lantaarnpaal kunnen repareren. Je hebt haast, want door de kapotte lantaarnpaal is een gevaarlijk verkeerspunt slecht belicht. Je wilt dus dat je gemeente dit zo snel mogelijk te weten komt.
S3	**Melding + lage urgentie**
	Je merkt op dat een lantaarnpaal in je straat kapot is: het licht brandt niet meer. Je wilt dit melden bij je gemeente, zodat zij de lantaarnpaal kunnen repareren. Je hebt geen haast, want door de andere lantaarnpalen is de straat nog goed verlicht.
S4	**Statusupdate + geen urgentie**
	Je gaat verhuizen binnen je gemeente. Vorige week heb je dit doorgegeven aan je gemeente, en je zou binnen drie dagen een bevestiging krijgen zodra de verhuizing was verwerkt. Je hebt alleen nog geen bericht ontvangen. Je neemt contact op met je gemeente om te vragen of je verhuizing al is verwerkt.
S5	**Statusupdate + hoge urgentie**
	Je gaat verhuizen binnen je gemeente. Vorige week heb je dit doorgegeven aan je gemeente, en je zou binnen drie dagen een bevestiging krijgen zodra de verhuizing was verwerkt. Je hebt alleen nog geen bericht ontvangen. Je neemt contact op met je gemeente om te vragen of je verhuizing al is verwerkt. Je hebt haast, want je gaat al over een paar dagen verhuizen. Je wilt het antwoord dus snel weten.
S6	**Statusupdate + lage urgentie**
	Je gaat verhuizen binnen je gemeente. Vorige week heb je dit doorgegeven aan je gemeente, en je zou binnen drie dagen een bevestiging krijgen zodra de verhuizing was verwerkt. Je hebt alleen nog geen bericht ontvangen. Je neemt contact op met je gemeente om te vragen of je verhuizing al is verwerkt. Je hebt geen haast, want je gaat pas over twee weken verhuizen. Je hoeft het antwoord dus niet meteen te weten.
S7	**Advies + geen urgentie**
	Samen met een paar buren organiseer je een buurtfeest. Jij hebt de taak gekregen om een vergunning aan te vragen voor dit feest. Je hebt hier geen ervaring mee, je wilt dus weten van je gemeente hoe je dit kunt regelen.

S8	**Advies + hoge urgentie**
	Samen met een paar buren organiseer je een buurtfeest. Jij hebt de taak gekregen om een vergunning aan te vragen voor dit feest. Je hebt hier geen ervaring mee, je wilt dus weten van je gemeente hoe je dit kunt regelen. Je hebt haast, omdat de datum voor het buurtfeest al snel dichterbij komt. Je wilt het antwoord dus snel weten.
S9	**Advies + lage urgentie**
	Samen met een paar buren organiseer je een buurtfeest. Jij hebt de taak gekregen om een vergunning aan te vragen voor dit feest. Je hebt hier geen ervaring mee, je wilt dus weten van je gemeente hoe je dit kunt regelen. Je hebt geen haast, omdat het buurtfeest pas over een half jaar is. Je hoeft het antwoord dus niet meteen te weten.
S10	**Informatie + geen urgentie**
	Er wordt aan de weg gewerkt in je straat. Je hebt hier geen informatie over ontvangen en wilt weten wanneer de werkzaamheden klaar zijn. Je neemt contact op met je gemeente om meer informatie te krijgen over het werkschema.
S11	**Informatie + hoge urgentie**
	Er wordt aan de weg gewerkt in je straat. Je hebt hier geen informatie over ontvangen en wilt weten wanneer de werkzaamheden klaar zijn. Je neemt contact op met je gemeente om meer informatie te krijgen over het werkschema. Je hebt haast, omdat je snel wilt weten wanneer alles weer bereikbaar is. Je wilt het antwoord dus snel weten.
S12	**Informatie + lage urgentie**
	Er wordt aan de weg gewerkt in je straat. Je hebt hier geen informatie over ontvangen en wilt weten wanneer de werkzaamheden klaar zijn. Je neemt contact op met je gemeente om meer informatie te krijgen over het werkschema. Je hebt geen haast, omdat alles verder nog wel goed bereikbaar is. Je hoeft het antwoord dus niet meteen te weten.

Opmerking: *Besloten is dat de respondent drie scenario's te zien krijgt, er zijn dus vier scenario-groepen samengesteld. Bij deze blokken is rekening gehouden met het idee dat: a) de respondent drie verschillende taken te zien krijgt en b) drie verschillende maten van urgentie te zien krijgt. De respondent wordt toegewezen aan een willekeurig blok:*

S1 + S5 + S9

S4 + S8 + S12

S7 + S11 + S3

S10 + S2 + S6

Q36 Hoe waarschijnlijk is het dat u de volgende kanalen zou gebruiken om deze situatie op te lossen?

Via de telefoon met uw gemeente

- Zeer onwaarschijnlijk
- Onwaarschijnlijk
- Niet waarschijnlijk noch onwaarschijnlijk
- Waarschijnlijk
- Zeer waarschijnlijk

Via de service balie van uw gemeente

- Zeer onwaarschijnlijk
- Onwaarschijnlijk
- Niet waarschijnlijk noch onwaarschijnlijk
- Waarschijnlijk
- Zeer waarschijnlijk

Via de website van uw gemeente

- Zeer onwaarschijnlijk
- Onwaarschijnlijk
- Niet waarschijnlijk noch onwaarschijnlijk
- Waarschijnlijk
- Zeer waarschijnlijk

Via WhatsApp met uw gemeente

- Zeer onwaarschijnlijk
- Onwaarschijnlijk
- Niet waarschijnlijk noch onwaarschijnlijk
- Waarschijnlijk
- Zeer waarschijnlijk

Opmerking: Deze vraag zal gesteld worden na elk vignette.
Opmerking: De verschillende kanalen zullen in een willekeurige volgorde weergeven worden.

Complexity

Q37 Als u deze situatie in het echt zou moeten oplossen, hoe ingewikkeld zou u dit dan vinden?

- Zeer ingewikkeld
- Ingewikkeld
- Niet ingewikkeld of eenvoudig
- Eenvoudig
- Zeer eenvoudig

Control Question

Q38 Was u ervan op de hoogte dat de meeste gemeenten in Nederland ook bereikbaar zijn via WhatsApp?

- Ja, dit wist ik
- Nee, dit wist ik niet

End Questionnaire

Hartelijk dank voor uw tijd en aandacht, dit is het einde van de enquête. Als u kans wilt maken op een Bol.com bon ter waarde van €20,- kunt u hier uw e-mailadres invullen:

Uw e-mail adres zal uitsluitend gebruikt worden voor de verloting van de Bol.com bon. U kunt dit veld leeg laten als u niet deel wilt nemen aan de loting.

Hartelijk dank voor uw deelname aan dit onderzoek!
Mocht u naar aanleiding van dit onderzoek vragen hebben, dan kunt u contact opnemen via de onderstaande contactgegevens.

Met vriendelijke groet,

Britt van der Wal (b.vanderwal-1@student.utwente.nl)

Appendix B – Weighting Factors

Gender	Dutch population	Sample	Weighting factor
Male	50,0%	27,1%	1.85
Female	50,0%	72,9%	0.69

Age	Dutch population	Sample	Weighting factor
15 – 25	14,8%	40,6%	0.37
25 – 35	15,0%	16,1%	0.94
35 – 45	14,6%	6,8%	2.15
45 – 55	17,9%	18,8%	0.95
55 – 65	15,9%	10,9%	1.46
65+	21,8%	16,8%	1.30

Education	Dutch population	Sample	Weighting factor
Low	31,7%	8,9%	3.56
Middle	39,3%	39,6%	0.99
High	29,1%	51,6%	0.56

Mean weighting factors: 1.35, standard deviation 0.91

Appendix C – Skewness and Kurtosis Values

Variable	Skewness	Kurtosis
WhatsApp Experience	-1,324	2,811
Immediacy of Feedback	-1,933	5,733
Personalization	-0,621	0,900
Number of Cues	-1,511	4,136
Usefulness	-0,995	2,369
Ease of Use	-1,199	3,680
Internet Self-efficacy	-1,288	2,607
Mobile Self-efficacy	-1,542	2,820
WhatsApp Channel Preference	0,705	-0,784

Appendix D – Welch's ANOVA - Number of Cues

Welch's ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Text	Between Groups	23,327	2	11,663	31,961	,000
	Within Groups	69,336	190	,365		
	Total	92,663	192			
Emoticons	Between Groups	73,784	2	36,892	39,719	,000
	Within Groups	176,475	190	,929		
	Total	250,259	192			
Images	Between Groups	32,395	2	16,197	23,561	,000
	Within Groups	130,621	190	,687		
	Total	163,016	192			
Animations (GIF)	Between Groups	27,010	2	13,505	11,461	,000
	Within Groups	223,882	190	1,178		
	Total	250,891	192			
Audio messages	Between Groups	27,639	2	13,820	14,605	,000
	Within Groups	179,781	190	,946		
	Total	207,420	192			
Videos	Between Groups	22,589	2	11,294	17,203	,000
	Within Groups	124,738	190	,657		
	Total	147,326	192			

Multiple Comparisons

Games-Howell

Dependent Variable	(I) Age categories	(J) Age categories	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Text	Young adults	Adults	,334*	,104	,006	,08	,58
		Seniors	,930*	,165	,000	,53	1,33
	Adults	Young adults	-,334*	,104	,006	-,58	-,08
		Seniors	,596*	,188	,007	,14	1,05
	Seniors	Young adults	-,930*	,165	,000	-1,33	-,53
		Adults	-,596*	,188	,007	-1,05	-,14
Images	Young adults	Adults	,719*	,171	,000	,31	1,13
		Seniors	1,625*	,237	,000	1,05	2,20
	Adults	Young adults	-,719*	,171	,000	-1,13	-,31
		Seniors	,906*	,275	,005	,25	1,57
	Seniors	Young adults	-1,625*	,237	,000	-2,20	-1,05
		Adults	-,906*	,275	,005	-1,57	-,25
Videos	Young adults	Adults	,528*	,142	,001	,19	,87

		Seniors	1,059*	,180	,000	,62	1,50
	Adults	Young adults	-,528*	,142	,001	-,87	-,19
		Seniors	,531*	,205	,031	,04	1,02
	Seniors	Young adults	-1,059*	,180	,000	-1,50	-,62
		Adults	-,531*	,205	,031	-1,02	-,04
Emoticons	Young adults	Adults	,687*	,184	,001	,25	1,13
		Seniors	,834*	,193	,000	,37	1,30
	Adults	Young adults	-,687*	,184	,001	-1,13	-,25
		Seniors	,147	,218	,778	-,37	,67
	Seniors	Young adults	-,834*	,193	,000	-1,30	-,37
		Adults	-,147	,218	,778	-,67	,37
Animations (GIF)	Young adults	Adults	,673*	,165	,000	,28	1,07
		Seniors	,865*	,172	,000	,45	1,28
	Adults	Young adults	-,673*	,165	,000	-1,07	-,28
		Seniors	,192	,193	,584	-,27	,65
	Seniors	Young adults	-,865*	,172	,000	-1,28	-,45
		Adults	-,192	,193	,584	-,65	,27
Audio messages	Young adults	Adults	,460*	,146	,006	,11	,81
		Seniors	,877*	,168	,000	,47	1,28
	Adults	Young adults	-,460*	,146	,006	-,81	-,11
		Seniors	,416	,198	,097	-,06	,89
	Seniors	Young adults	-,877*	,168	,000	-1,28	-,47
		Adults	-,416	,198	,097	-,89	,06

*. The mean difference is significant at the 0.05 level.

Appendix E – Linear Regression

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	,365[a]	,133	,129	1,01977	,133	29,419	1	191	,000

a. Predictors: (Constant), Internet Self-efficacy

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	30,593	1	30,593	29,419	,000[b]
	Residual	198,625	191	1,040		
	Total	229,218	192			

a. Dependent Variable: Overall Channel Preference Website

b. Predictors: (Constant), Internet Self-efficacy

Coefficients[a]

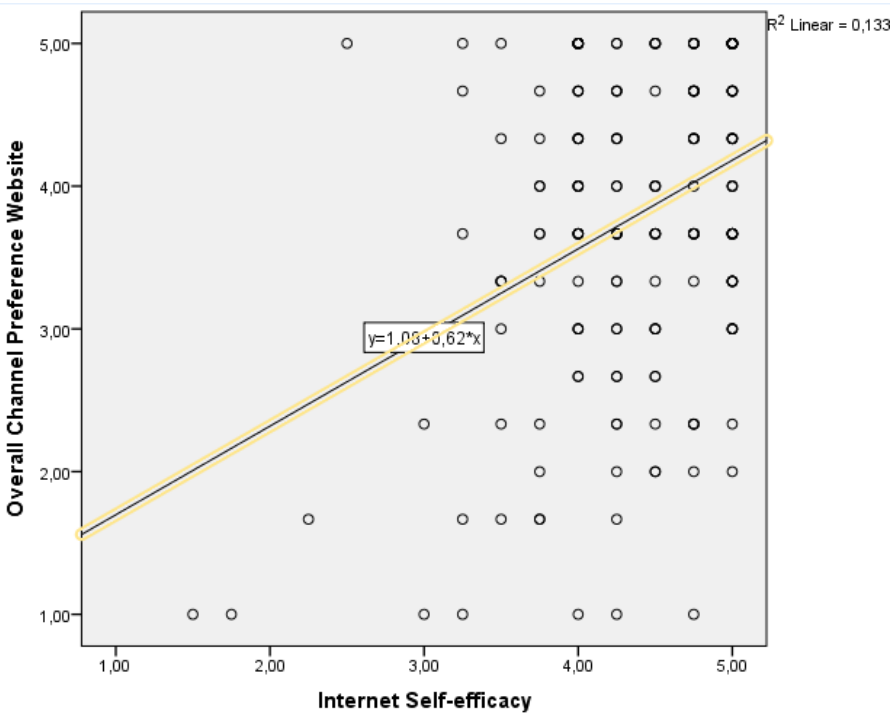
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1,077	,502		2,147	,033
	Internet Self-efficacy	,621	,115	,365	5,424	,000

a. Dependent Variable: Overall Channel Preference Website

Bootstrap for Coefficients

Model		Bootstrap[a]					
		B	Bias	Std. Error	Sig. (2-tailed)	95% Confidence Interval	
						Lower	Upper
1	(Constant)	1,077	,031	,574	,066	,034	2,300
	Internet Self-efficacy	,621	-,007	,127	,001	,344	,848

a. Unless otherwise noted, bootstrap results are based on 1000 bootstrap samples


R2 Linear = 0,133
y=1,08+0,62*x
Overall Channel Preference Website
Internet Self-efficacy
5,00
4,00
3,00
2,00
1,00
1,00
2,00
3,00
4,00
5,00