“Simply download the App...!”: The influence of personality traits on the download intention of festival-related apps

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Abstract

Over 6 million mobile apps are available in app stores nowadays. Yet, our understanding of the factors influencing users' intention to download these apps is mostly focused on usability and user aspects. While such traditional predictors have been extensively studied, the potential impact of personality traits on app download intention remains largely unexplored. Studying the link between personality traits and app downloads enhances our understanding of how people make digital choices. Researching the influence of personality traits on app downloads could improve app design and customization to suit diverse user personalities and experiences. This study aims to bridge this gap by investigating the added value of personality traits alongside traditional predictors in predicting app download intention.

Drawing upon a sample of young adults, a comprehensive survey design integrated traditional predictors and personality traits in a stepwise regression model to investigate the added value of our human characteristics on the download intention of a festival app. The traditional predictors consisted of basic needs, subjective norms, attitude towards using, perceived usefulness, and performance, while the personality traits were defined as Extraversion, Conscientiousness, Agreeableness, Neuroticism, and Openness. Through a self-administered survey, the data of 136 respondents were analyzed. Results underscored the significant role of the traditional predictors, such as basic needs, attitude towards using, and performance expectancy. However, the big five personality traits of Extraversion, Conscientiousness, Agreeableness, Neuroticism, and Openness failed to increase the predictive power of the model.

The study gives important insights on how to position personality traits in research models for app adoption and advises future research to focus on specific types of apps when predicting download behavior. App marketing campaigns should focus on the basic needs of their customers, their attitude towards the app, and the performance users expect it to have. Researchers should pay attention to the difference between hedonic and utilitarian applications, as the different types of apps have different relations to personality traits. The findings have important implications for developers, marketers, and researchers who want to improve the targeting of marketing campaigns or optimize app designs.

Keywords: App download, personality traits, festival app, usability, user, utilitarian app, traditional predictors.

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1. Introduction

In today's digital age, there seems to be an app for almost everything. Apps rose to the top of the modern communications hierarchy and became everyone's daily companion for nearly every possible task. From ordering food to booking a taxi, tracking fitness, and meditating, we rely on apps to make our lives easier and more convenient. As of 2023, there are more than 6 million apps available to download in leading app stores (Anthony, 2023). Therefore, smartphones became our daily companions. According to van Endert & Mohr (2020), nearly 80% of adults nowadays own a smartphone, while the average duration of being actively engaged with your smartphone ranges from around 5 to 9 hours every day. In many restaurants today, downloading a specific app is required to make a payment or place an order for meals. Given how deeply integrated these apps are into our daily lives, this naturally raises concerns about user privacy and security (Fife & Orjuela, 2012). With the increased usage of smartphones, the world of apps is expanding rapidly, and it has become more important than ever to examine the factors that influence our decisions to download and use these apps.

The convenience that apps offer us is undeniable. However, the increasing use of apps also comes with a potential trade-off regarding security risks. Many apps require us to provide personal information such as our location, gender, and age. Most users have around twenty-five accounts in online applications that require a password (Scott & Wynne, 2016). With so many accounts to handle, users often opt for a one size fits all approach, commonly known as password fatigue (Al-Slais & El-Medany, 2022). When having the same password for the same applications, it becomes increasingly easier for cyber-attacks to succeed and steal account information of multiple apps at once. Additionally, Widowsson (2016) identified that in 95% of cyber-attacks, the human element is the contributing factor. Despite these risks, we continue to download and use apps without much thought or consideration, often in a trade-off for personal or financial benefits (Shklovski et al., 2014).

There has been a significant amount of research into the adoption of technology, including the adoption of apps. One of the most widely used models for understanding technology adoption is the Technology Acceptance Model (TAM), which suggests that ease of use and perceived usefulness are key factors that influence our decisions to adopt new technology (Davies, 1989). Next to that, there is also the UTAUT model by Venkatesh et al. (2003), which integrates eight different models to explain technology usage and acceptance in a unified version. Since technology evolves rapidly, Uğur & Turan (2019) adapted these

theories for mobile applications, to integrate them into a new theoretical model to be more applicable to our app-driven world. They discovered that basic needs affected perceived benefit and performance expectancy. Especially younger people were influenced by subjective norms and their surrounding environment, affecting their adoption behavior based on observation or directions from conversations (Uğur & Turan, 2019). But, are these the only predictors of our adoption behavior?

Regarding app adoption, many factors and motives are evident. In past research, technological factors are seen as the main predictors of app adoption. Nevertheless, they might not explain all the reasons for what drives us towards downloading an application, since human emotions are also part of our decision-making process (Baumeister et al., 2006). Additionally, by understanding how personality traits play a part in app downloading, developers and designers could create more personalized and engaging user experiences. The same goes for app recommendation systems. Personality traits could be incorporated into algorithms to improve their accuracy and relevance.

Exploring the relationship between personality traits and app download behavior can contribute to our understanding of human behavior and decision-making in the digital age. It can shed light on the psychological factors that drive individuals to choose and engage with specific apps, offering insights into the intersection of technology and human psychology. Thus, researching the influence of personality traits on app download behavior can inform the design and customization of apps to better fit individual users. Different personality traits may be associated with distinct design preferences, such as visual aesthetics, interaction styles, and content presentation. By considering these traits, app developers can create user interfaces and experiences that resonate with different user personalities.

Therefore, also our personal characteristics could be underlying motives that influence our app adoption behavior. In that context, Xu et al. (2016) identified that personality traits like Extraversion or Openness have a significant influence on the different types of apps we want to download. Some users pursue growth and development needs, while others prefer safety and protection (Zhang et al., 2018). Thus, a person’s focus on the presence or absence of gaining advantages could make them more prone to downloading apps, than a focus on avoidance or negative consequences.

Existing research has proposed possible factors that influence the adoption of mobile apps. Nevertheless, it has not taken into account how different personality traits or characteristics can become important variables to explain our app download behavior. Based on these aforementioned studies and theories, the objective of this research is to provide

evidence-based answers to the following question: “To what extent do personality traits, next to usability factors, add to the intention to download a festival app?”. Many studies have been conducted taking into account technological and user aspects, but they have not combined these views with the influence of personality traits of different users.

The relevance of this study lies in combining existing traditional predictors of app adoption with personality traits, to explain app download behavior better. By examining how far personal characteristics drive our decisions to download and use apps, we can better understand the reasons behind our download intentions and make more informed decisions about the apps we choose to use. Furthermore, the research has practical relevance for app providers who can optimize their features and products, as well as for policymakers to increase awareness and adopt appropriate policies for the app development industry.

2. Theoretical Framework

2.1 App download intention

Smartphone technology research has been on the rise in recent years. According to Aldhaban (2012), smartphone technology evolves rapidly, which is why also research on the adoption of smartphone technology is increasingly gaining more popularity. Mobile apps for smartphones not only provide consumers with various online communication tools, but they also help users to perform various user functions, including banking, shopping, or mobile payment (Dhiman et al., 2020). Additionally, Zhou and Lu (2011) identified that the advantages of mobile Apps lie in their unique characteristics of ubiquity, immediacy, and localization. Ubiquity gives users the ability to access the internet and therefore also mobile apps from anywhere in the world, while immediacy and localization allow users to get optimized information and services based on their location and preference in real time (Zhou & Lu, 2011). Thus, there is clear evidence of the benefit of picking up this fast-evolving technology.

For this study, the focus will be on a utilitarian app in a festival context. The reasons behind our download intention focused mostly on traditional predictors as past research pointed out. Traditional predictors of mobile apps contain mostly technology and user aspects, first investigated in existing research by Davis (1989) or Venkatesh et al. (2003). They have been the main factors to explain technology acceptance and use. In addition, Uğur and Turan (2019) put together an acceptance model, that combined all relevant existing studies into a new model, specifically for mobile applications. The established factors influencing app download intentions consisted of concepts about basic needs, attitudes, and perceived norms. Nevertheless, these predictors may not capture the whole picture behind our download intentions, as well as our vulnerability to privacy risks.

Smartphone apps come with many advantages, nevertheless, they also serve the potential for exposing us to possible privacy and security risks. Wei et al. (2012) observed that the danger lies in the mixture of both personal and entertainment apps installed on the same device. Therefore, users also share their private information, like bank account details or contacts. Additionally, Filkins et al. (2016) explored that healthcare data, combined with an individual's financial profile and social behavior patterns is becoming more valuable than ever as it opens new doors for both targeted marketing, as well as for criminals profiting from using the whole identity from someone to commit cyber frauds. Apps can potentially collect sensitive data from users, access personal data or even use the camera or microphone without

permission (Wei et al., 2012). As previously mentioned, in 95% of cyberattacks, the human element is the contributing factor (Widdowson, 2016). Thus, preventing the adoption of certain apps can be essential for minimizing potential security risks.

This human element influencing our download intentions and susceptibility toward security issues could be explained by different personality traits. Subsequently, the big five personality traits were identified in recent research to influence our app download behavior (Agyei et al., 2020). Xu et al. (2016) observed that the big five personality traits have a significant impact on the adoption of different types of apps. Additionally, Alalwan et al. (2016) found significant evidence for the influence of personality concepts such as self-efficacy in the context of the adoption of mobile banking apps. Correspondingly, personality traits could have an impact on the download intention of a utilitarian app in the context of a festival.

Existing research on technology acceptance and adoption developed several theoretical models to explain and predict users' adoption of new technologies, but they might not be the only predictors of our download behavior. To investigate how significant personality traits can influence our download intentions, we will first look at how traditional predictors would affect the adoption of a utilitarian festival app. The previously mentioned mobile applications acceptance model identified five different factors that influence the behavioral intention to download an app, which will serve as a starting point to formulate our hypotheses.

2.2 Traditional Predictors

The main factors to explain technology acceptance and use, as observed by Davis (1989) and Venkatesh et al. (2003), are referred to as traditional predictors. They will form the first line of variables to predict app download intention. For this study, we investigate a utilitarian app in a festival context. Technology has evolved drastically since the publishment of such theories. Hence, Uğur and Turan (2019) reviewed over 250 sources and put together an acceptance model, that proved to be empirically evident and applicable to the new technology of mobile applications. The five identified variables include basic needs, subjective norms, attitude towards using, perceived usefulness, and performance expectancy. These predictors will be defined and explained in the following paragraphs.

2.2.1 Basic Needs (BN)

The concept of basic needs was first mentioned in the Uses and Gratifications theory by Blumler and Katz (1974). First, this theory was mostly used for radio and TV audiences, while it is now applied to new technology products and applications (Uğur & Turan, 2019). Blumler and Katz (1974) argue that people seek gratification, meaning pleasure or enjoyment, to satisfy their basic needs and urges. According to uses and gratifications, the media and their content are considered sources of influence. Audience members actively select these media and individual differences, motivation, societal structure, attitude, and involvement media the potential effects of the media (Rubin, 2009).

Furthermore, also individual background characteristics can influence one's desires and needs (Blumler & Katz, 1974). UGT can explain the psychological factors behind users' acceptance of technology, but nowadays there are way more media options than during the time of TV broadcasts (Uğur & Turan, 2019). In that regard, Ezumah (2013) identified that the main reasons for college students' media or smartphone usage were keeping in touch with friends, sharing photos, and entertainment purposes. That shows that the basic needs of users are related to the environment they find themselves in. Apps that do not correspond to individual needs are not likely to be adopted, which means the process of adopting a new mobile application starts with individual desires to fulfill personal needs (Uğur & Turan, 2019). Accordingly, the first hypothesis to predict app download intention will be the influence of basic needs.

H1: Higher perception of the fulfillment of basic needs will have a positive influence on app download intention.

2.2.2 Subjective Norms (SN)

Subjective norms are part of the psychology-based theory of planned behavior, as invented by Ajzen (1991). The theory suggests that intentions to perform behavior are highly predicted by attitudes towards the behavior, subjective norms, and perceived behavioral control (Ajzen, 1991). According to Uğur and Turan (2019), belief is a mediating variable between subjective norms and actual behavior. Subjective norms are mostly seen in social settings of pressure, which refers to the pressure to perform or not to perform a certain behavior (Ajzen, 1991). Such situations are very likely to occur especially for younger people, who thrive on feelings of belonging to certain groups (Gilligan, 2000). People might adjust

their behavior, depending on their perception of what others think about them (Vallerand et al., 1992). Thus, subjective norms might have a direct influence on app download intentions.

H2: Subjective norms will have a positive influence on app download intention

2.2.3 Attitude towards using (AU)

The Technology Acceptance Model, as proposed by Davis (1989), suggests that attitudes towards using technology are strongly influencing the behavioral intention to do so. When users have positive attitudes towards a certain technology, they are more likely to adopt them for their usage. Additionally, Cheong and Park (2005) analyzed university students' internet acceptance and found that attitude towards using technology was the most significant factor in predicting behavioral intention. Thus, attitude seems to be a factor in newer technologies. Uğur and Turan (2019) concluded, that also in terms of mobile applications, behavioral intention is formed by positive and negative beliefs, which form users' attitudes towards performing a particular behavior.

H3: Attitude towards using will have a positive influence on app download intention

2.2.4 Perceived Usefulness (PU)

An additional key variable to predict download intention is perceived usefulness. It predicts the degree to which technology can be of use to individuals, which is also linked to the different tasks that should be performed (Davies, 1989). Since the TAM was so successful in explaining user acceptance of technology, its concepts have been used in a variety of new research that included the adoption of advanced technologies, such as apps (Uğur & Turan, 2019). Perceived usefulness here explains how far an app could help users to perform a certain task better than other behaviors. If an app is likely to increase the performance of users, they are more prone to downloading the application.

H4: Perceived usefulness will have a positive influence on app download intention

2.2.5 Performance Expectancy (PE)

One essential variable that originated from the Unified theory of acceptance and use of technology by Venkatesh et al. (2003) is performance expectancy. By including eight different models into one unified theory, Venkatesh et al. (2003) analyzed not only why we accept new technologies, but also why we use them. In their study, performance expectancy was the strongest predictor of intention to use technology and was defined as the degree to which an individual believes that using a certain technology will help him to improve performance (Venkatesh et al., 2003). Therefore, the perceived performance of an app might affect the intention to download it, as many of them are also designed to be functional and convenient for users (Tractinsky & Lowengart, 2007).

H5: Performance expectancy will have a positive influence on app download intention

In line with previous research, all these variables are supposed to have positive effects on our intention to download mobile applications. Nevertheless, they could not be the only predictors of our behavior, since personal characteristics have a significant impact on our decision-making (Baumeister et al., 2006). In that context, Wang et al. (2012) observed that personality traits play a significant role in how students use Social Networking Sites. Agreeable individuals were more inclined to comment on others' posts, while narcissistic users updated their status more frequently for self-presentation purposes (Wang et al., 2012). Hence, personality traits could also be a direct indicator of app download intention.

2.3 Personality traits

Personality can be defined as a set of characteristics that establish the differences between people's thoughts, feelings, and actions (Devaraj et al., 2008). According to Walczuch and Lundgren (2004) personality consists of all our traits and behaviors that make us unique. Furthermore, personality includes people's attitudes, beliefs, cognitions and behavior to reflect our thoughts and actions (Devaraj et al., 2008). The Big Five Personality scale has been used extensively in scientific research to analyze the five most common personality factors: extraversion, agreeableness, conscientiousness, neuroticism and openness (Urueña et al., 2018). Furthermore, prior research indicated that these categories provide the most comprehensive theoretical explanations of personality (Agyei et al., 2020). As outlined by Xu et al. (2016), the big five personality traits have a significant impact on the adoption of

different types of apps. Also, Alalwan e,t al. (2016) found compelling evidence for the influence of personality concepts on download intentions, which was analyzed in the context of mobile banking apps. Accordingly, this study will test the direct influence of the big five personality traits on app download intention for a utilitarian festival app and analyze whether it adds value to the proposed model (Fig.1), next to the traditional predictors.

2.3.1 Extraversion (E)

According to Xu et al. (2016), Extraversion is frequently associated with being sociable, talkative and active. People who are high in Extraversion, highly value warm interpersonal relationships and tend to make friends in offline settings and keep in touch with them online (Ross et al., 2009). They use social networking sites, such as Facebook, more frequently and also tend to belong to significantly more groups (Ross et al., 2009). Similarly, Extroverts are less concerned about the sharing of private information in online settings and are more likely to be attracted by the potential benefits of applications (Pentina et al., 2016). They are in general more adventurous in online and offline settings, which could lead to them being more prone to downloading mobile applications (Agyei et al., 2020).

H6: Extraversion will have a positive influence on app download intention

2.3.2 Conscientiousness (C)

Conscientiousness relates to traits such as self-control, self-discipline, being organized and reliable (Agyei et al., 2020). Since each of these qualities is directly related to intrinsic motivation, conscientiousness is linked to high academic or professional achievement (Xu et al., 2016). Moreover, highly conscientious people are less likely to use unproductive or distracting apps (Xu et al., 2016). An indicator that they could give more thought to the download process than for example extraverts. According to Devaraj et al. (2008), conscientious individuals are more critical of the performance of technology for a certain task, meaning they would only adopt it if it clears their performance. They do not value creativity as high as productivity, as it could lead to distraction instead of improvement (Xu et al., 2016). That is why a utilitarian app in a festival context, that caters to a specific purpose, could be attractive to download for conscientious people, while apps for leisure might not be considered an option. In that regard, Agyei et al. (2020) stressed that conscientiousness has motivational consequences, which is why it can be considered a direct predictor of behavior.

Given their attention to detail and organized nature, conscientious people are more prone to downloading applications, if they do fulfill the requirements to enhance performance.

H7: Conscientiousness will have a positive influence on app download intention.

2.3.3 Agreeableness (A)

Agreeableness can be related to Individuals who are kind, likable, considerate, forgiving, cooperative (Devaraj et al., 2008). They tend to build trusting and warm relationships while maintaining harmony and avoiding conflict (Agyei et al., 2020). In addition, (Pentina et al., 2016) described agreeable individuals as more likely to value technology that encourages collaboration, cooperation and task accomplishment. Furthermore, they have more trust in technology and are less suspicious about potential drawbacks (Pentina et al., 2016). Thus, they tend to be more willing to trust service providers in exchange for the service providers' trust in them, as Zhou and Lu (2011) explained. They seem to care more about the positive elements of technology, rather than the drawbacks it could have (Agyei et al., 2020). Since agreeable people are less likely to judge others' actions and try to be cooperative, they might be willing to download apps more easily than others (Pentina et al., 2016).

H8: Agreeableness will have a positive influence on app download intention

2.3.4 Neuroticism (N)

The personality trait of Neuroticism is characterized by anxiety, self-consciousness and impulsiveness (Pentina et al., 2016). Moreover, they have unstable emotions, high amounts of pessimism and low self-esteem, as well as a fear of new experiences (Zhou & Lu, 2011). Looking at technology, Agyei et al. (2020) identified that neuroticism makes people perceive new technology as frightening and demanding. Also (Xu et al., 2016) explained that neurotic people become stressed by new technologies and services, which hurt their behavioral control, resulting in reduced intentions to adopt new technologies. This could lead to them ignoring the potential benefits of new technology. Furthermore, neurotic people tend to focus on the negative side effects of mobile app downloads, which could increase their perceived privacy concerns (Pentina et al., 2016). Thus, their impulsive behavior, combined with a pessimistic attitude could result in a rejection for downloading mobile applications.

H9: Neuroticism will have a negative influence on app download intention

2.3.5 Openness to new experiences (O)

People with the trait of Openness to new experiences are mostly independent, broad-minded, imaginative and willing to try new things (Agyei et al., 2020). Such individuals tend to be less conforming to norms and have a widespread different interests (Pentina et al., 2016). Thus, they have a high likelihood of becoming innovators and early adopters of new technology and services (Xu et al., 2016). Next to that they also have a predisposition for seeking out more detailed information, which could make them look out for potential benefits of certain technology (Agyei et al., 2020). According to (Pentina et al., 2016) people with high openness to new experiences do not worry as much about the sharing of information, which in the context of app adoption, could make them more prone to downloading an application without much consideration. Additionally, they are more prone to trusting service providers with their private information, since they focus on the potential usefulness of certain applications and how they could improve their experience (Zhou & Lu, 2011). In conclusion, they should be more expected to download a mobile application, when they get the chance to.

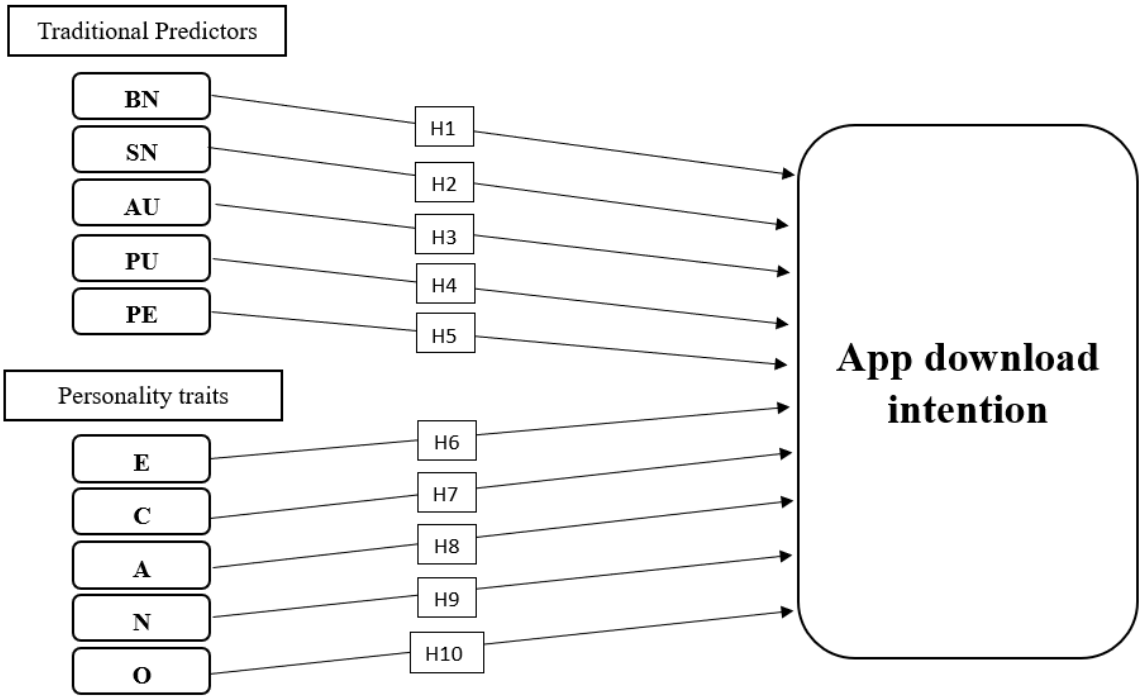
H10: Openness to new experiences will have a positive influence on app download intention

2.3.6 Conceptual model

Overall, it is expected that personality traits will have an added value toward app download intention. They are predicted to increase the explained variance of the proposed research model and add new variables to app adoption research. The traditional predictors are, in line with previous research, predicted to explain app download intention well and be the main drivers for app adoption.

Figure 1

Preliminary research model



Note: BN = Basic needs; SN = Subjective norms; AU = Attitude towards using; PU = Perceived usefulness; PE = Performance expectancy; E = Extraversion; C = Conscientiousness; A = Agreeableness; N = Neuroticism; O = Openness.

Table 1

Overview of formulated hypotheses

Hypothesis number	Independent variable	Hypothesis statement
1	Basic needs	Higher perception of the fulfillment of Basic needs will have a positive influence on app download intention
2	Subjective norms	Subjective norms will have a positive influence on app download intention
3	Attitude towards using	Attitude towards using will have a positive influence on app download intention
4	Perceived usefulness	Perceived usefulness will have a positive influence on app download intention
5	Performance expectancy	Performance expectancy will have a positive influence on app download intention
6	Extraversion	Extraversion will have a positive influence on app download intention
7	Conscientiousness	Conscientiousness will have a positive influence on app download intention
8	Agreeableness	Agreeableness will have a positive influence on app download intention
9	Neuroticism	Neuroticism will have a negative influence on app download intention
10	Openness to new experiences	Openness to new experiences will have a positive influence on app download intention

3. Methodology

3.1 Research design

In a quantitative research design, this study examined how far personality traits influence the intention to download a festival app, next to common usability factors. The festival context was chosen because of its attractiveness for a younger audience (Hutton et al., 2014). That way the target population of young adults would be interested in downloading such an application. In the specific festival scenario, participants were introduced to a festival trip with their friends, in which they were recommended to download the official app for the festival, which came with a list of features (see Appendix A). Since a utilitarian app was chosen, the app focused on common usability aspects that are relevant in a festival context. The full app scenario will be introduced in the procedure section.

3.2 Participants

This study focused on students and young adults between the age of 18-32. This target group was specifically chosen due to the essential role of young adults in the diffusion and acceptance of technology (Uğur & Turan, 2019). Younger generations are born into a world of new technology that enhances our communication and interaction; thus, they highly influence the expectation and acceptance of app technology (Uğur & Turan, 2019). Since students were the primary target audience, the study chose a high age range of 18-32 to also include master's or bachelor's students of older age. The study was reviewed and approved by the Ethics committee of the University of Twente. After that, the survey was distributed on various social media channels, including Instagram, Reddit and WhatsApp. The various social media posts asked participants to share the survey to increase the number of participants. Participants who do not own a smartphone were excluded from the study, as that makes them unable to download mobile apps.

Following the snowball and convenience sampling, 204 responses were collected. 66 responses only resulted in partial answers and had to be deleted from the dataset. Furthermore, 2 more responses had to be excluded due to an age range of 51 and 53, which excludes them from the target audience. That resulted in 136 responses which were processed for further analysis (Table 2). 60% of the participants were female, while 38.5% were male and 1.5% referred to non-binary. The mean age of participants was 23 years with most participants being between 21 and 25 years old (75%). Most respondents were students with a

bachelor's degree (62.2%), while 24.4% of respondents were at High School level. Only a small proportion of respondents obtained a master's degree (10.5%) and 2.9% of participants had a vocational level.

Table 2

Demographics

		N (136)	%
Gender:			
	Male	52	38.5%
	Female	81	60%
	Non-binary	3	1.5%
Age			
	18	2	1.4%
	19	4	2.9%
	20	8	5.9%
	21	18	13.3%
	22	17	12.5%
	23	26	19.2%
	24	20	14.8%
	25	21	15.5%
	26	6	4.4%
	27	5	3.7%
	28	2	1.4%
	29	2	1.4%
	30	3	2.2%
	31	1	0.7%
Education			
	High School	33	24.4%
	Vocational level	4	2.9%
	Bachelor's degree	84	62.2%
	Master's degree	14	10.5%

3.4 Study procedure

For the study, a self-administered survey was created to measure the influence of the independent variables from the two constructs personality traits and traditional predictors on the dependent variable download intention. At first, participants were introduced to the nature of the study, as well as the purpose and scope of the study (Appendix A). Participants were not informed that the research focuses on the effect of personality traits on their download behavior, to prevent biases and not influence their decision-making. Furthermore, participants were informed about the estimated duration of the survey and that their participation is

completely anonymous. Ultimately, participants were asked to give their consent to participate in the survey and informed that they can withdraw at any time.
In the survey, participants were first asked to respond to questions related to their personality traits, starting with Extraversion and followed by Conscientiousness, Agreeableness, Neuroticism and Openness (Appendix B). Next up they were introduced to the Festival App scenario, followed by questions about their intention to download the app.

App Scenario:

"Imagine you planned a trip to a festival with your friends. You arrive perfectly prepared at the festival location and get in line to finally enter. While you wait in line you see a big banner in front of the entrance, highly recommend you to download the official app for your optimal festival experience. Next to that, you see a list of potential benefits the app has to offer:

"Simply download our new official festival app to upgrade your ultimate festival experience!"

- Detailed Festival Map with highlighted hotspots to improve wayfinding
- Get a 5% discount on specified food and beverages
- Timeline of festival acts and stages
- Live announcements for specific artists
- Find my friend's function
- "Drink Water" Reminder to stay hydrated
- and many more features!

The queue to get inside seems to move quickly. What will your decision be?

In the following, you will be asked questions about downloading this app."

At last, participants were asked to explain their download behavior, by responding to questions about the traditional predictors of basic needs, subjective norms, attitude towards

using, perceived usefulness and performance expectancy. After that, participants were thanked for their participation and informed about the contact details of the researcher in case of further questions.

3.4 Measures

3.4.1 Traditional measures

The traditional predictors, as well as the dependent variable behavioral intention, were extracted from the aforementioned research study by Uğur & Turan (2019). The study includes all important concepts of the prevalent usability and technology research models, such as the Technology acceptance model by Davis (1989) and the UTAUT model by Venkatesh et al. (2003). Based on these theories Uğur & Turan (2019) applied their model specifically to the context of mobile apps. The established variables were basic needs, subjective norms, attitude towards using, perceived usefulness and performance expectancy. All items were adjusted to indicate that they are referring to the festival app. Furthermore, the wording of the items was also modified, since users were not actively downloading an app, meaning they had to predict their behavior. Each scale was measured using a five-point Likert scale ranging from “strongly disagree” to “strongly agree”.

The basic needs scale included five items and measured how well the respondents perceived basic needs were fulfilled by the festival app. An example statement for this subscale is “I think the services offered by the festival app would meet my needs”. A Cronbach’s Alpha value of α= .85 indicated high reliability. The next subscale for subjective norms also included 5 items. A Cronbach’s Alpha value of α= .73 was found for this subscale, indicating moderate reliability. An example statement for this subscale is “I believe my environment (friends) requires me to have the festival app”. The attitude towards using subscale included 5 items as well and had a Cronbach’s Alpha value of α= .85, indicating high reliability. An example statement of this subscale is “I think using the festival app would be a good idea”.

The next subscale related to Perceived usefulness and also had 5 items. An example statement for this subscale is “I think I save time using the festival app”. A Cronbach’s Alpha value of α= .87 was found for this subscale, indicating high reliability again. The last subscale for the traditional predictors was performance expectancy, with 5 different items. An example statement for this subscale is “I believe the festival app can help me do my activities better”.

A Cronbach's Alpha value of α= .87 was found for this subscale, also indicating high reliability. All constructs had an Eigenvalue above 2.04, confirming their validity.

To ensure the validity of the constructs a factor analysis was conducted. A Kaiser-Meyer-Olkin test found a significant value of 0.92, which indicated the data was suitable for factor analysis. After multiple rounds of factor analysis, the traditional predictors seemed to measure 4 underlying constructs. Basic needs, Attitude towards using and perceived usefulness all loaded on the same factor, which appeared logical. This could be caused by the origin and similarity of the variables. Both "Attitude towards using" and "Perceived usefulness" have been extracted from the Technology Acceptance Model by Davis (1989). All three variables, including basic needs, attitude towards using and perceived usefulness have a similar wording, making them highly correlated to each other.

Nevertheless, the research model will stick to these traditional predictor scales, since the previous study by Ugur and Turan (2019) validated them. This limitation will be further assessed in the discussion. The sufficient Cronbach alpha values for all traditional predictor scales indicated high reliability, proving the scales to be suitable for further analysis. "Subjective needs" and "Performance expectancy" on the other hand emerged from the Theory of planned behavior by Ajzen (1991) and the Unified theory of acceptance and use of technology by Venkatesh et al. (2003), which resulted in them loading on different factors. All constructs had an Eigenvalue above 2.04, confirming their validity.

3.4.2 Personality measures

The questions related to a person's personality traits were taken from the Big Five personality inventory by John & Srivastava (1999). These questions refer to the five personality traits of Extraversion, Conscientiousness, Agreeableness, Neuroticism and Openness. Each trait contained 5 questions and was measured by a five-point Likert scale ranging from "strongly disagree" to "strongly agree". The factor loadings and Cronbach's alpha (α) values together with the eigenvalues and explained variance for the different personality traits scales can be found in Table 3. A Kaiser-Meyer-Olkin test showed a value of 0.73, which can be considered significant and proved the data to be suitable for factor analysis.

The first sub-scale for Extraversion included 5 items and showed good reliability overall. An example statement of this subscale is "I feel comfortable around people" (John & Srivastava, 1999). A Cronbach's Alpha value of α= .86 was found for this subscale, indicating high reliability. The next sub-scale measured the concept of Conscientiousness with 5 different

items. A Cronbach's Alpha value of α= .79 was found for this subscale, also providing high reliability. An example statement for this subscale is "I make plans and commit to them" (John & Srivastava, 1999). The construct of Agreeableness was also measured by 5 different items and had a Cronbach's Alpha value of α= .60, indicating lower but acceptable reliability. However, dropping an item from the scale would have not increased the reliability. One example statement from this subscale is "I am helpful and unselfish with others" (John & Srivastava, 1999).

The fourth subscale referred to the personality traits Neuroticism and also included 5 items. An example statement for this subscale is "I am often worried about things" (John & Srivastava, 1999). A Cronbach's Alpha value of α= .80 was found for this subscale, indicating high reliability. The last sub-scale related to the construct of Openness to new experiences, also includes 5 items. An example statement of this subscale is "I am curious about many different things" (John & Srivastava ,1999). A Cronbach's Alpha value of α= .86 was found for this subscale, indicating high reliability. All constructs showed an Eigenvalue above 1.45, indicating that all constructs can be considered valid.

Table 3

Factor analysis for personality traits

Factor analysis - (personality traits)

	Factor	*Factor*	*Factor*	*Factor*	*Factor*
Statements	**1**	**2**	**3**	**4**	**5**
Extraversion 1 - I feel comfortable around people		0.75			
Extraversion 2 - I am energetic		0.68			
Extraversion 3 - I am passionate to others		0.54			
Extraversion 4 - I generate a lot of enthusiasm		0.72			
Extraversion 5 - I am outgoing, sociable		0.77			
Conscientiousness 1 - I pay attention to details			0.51		
Conscientiousness 2 - I am a reliable worker			0.75		
Conscientiousness 3 - I keep going until the task is finished			0.67		
Conscientiousness 4 - I do things efficiently			0.67		
Conscientiousness 5 - I make plans and commit to them			0.67		
Agreeableness 1 - I am helpful and unselfish with others					0.43
Agreeableness 2 - I have a forgiving nature					0.38
Agreeableness 3 - I am generally trusting others					0.61
Agreeableness 4 - I am considerate and kind to almost everyone					0.36
Agreeableness 5 - I like to cooperate with others					0.45
Neuroticism 1 - I am easily anxious	0.88				
Neuroticism 2 - I have frequent mood swings	0.65				
Neuroticism 3 - I am often worried about things	0.68				
Neuroticism 4 - I get nervous easily	0.65				
Neuroticism 5 - I am pessimistic	0.40				
Openness 1 - I often come up with new ideas				0.72	
Openness 2 - I am curious about many different things				0.54	
Openness 3 - I have an active imagination				0.67	
Openness 4 - I am a deep thinker				0.59	
Openness 5 - I value artistic, aesthetic experiences				0.45	
Cronbach alpha:	0.80	0.83	0.79	0.76	0.60
Explained variance:	10,70%	10,70%	9,30%	9,00%	5,80%
Eigenvalue:	2.69	2.66	2.31	2.25	1.45

4. Results

4.1 Descriptive statistics

Table 5 below shows the descriptive statistics of the variables in the dataset. All constructs were measured using a five-point Likert scale. It includes the traditional predictors, the personality traits, the demographics, as well as the dependent variable app download intention.

Starting with the traditional predictors, basic needs indicated a rather high mean score, together with low variability among the respondents (M = 3.9, SD = 1.08). Since answer options ranged from 1-5, with 2.5 being average, a mean of 3.9 can be considered high. For the standard deviations, all traditional predictors show low standard deviations around 1, meaning all scores were close around the mean. Subjective norms also had a higher-than-average score (M = 3.39, SD = 1.10). The variable Attitude towards using achieved similar results (M = 3.3, SD = 1.23). Perceived usefulness had a smaller standard deviation, demonstrating less variability in the responses, but still close to the mean (M = 3.75, SD = 0.98). Additionally, Perceived usefulness showed high mean scores as well, next to a moderate variation in responses (M = 3.53, SD = 1.14).

Nearly all personality scale traits indicated high mean scores, as well as healthy standard deviations that showed responses close to the mean score. All standard deviations have a value around 1, indicating that all scores were close around the mean. The variable Extraversion had a high mean score and a medium standard deviation (M = 3.91, SD = 0.99). The same goes for the personality trait Agreeableness (M = 3.91, SD = 0.88). Conscientiousness also found a high mean score and similar standard deviation (M = 3.94, SD = 0.99). Openness to new experiences showed the highest mean of all variables (M = 4.16, SD = 0.89). Given the fact that all traits regarding Extraversion, Conscientiousness, Agreeableness and Openness can be considered positive personality traits, the high mean scores showed that most respondents perceive themselves positively. Neuroticism marked the lowest mean score in the dataset (M = 3.08, SD = 1.19), indicating that the number of people who felt depressed or less social was lower than those who felt healthful.

Table 4

Descriptive Statistics

		Mean	*SD*
Constructs			
1	Basic needs	3.9	1.08
2	Subjective norms	3.39	1.10
3	Attitude towards using	3.30	1.23
4	Perceived usefulness	3.75	0.98
5	Performance expectancy	3.53	1.14
6	Extraversion	3.91	0.99
7	Conscientiousness	3.94	0.99
8	Agreeableness	3.91	0.88
9	Neuroticism	3.08	1.19
10	Openness	4.16	0.89
11	App Download intention	3.45	1.14

Note: All independent variables were measured using a 5-point Likert scale.

4.2 Correlations

Considering the correlation among the variables, as observed before basic needs, attitude towards using and perceived usefulness were highly correlated, since they measure similar constructs (r = .76). Furthermore, performance expectancy and subjective norms showed moderate to high correlations to the other traditional predictors with all r values above .44. Looking at the dependent variable app download intention, all traditional predictors displayed a high correlation. Basic needs, attitude towards using and perceived usefulness showed the highest correlation (r = > .73). Nevertheless, performance expectancy and subjective also showed a high and moderate correlation with the dependent variable (r = .66, r = .43). These results suggest, that all traditional predictors increase the intention to download the festival app.

The personality traits were not correlated with each other or the traditional predictors. Moreover, the personality traits had no or even negative correlations with the dependent variable app download intention. Conscientiousness had a negative correlation with app download intention (r = -0.8). Extraversion and Agreeableness also had a non-significant correlation (r = .10). The results indicated that the personality traits had no relationship to the dependent variable app download intention. The same goes for the demographics which showed no correlation to the traditional predictors or the personality traits. Since the

demographics also indicated no correlation to the dependent variable download intention, they were not included in the upcoming regression analysis, as they would not add any predictive power to the model. When calculating the correlations Gender was coded for 1 = male and 2 = female.

Table 5

Pearson's correlations for all variables

		BN	*SN*	*AT*	*PU*	*PE*	*EX*	*CS*	*AG*	*NT*	*OP*	*D1*	*D2*	*D3*	*DI*
Constructs															
1	Basic needs	1													
2	Subjective norms	.44*	1												
3	Attitude towards using	.76*	.52*	1											
4	Perceived usefulness	.75*	.45*	.73*	1										
5	Performance expectancy	.59*	.52*	.65*	.73*	1									
6	Extraversion	.06	.09	.09	.12	.14	1								
7	Conscientiousness	-.28	.08	.02	-.03	.07	.16	1							
8	Agreeableness	.15	.07	-.05	.23	.16	.20	.09	1						
9	Neuroticism	.02	.16	.12	-.05	.03	-.22	-.13	-.31	1					
10	Openness	.06	.24	.12	.12	.17	.15	.05	.22	.17	1				
11	Age	-.05	-.05	-.13	-.06	-.03	-.05	.05	-.06	-.05	-.04	1			
12	Gender	.15	.16	.04	.12	.12	-.06	-.03	-.01	.36	.19	-.12	1		
13	Educational level	-.08	-.01	-.04	-.10	-.08	.06	.05	.04	-.13	-.06	.27	-.18	1	
14	App Download intention	.77*	.43*	.78*	.73*	.66*	.10	-.08	.10	.03	<.00	-.10	.04	-.05	1

Note: *Correlation is significant at the 0.05 level. Gender (1=male / 2=female). D1 = Age, D2 = Gender, D3 = Educational level

4.2 Assumptions

Before the regression analysis, the statistical assumptions were tested. To test the assumption of normality, a histogram and a Q-Q plot (see Appendix D) were investigated. The results showed that the dependent variable download intention was not distributed normally across the mean, as it is slightly curved to the right. Also, the Q-Q plot showed that the independent variable is not normally distributed, as the scores were not following the diagonal line. Thus, we had to use a non-parametric test and a Kruskal-Wallis test was used. The null hypothesis that download intention is distributed equally for all traditional predictors and personality traits was tested using a Kruskal-Wallis test with an α of 0.05. Results showed that the null hypothesis could be rejected, $\chi 2(9, N = 136) = 210.96$, $p < .001$. Furthermore, the assumption of multicollinearity was checked. Table 6 shows that the independent variables do not highly correlate with each other. Only basic needs, attitude towards using and perceived

usefulness showed high correlations, as described earlier, since they measure similar constructs.

4.2 Regression analysis

To test the hypothesis that personality traits add to the intention to download the festival app, a step-wise regression analysis was conducted (Table 7). Through a step-wise regression analysis we can analyze the added value of the personality traits subsequently. As indicated earlier, the demographics were not included in the model due to their low correlation to the dependent variable app download intention, which is why they would not add any value to the model. Since the traditional predictors were established to be the main predictors for app download intention, we can include the personality traits in our model to see if they added more value. Thus, in the first block of the regression model, we added the traditional predictors. Subsequently, in the second block, we added the personality traits to check whether they increase the explanatory value of the overall model.

Model 1 included the traditional predictors in the regression model. To test our hypothesis that the traditional predictors add to the intention to download the festival app, we ran a regression analysis with basic needs, subjective norms, attitude towards using, perceived usefulness and performance expectancy as the independent variables and app download intention as the dependent variable, adjusted $R^2 = 0.70$. We found support for our hypothesis that a higher perception of fulfillment of basic needs would have a positive effect on app download intention, b = 0.42, SE = 0.09, t(126) = 4.530, p = <.00. Furthermore, we found no support for our hypothesis that subjective norms would have a positive effect on app download intention, b = -0.05, SE = 0.07, t(126) = -0.675, p = .90. Also attitude towards using had a positive effect on app download intention, b = 0.29, SE = 0.08, t(126) = 3.530, p = <00.

Additionally, we found no support for our hypothesis that perceived usefulness would have a positive effect on app download intention, b = 0.14, SE = 0.09, t(126) = 1.437, p = .15. At last, we found support for our hypothesis that performance expectancy would have a positive effect on app download intention, b = 0.19, SE = 0.08, t(131) = 2.332, p = .02. Overall, all hypotheses except for subjective norms and perceived usefulness, aligned with our expectations.

Table 6

Regression analysis results predicting App download intention

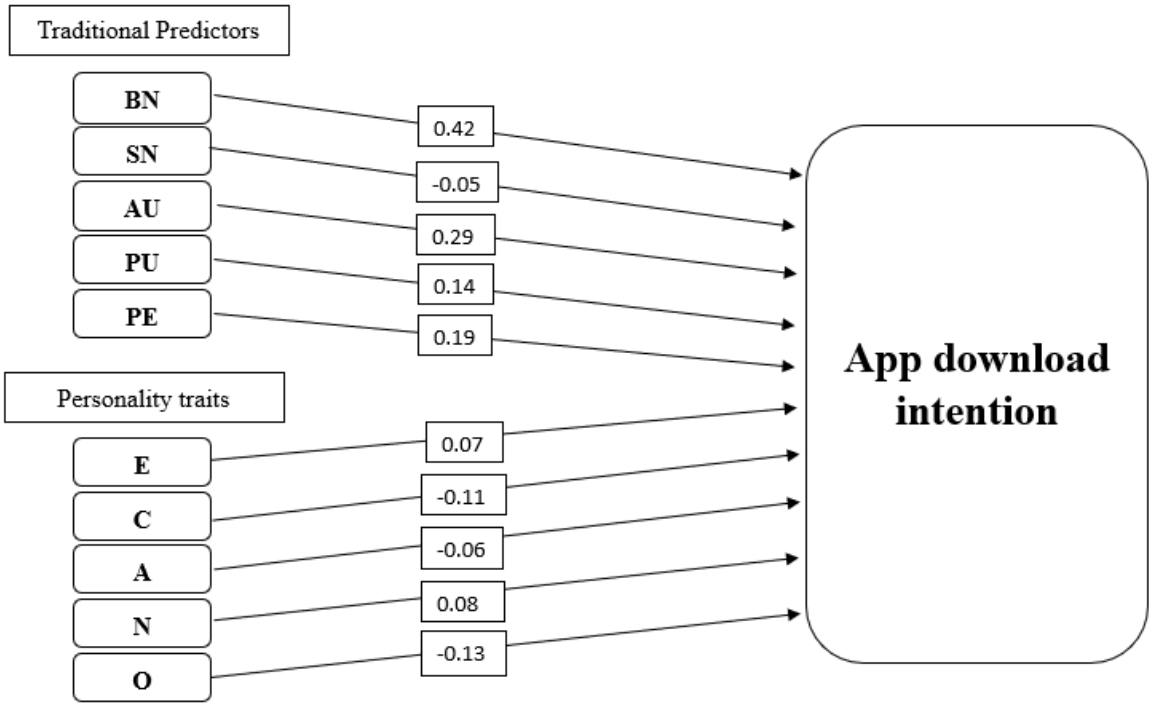
Model statistics	*Adj. R^2*	*F-value*	*Sig.*
Model 1: Traditional predictors	0.70	40.56	<0.00
Model 2: Traditional predictors + Personality traits	0.71	26.79	<0.00
Regression coefficients	*β*	*t-value*	*Sig.*
Model 1: Traditional Predictors (Δ Adj. R^2 = 0.70)			
Basic needs	0.42	4.53	<0.00
Subjective norms	-0.05	-0-68	0,01
Attitude towards using	0.29	3.53	<0.00
Perceived usefulness	0.14	1.44	0.15
Performance expectancy	0.19	2.33	0.02
Model 2: Traditional Predictors + Personality traits (Δ Adj. R2 = 0.01)			
Basic needs	0.40	4.39	<0.00
Subjective norms	-0.04	-0.59	0.55
Attitude towards using	0.33	4.03	<0.00
Perceived usefulness	0.10	1.05	0.29
Performance expectancy	0.21	2.64	0.01
Extraversion	0.07	1.22	0.26
Conscientiousness	-0.11	-1.79	0.08
Agreeableness	-0-06	-0.65	0.51
Neuroticism	0.08	1.35	0.18
Openness	-0.13	-1.74	0.08

The final model 2 added the personality traits variables. Against our expectations the model increased the explained variance only by 1%, resulting in a non-significant increase of variance (Adj. $R^2 = 0.01$). As such the overall explained variance of models 1 and 2 was $R^2 = 0.71$, with 70 % being explained by the traditional predictors and only 1% by the personality traits. We found no support for our hypothesis that Extraversion would have a positive effect on app download intention, b = 0.07, SE = 0.05, t(121) = 1.122, p = .26. Similarly, we found no support for our hypothesis that Conscientiousness would have a positive effect on app download intention, b = -0.11, SE = 0.06, t(121) = -1.787, p = .08. Also our hypothesis for a positive effect of agreeableness on app download intention found no support, b = -0.06, SE = 0.09, t(121) = -0.654, p = .51. Furthermore, we found no support for our hypothesis that Neuroticism would have a negative effect on app download intention, b = 0.08, SE = 0.05, t(121) = 1.353, p = .18. At last, we found no support for our hypothesis that Openness to new experiences would have a positive effect on app download intention, b = -0.13, SE = 0.07, t(121) = -1.743, p = .08.

In conclusion, most traditional predictors added as anticipated a lot of variance in the model and explained 70% of the variance in Model 1. All personality traits were against our expectations no significant predictors for app download intention and did not add significant value (1%) to the model. Further elaboration will be provided in the discussion section. The final research model is presented in Figure 2. Table 7 summarizes the proposed hypotheses and indicates whether they were supported by the analysis or not.

Figure 2

Final research model



Note: BN = Basic needs; SN = Subjective norms; AU = Attitude towards using; PU = Perceived usefulness; PE = Performance expectancy; E = Extraversion; C = Conscientiousness; A = Agreeableness; N = Neuroticism; O = Openness.

Table 7

Summary of hypothesis testing

Hypothesis number	Independent variable	Hypothesis statement	Supported
1	Basic needs	The level of Basic needs will have a positive influence on app download intention	Yes
2	Subjective norms	Subjective norms will have a positive influence on app download intention	No
3	Attitude towards using	Attitude towards using will have a positive influence on app download intention	Yes
4	Perceived usefulness	Perceived usefulness will have a positive influence on app download intention	No
5	Performance expectancy	Performance expectancy will have a positive influence on app download intention	Yes
6	Extraversion	Extraversion will have a positive influence on app download intention	No
7	Conscientiousness	Conscientiousness will have a positive influence on app download intention	No
8	Agreeableness	Agreeableness will have a positive influence on app download intention	No
9	Neuroticism	Neuroticism will have a negative influence on app download intention	No
10	Openness to new experiences	Openness to new experiences will have a positive influence on app download intention	No

5. Discussion

This research aimed to investigate the added value of personality traits next to usability factors regarding app download intention. The findings indicate that the traditional predictors explained app download intention well, while the personality traits failed to increase the variance of the model. Especially basic needs, attitude towards using, and performance expectancy were great predictors of app download intention and explained 70% of the variation in our model. The personality traits Extraversion, Conscientiousness, Agreeableness, Neuroticism and Openness did not increase the explained value of the model and only explained 1% of the variation in our model. The following section will discuss the findings of the paper, its limitations, as well as recommendations for future research.

5.1 Discussion of the Findings

5.1.1 Traditional predictors

Starting with the results of the traditional predictors, we can confirm that basic needs, attitude towards using and performance expectancy all had a positive effect on app download intention. Basic needs had the biggest impact on the dependent variable, followed by attitude towards using and performance expectancy. This confirms the findings by Ugur & Turan (2019), who included the basic needs variable in their model after it has not been prioritized in the latest technology acceptance research. Furthermore, performance expectancy has been confirmed to be an independent predictor of download intention. Unlike usual literature, Ugur & Turan (2019) explained that performance expectancy is not shaped by the performance of the innovator, but rather by the expected performance of the innovation, which this study confirmed.

Subjective norms on the other hand correlated negatively with the dependent variable app download intention. This could be explained by the specific research design this study followed, where participants were just presented with an app download scenario, instead of a real app that they would be able to download. This aspect will be further discussed in the limitations section. Moreover, also Ugur & Turan (2019) only observed a low effect of subjective norms on behavioral intention, which might be because participants may hesitate to admit that they were influenced by their friends or environment.

Further, Perceived usefulness did not have a positive effect on app download intention. Unlike the other variables, perceived usefulness is heavily related to the different functions of the app. If the majority of the mentioned functions are not perceived to be useful for a user, he would not adopt them. A user who never used an app at a festival in the past and had a great

experience, might not believe to need one after all, as his subjective memories of the event were already positive without an app. Furthermore, past studies by Ugur & Turan (2019) or Agyei et al. (2020) did not predict perceived usefulness to be a direct predictor. It rather influenced attitude towards using or was used in a different context. Agyei et al. (2020) investigated perceived usefulness in the context of mobile banking apps, which could be considered much more useful and important than a festival app.

5.1.2 Personality traits

Looking at the results of the personality traits, none of the proposed hypotheses could be accepted. Extraversion, Conscientiousness, Agreeableness, Neuroticism and Openness did not have a significant effect on the dependent variable download intention. Conscientiousness was hypothesized to have a positive effect on app download intention, but in the end, resulted in a negative relationship. That could be caused by the fact that the festival app was labeled as utilitarian, but could be considered to be low in functionality given the hedonic nature of a festival.

Additionally, Xu et al. (2016) observed that users who score high on Conscientiousness are less likely to adopt hedonic apps, such as photography or music. Therefore, a festival could be labeled as hedonic by conscientious users, since the features of the app were not perceived by them as productive. Moreover, Xu et al. (2016) stressed that different personality traits influence what type of app we download. Since the present study only described a fictional app, the category of the app is hard to assess and personality traits could not be related to the intention to download it. Similarly, studies by Ross et al. (2009) and Wang et al. (2012) showed that personality traits like Extraversion are most significant in the context of social media apps. Since the present study focused on a utilitarian festival app, the non-significant effects of Extraversion could be explained by the type of the app.

Furthermore, existing studies did not use personality traits as a direct predictor of behavioral intention. Devaraj et al. (2008) discovered that personality traits rather influence technology acceptance predictors instead of influencing behavioral intention directly, which should be further examined in the future. In that regard, Zhou & Lu (2011) predicted personality traits to influence first trust and perceived usefulness, and not behavioral intention directly. In addition, Agyei et al. (2020) also took personality traits as predictors for perceived usefulness and perceived ease of use, instead of direct predictors for behavioral intention and achieved significant results. Therefore, personality traits seem to have an effect on different factors between them and download intention, as they are not related directly.

In this study a utilitarian app was chosen, nevertheless, the results could have been

different when analyzing a hedonic app. As outlined before, different personality traits have different effects depending on the type of app. Therefore, a hedonic app could have achieved different and more significant results. Also, since this study focused on a festival scenario where you don't have to put in your personal information and data, respondents could have been influenced by that security aspect. In mobile banking or health apps, much more data is required to use the app, which is why users with different personality traits could have different opinions about such apps. That is why the results in the festival scenario might be non-significant.

5.2 Limitations

In this research study, a self-administered survey was used for data collection. That means a self-report measure was used and participants had to analyze and predict their character. According to Richter & Johnson (2001), self-report measures often lead to participants answering a survey in a way that they believe to be socially desirable. This could lead to less honest answers and therefore impact the study results (Richter & Johnson, 2001). Subsequently, since most participants seem to have similar personality traits, the data have low statistical power to identify significant relationships. In that regard, Specht et al. (2011) identified that age has a significant influence on personality traits, as our personality traits change throughout our life span. The present study only analyzed students and young adults, which could explain the low variation in personality aspects of the respondents. Therefore, a larger age range for the target audience could have provided different results.

Plus, the study used convenience and snowball sampling in the data collection process, which means that the survey was distributed among the researcher's network and could have led to a less representative sample of the target audience. Given the fact that the sample size was rather low (136), the statistical power to detect significant effects could be negatively affected as well. Additionally, the survey does not include a question about a respondent's festival experience. Participants who never went to a festival may not know what features they could make use of when thinking about a festival app. Unlike studies by Xu et al. (2016), this study only introduced participants to an app download scenario, instead of analyzing actual app adoption records.

Accordingly, variables like perceived usefulness are hard to predict, as users have to imagine the actual performance and usability of the app. Further, subjective norms could have also been negatively affected by the study design, since participants have to imagine with whom they would go to the festival and what their environment would look like at that specific moment. Therefore, their answers might be biased, as items for subjective norms

were worded like “I think people around me…” (Appendix B), which could impact the results depending on the environment they were exposed to during the completion of the survey. Moreover, since the study only focused on the three demographics of age, gender and educational level, it did not take other demographical predictors into account.

Further, the variable’s basic needs, attitude towards using and perceived usefulness, all scored on the same factor during the factor analysis. This is a limitation, which is why future studies should be more carefully looking into the statements and distinguish whether they measure the same constructs due to similar wording. The statements should precisely distinguish between the fulfillment of basic needs, the overall attitude users have towards the app, and whether they perceive different functions of the app to be useful.

5.3 Academic and practical implications

Existing research has concentrated on theorizing usability factors to predict technology adoption and use. The purpose of this study was to determine to what extent personality traits, next to usability factors, add to the adoption of technology, in the context of a festival-related app. However, the study only found significant results for the traditional predictors to explain download intention. The effect of personality traits on download intention could not be supported. Accordingly, future research has to consider important aspects, when investigating personality traits in the context of technology adoption and use. Firstly, researchers should carefully consider the role of personality traits within the research model. As this study observed, personality traits did not have a direct influence on app download intention. Moreover, similar studies by Agyei et al. (2020) and Zhou & Lu (2011) pointed out that personality traits can have a significant influence on the variables directly influence download intention, such as trust or perceived usefulness. Future research should further investigate the influence of personality traits on intermediate variables like trust and perceived usefulness, as they might mediate the relationship between personality traits and app download intention.

Further, as Xu et al. (2016) pointed out, future research should carefully look at the type of app they want to analyze since personality traits are deeply related to the specific category an app belongs to. The same goes for the influence of age on personality traits. Personality traits change over time, meaning a bigger target audience could greatly improve the variety of different personality traits in the data. Additionally, another important consideration is that in a mobile app context, research should refer to an actual app to

download, instead of just a scenario. Without a proper app to investigate, participants have to use their imagination to predict the performance or usefulness of the app, resulting in less specific answers to practical questions.

Practical implications for app developers would be to keep attention to the target audiences' basic needs, as this was the variable with the biggest effect on app download intention. Next to that also attitude towards using and performance expectancy should be prioritized by app developers, given their positive impact on app download intention. An app's performance should be an essential part of the development process, as only good features would influence the target audience. From a marketing perspective, app developers should emphasize and highlight the benefits, user-friendly features or positive experiences of the app. Considering the significant effect of basic needs, attitude towards using and performance expectancy, app marketing strategists should emphasize these factors in their campaigns to attract potential users.

Since the personality traits did not influence app download intention directly, practitioners should consider that for a utilitarian app, they do not have to adjust the design or marketing campaigns of an app depending on the target audience's personality. They should much rather focus on performance and user needs when constructing an app since these factors have a more significant influence on app download intention.

5.4 Conclusion

This study aimed to investigate the added value of personality traits alongside usability factors in predicting app download intention. The findings revealed that the traditional predictors, including basic needs, attitude towards using, and performance expectancy, significantly influenced app download intention. However, the traditional predictor's subjective needs and perceived usefulness did not have a positive effect on app download intention. Moreover, personality traits did not demonstrate a direct effect on app download intention. This suggests that personality traits may have an indirect influence on technology adoption through mediating factors like trust or perceived usefulness.

The study has provided practical implications for app developers, emphasizing the importance of meeting users' basic needs, fostering a positive attitude towards using, and ensuring high-performance expectancy to enhance app adoption. Tailored app marketing strategies can further increase the chances of user acceptance and adoption. Academically, this study highlights the need for future research to explore the specific role of personality traits in

technology adoption and use. Investigating the relationship between personality traits and intermediate variables, such as trust or perceived usefulness, can provide a deeper understanding of the mechanisms underlying app download intention.

Additionally, considering contextual factors, such as the type of app and age variations in personality traits, future research can focus on these factors and contribute to a more comprehensive understanding of technology acceptance. The limitations identified in this study, including self-report measures, hypothetical scenarios, and limited sample size, suggest areas for improvement in future research. Further investigation into the relationship between mobile apps and personality traits should improve our understanding of app download intention as mobile apps appear to become increasingly prevalent in the future.

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Appendices

Appendix A – Consent form

Dear participant,

You are being invited to participate in a research study about smartphone usage. This study is being conducted as a bachelor thesis by Enrico Rott from the University of Twente, in the Netherlands. It will take you approximately 10 minutes to complete.

The data will be used for research and educational purposes and will be deleted on the 30.06.2023. Your participation in this survey is anonymous. Your answers are only visible for the researcher and supervisor. Your participation in this study is entirely voluntary and you can withdraw at any time.

There are no known risks associated with this research study. All your answers in this study will remain confidential. For further information or questions about the study, please contact me via the email address below.

Thank you for your efforts.

Kind regards,

Enrico Rott (e.rott@student.utwente.nl)

Project supervisor: Mark Tempelman (m.h.tempelman@utwente.nl)

Appendix B – Questionnaire

Personality traits

Extraversion:

1. I feel comfortable around people
2. I am energetic
3. I am passionate to others
4. I generate a lot of enthusiasm
5. I am outgoing, sociable

Conscientiousness

1. I pay attention to details
2. I am a reliable worker
3. I keep going until the task is finished
4. I do things efficiently
5. I make plans and commit to them

Agreeableness:

1. I am helpful and unselfish with others
2. I have a forgiving nature
3. I am generally trusting others
4. I am considerate and kind to almost everyone
5. I like to cooperate with others

Neuroticism:

1. I am easily anxious
2. I have frequent mood swings
3. I am often worried about things
4. I get nervous easily
5. I am pessimistic

Openness:

1. I often come up with new ideas
2. I am curious about many different things

3. I have an active imagination
4. I am a deep thinker
5. I value artistic, aesthetic experiences

Traditional predictors

Basic needs:

1. I think the services offered by the festival app would meet my needs
2. I believe the festival app is compatible with what I want to do with my smartphone
3. I think I am downloading the festival app for the services I need
4. To my idea, the festival app works for me
5. I think I would use the festival app because I need it

Subjective norms:

1. I think people around me would think the festival app is useful
2. To my best knowledge people around me encourage me to use the festival app
3. I think the use of the festival app is fashionable (trendy)
4. I guess people around me think its a good idea to use the festival app
5. I believe my environment (friends) requires me to have the festival app

Attitude towards using:

1. I think using the festival app would be a good idea
2. I would like to be among the first to try the festival app
3. I think I would like to use the festival app
4. I would love trying out the latest version of the festival app
5. I am usually among the first to adopt new technologies and devices

Perceived usefulness:

1. I think I save time using the festival app
2. I find the festival app will benefit me, because i can use it from anywhere
3. I assume the festival app will benefit me, because i can use it at any time
4. I believe using the festival app enhances the efficiency of my festival experience
5. Using the festival app makes it easier to perform my festival activities

Performance expectancy:

1. I think the festival app allows me to do my activities faster
2. I believe the festival app can help me do my activities better
3. I assume the festival app can make me more productive
4. I expect the festival app makes it easy for me to perform my intended activities
5. I suppose the festival app can improve the performance of my activities

Dependent variable

Download intention:

1. I prefer to use the festival app rather than traditional methods
2. I believe that i will continue to use the festival app once I enter the festival
3. I have the intention to use the festival app frequently during the festival
4. My goal is to use the festival app during more festival visits in the future
5. I think I will use the festival app to increase my festival experience

Appendix C – Literature Log

Literature Search Overview

Date	Source	Search String	Total hits	Relevant Literature
01-04-23	Scopus	App AND adoption AND personality AND traits	15	2
01-04-23	Scopus	"App adoption" "personality traits"	7	2
01-04-23	Scopus	App AND download AND personality	10	1
01-04-23	Scopus	App AND adoption AND personality	33	5
01-04-23	Scopus	App AND personality	488	3
01-04-23	Google Scholar	Personality traits influence on app download intention	15.500	4
17-04-23	Google Scholar	“Personality traits” “app download”	128	3
17-04-23	Scopus	Personality AND influence AND app	100	3
17-04-23	Google Scholar	personality traits AND "app download" AND traditional predictor	880	4
17-04-23	Scopus	Personality AND traits AND influence AND app	45	3
17-04-23	Scopus	Measure AND personality AND app	61	2
29-04-23	Scopus	Utilitarian AND app AND download	8	2
29-04-23	Google Scholar	utilitarian app AND usability factors AND personal characteristics	12,500	3
12-05-23	Scopus	Impact AND personality AND app AND adoption	14	1
12-05-23	Scopus	Technology AND adoption AND personality AND traits	166	2

Appendix D – Testing the assumption of linearity