The role of perceived risk in the behavioral intention to use and accept algorithm-based news aggregators: A quantitative study using an expanded UTAUT2 model

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Enjoy!

Abstract

The role of perceived risk in the behavioral intention to use and accept algorithm-based news aggregators: A quantitative study using an expanded UTAUT2 model

The purpose of this research was to examine whether the opportunities or the risks are most significant for consumers when they are using algorithm-based news aggregators, this was accomplished by using an expanded Unified Theory of Acceptance and Use of Technology 2 model (UTAUT2). In addition to examining the significance of the original UTAUT2 parameters, we sought to reveal if our additional parameter - perceived risk - was significant for the use and acceptance of news aggregators. We collected empirical data using an online survey, this resulted in 117 usable responses from people who currently use news aggregators. We conducted a multiple regression analysis with the collected data as well as two reliability tests. The findings of the multiple regression analysis indicated that habit had the most significant influence on the behavioral intention to use and accept algorithm-based news aggregators, followed by effort expectancy, facilitating conditions, and performance expectancy. Further, we found that our additional category perceived risk did not show a significant influence on the behavioral intention. The data of our sample further showed an indication of unawareness concerning the risks related to algorithm-based news aggregators. Our findings have the opportunity to expand the existing literature as well as interest in the subject of news aggregators from a consumer perspective.

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Keywords: news aggregators, algorithms, UTAUT2, multiple regression, perceived risks, filter bubbles, democracy, risk communication

Sammanfattning

Rollen av upplevd risk i intentionen vid användning och acceptans av algoritm-baserade nyhetsappar: En kvantitativ studie som använder en expanderad UTAUT2 modell

Syftet med den här studien var att undersöka huruvida det är fördelarna eller riskerna som är mest signifikanta för konsumenter vid användandet och acceptansen av algoritm-baserade nyhetsappar, vi åstadkom detta genom att använda oss av en expanderad Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) modell. Utöver att undersöka signifikansen av de originella UTAUT2 kategorierna, avsedde vi att undersöka om den upplevda risken med nyhetsappar har någon påverkan på intentionen att fortsätta använda och acceptera nyhetsappar. Vi samlade in empiri med hjälp av en internetbaserad enkät som resulterade i 117 användbara svar från personer som använder nyhetsappar i dagsläget. Vi utförde en multipel regressionsanalys med den insamlade datan, utöver regressionsanalysen utförde vi även två reliabilitetstest. Vårt resultat från regressionsanalysen indikerade att *habit* (vanan) hade starkast signifikans för intentionen att använda och acceptera algoritm-baserade nyhetsappar följt av *effort expectancy* (enkelheten), *facilitating conditions* (system support) och *performance expectancy* (förväntade möjligheter). Vi fann dessutom att vår adderade kategori *perceived risk* (upplevd risk) inte var signifikant för användningen och acceptansen av nyhetsappar. Utöver vår hypotesprövning fann vi att det finns kunskapsbrist gällande vilka risker som finns med algoritm-baserade nyhetsappar. Vårt resultat har möjligheten att bidra till befintlig forskning och ytterligare intresse kring algoritm-baserade nyhetsappar från ett konsumentperspektiv.

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Nyckelord: nyhetsappar, algoritmer, UTAUT2, multipel regressionsanalys, upplevda risker, filterbubblor, demokrati, risk kommunikation

1. Introduction

In this first chapter, we will present the background for algorithm-based news aggregators as well as the connection to strategic communication. In addition, we will present our purpose and the delimitations for our study.

1.1 Background

The digital era that we currently exist in is, and has for quite a while now, has forced businesses into moving their physical activities online. One way to satisfy customers is to make their business available through apps that can be downloaded through mobile phones and tablets. Statistically speaking, there has been a global surge in the use and downloads of apps indicated by the fact that there were 178.1 billion apps downloads in 2017 and that number is expected to rise to 258.2 billion app downloads in 2022 (Cheng, Sharma, Sharma & Kulathunga, 2020). The Swedish institute Internetstiftelsen (2019) found that a majority of the Swedish population (60%) finds it meaningful to spend time on news apps, indicating that the short but sweet news format makes it easier for people to keep up to date. Not only does the time-saving factor play an important role for the increased use of news aggregators, but they also offer personalization, user-friendliness as well as several many other benefits (Camacho-Markina, Pastor & Urrutia, 2019). News aggregators act as intermediaries between publishing houses and the public and with the help of algorithms they gather news from several different independent news sources in order to present each consumer with news related to their interests (Camacho-Markina et al., 2019). Furthermore, the main online news sources worldwide in 2017 were social media (44%), publishing house websites (37%), news aggregators (15%), and somewhere else online (27%) (Statista, 2017). This implies a major change in the way we get our news, statistics from Statista (2019) shows that there is solid growth in the use of digital news reading. Even if news aggregators are one of the major news outlets used in the world they are also a fairly recent establishment which makes the research regarding them quite minimal.

The prevailing development in society creates great opportunities that come with new risks, however, do we find the risks proportionate to the opportunities we get? Due to the establishment of news in a digital format we now have new competitors and actors within the news trade. Nechushtai & Lewis (2019) explains that Google and Facebook are the ones that

control the communication channels used for news dissemination that publishing houses earlier used to manage. The internet makes it possible for the information to circulate back and forth from the masses in society, thus, eliminating the transmission view of communication and instead making it as an arena of actors communicating both vertically, horizontally and simultaneously (Camacho-Markina et al., 2019; Frandsen & Johansen, 2017). Connolly-Ahern (2008, p.765) defines strategic communication as "the purposeful communication by a person or an organization designed to persuade audiences with the goal of increasing knowledge, changing attitudes or inducing desired behavior", all of these benefits are possible with the development of algorithm-based news aggregators. With digital developments, we get access to a great variety of information which in turn leads to more choices, and those choices come with both risks and opportunities (Falkheimer & Heide, 2018). Algorithm-based news aggregators are a perfect example of a service that provides information but comes with both risks and opportunities, such as keeping data of their consumers but also providing their consumers with a personalized news feed (Cheng et al., 2020). Falkheimer & Heide (2018) explain that people nowadays demand more personalized communication from organizations. The personalization of communication has been possible due to the surge of the data economy which in turn builds on the collection of digital footprints (Bean & Koeppel, 2012). Accordingly, strategic communication scholars promote innovations such as advanced personalized communication because of the opportunities it brings, simultaneously, they understand that it is necessary to acknowledge the ethical issues that they might cause (Falkheimer & Heide, 2018). We find algorithms to be a new form of strategic communication due to the fact that their purpose is to gain consumers by personalizing each feed and making it more relevant for each consumer. Thus, since adapting the communication for the intended target group is one of the main strategies for effective strategic communication we, therefore, find great similarities in the purpose for both strategic communication and algorithm-based news aggregators. However, algorithms function more secretively, indicating that many consumers might not understand at what cost they receive their personalized communication. This leads us to algorithms being a new form of risk which is in need of proper risk communication. Ueland (2019) suggests that the purpose with risk communication is both to increase the knowledge about the safety issue or risk and to educate people in safer behavior. This is due to the fact that people's perception and knowledge of a risk will affect their behavior in relation to the risk (Martin & Stewart, 2019). We, therefore, see this research concerning the opportunities and risks with algorithm-based news aggregators meaningful to the development

and expansion of the field strategic communication. In addition, we will contribute to the research field by applying UTAUT2 on algorithm-based news aggregators.

As mentioned above, the personalization function in news aggregators implies that the company behind the news aggregator needs to collect consumers' personal information in order to provide each consumer with an individualized feed (Camacho-Markina et al., 2019). The algorithmic function places the consumer with a personalized feed into a *filter bubble*. A filter bubble defines as an information cocoon where the consumer is only presented with information that confirms their current beliefs or political agenda, making it difficult to get an objective perspective (Bastian, Makhortykh & Dobber, 2019; Zuiderveen Borgesius, Trilling, Möller, Bodó, de Vreese & Helberger, 2016). The upsurge in the use of news aggregators lead more people into individualized filter bubbles and as a result, more people get biased news stories presented to them which can lead to greater opposing forces in the democratic society (Bastian et al., 2019; Cheng et al., 2020; Zuiderveen Borgesius et al., 2016). The reason for the stronger opposing forces comes from the fact that more people get stuck in filter bubbles and might not get the chance to reject or disregard the articles that do not conform with their beliefs (Zuiderveen Borgesius et al., 2016). This makes it harder for consumers to understand and see other perspectives for certain subjects which eventually will have an effect on their future democratic choices (Diakopoulos, 2019; Zuiderveen Borgesius et al., 2016). Diakopoulos (2019) presents an experiment with displaying certain news in a Facebook feed resulting in a greater voter turnout, however, Diakopoulos also suggests that this function could be abused if not handled with care and an ethical motive. The ability to steer people's attention is an influential possibility that can both cause harm and benefits (Diakopoulos, 2019).

Finally, as mentioned earlier, the news serves as a crucial component of our society due to the fact that a well functioning democratic society needs to have well-informed citizens that care about their responsibility to vote for the party with whom they symbolize (Raiz, 2010). The mass media holds a great responsibility in the dissemination of information and news (Raiz, 2010) but with the recent developments in technology, it is now publishing houses, social media, and tech companies that are the major players in the news trade (Statista, 2017). As declared, this comes with certain negative consequences e.g. filter bubbles, but the personalization of news feed can also encourage more people to read the news since they can find news that fit their interests, implying that they become more informed which is good for the society (Bastian et al., 2019). The consequences of algorithm-based news aggregators are

due to the fact that consumers might not be aware of the algorithms steering their newsfeed, and are therefore deprived of the choice to get other types of news or perspectives (Diakopoulos, 2019). This brings us to our concern and interest regarding algorithm-based news aggregators - are the risks or the advantages most significant for the continuous use of the apps?

1.2 Purpose

The purpose of this study is to expand the research and interest in why people use algorithm-based news aggregators and if the advantages trump the risks that come with news aggregators. In order to do this, we will use the model of Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) to discover which of the following parameters - performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, price value, habit, and perceived risk, are most significant for people using news aggregators. The last parameter - perceived risk is our additional contribution to the original UTAUT2 which is necessary for the purpose to understand if the possible risks with using news aggregators have an effect on people's behavioral intention to accept and use this technology. The aim of this study is, therefore, to analyze which parameters are most important to consumers of news aggregators and to study if they are aware of the societal threats they can cause, and if this awareness would affect their consumption behavior. By doing so we will be able to detect if the advantages trump the risks when using algorithm-based news aggregators by revealing which categories are significant for the behavioral intention. Hence, our research question is:

Do the opportunities outweigh the risks concerning the personalized communication in algorithm-based news aggregators?

1.3 Delimitations

The sample of this study is limited to people who use some sort of news aggregators, with news aggregators we mean digital news outlets that gather news from several different independent news sources. e.g. OMNI, Google News, Apple News, Yahoo News, Bing News, Feedly, News360, Alltop, Flipboard, etc. We do not have any geographical restrictions for our sample. Due to our relatively small sample (117 people) and using convenience sampling we are not able to generalize our study's result to everyone using news aggregators globally. However, we do find the sample large enough to spark further interest in the field of perceived risks versus

advantages with algorithm-based news aggregators, as well as the possibility to compare our results with other similar studies. In addition, our sample size is good enough to be repeated according to Tabachnick and Fidell (2007). This study focuses primarily on theories related to the UTAUT2 parameters and we have therefore disregarded other theories related to algorithms and technology. We have done the delimitation choices regarding this study in relation to our area of interest - algorithm-based news aggregators, our choice of method as well as our time and resource availability.

2. Theoretical framework and previous research

The interest in people's behaviors and attitudes in relation to algorithm-based apps and aggregators have developed quite recently which is evident by the fact that the vast majority of prior studies have been published in the last three years. The following section will provide the essential theories of which the study will be based upon. Firstly, the reader will be introduced to the explanation of news aggregators, the reader will thereafter be introduced to the theories of risk communication, Social Construction of Technology (SCOT) and Social Acceleration. Secondly, we will present the original model Unified Theory of Acceptance and Use of Technology (UTAUT). We will then move on to the model that will be used as the fundamental cornerstone of this study and as the base for our hypotheses - the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2). Finally, we will present our hypothesis development for the different parameters as well as our research model with our additional construct: Perceived risk.

2.1 News aggregators

News aggregators have simplified the way we receive our daily news (Camacho-Markina et al., 2019; Cheng et al., 2020). Some examples of algorithm-based news aggregators include Google News, Apple News, Yahoo News, Smartnews, and OMNI. Algorithm-based news aggregators rely on the function of personalization implying that they present each individual with content and news which identifies most with their previous and current interests and behaviors (Bastian et al., 2019). Hence, algorithm-based news aggregators depend on the collection of consumers' personal data which is collected through several sources e.g. by saving previous clicks or subscriptions (Bastian et al., 2019). Bastian et al. (2019), further explains that the feeds are composed of recommender algorithms which have the ability to understand if a certain story will be relevant for the particular consumer. Other algorithms in news aggregators can be based on semantic (the user has read something similar in the past) or collaborative (other people alike the user likes a certain story) filtering as well as popularity metrics (Bastian et al., 2019).

2.2 Risk communication

Since our purpose with this study is to understand if the opportunities outweigh the risks with algorithm-based news aggregators we find it interesting to understand how individuals' risk perception may be affected by risk communication. Martin & Stewart (2019), define risk communication as an information exchange that aims to provide knowledge and understanding while at the same time establish credibility and influence behavioral change. Risks are present everywhere in our life, but how we as consumers choose to act in relation to them can make all the difference (Martin & Stewart, 2019). Individuals and consumers are all different which makes it reasonable that we all perceive risks differently we can both overestimate and underestimate risks which will have consequences on our holistic perception of the risks (Martin & Stewart, 2019). Subsequently, this can be determined from our previous knowledge of the risk also known as the risk communication we have received (Martin & Stewart, 2019). Martin & Stewart (2019) explains that it is crucial to keep in mind that the voluntary risks are determined by the level of benefit and harm it brings. Some risks are regulated due to society's perception of the risk and its consequences, this is influenced by individuals in the society and their own perceptions (Martin & Stewart, 2019). Thus, a risk that has not been properly communicated and spread leads to reduced knowledge among the people in society which in turn leads to no regulations being forced into place (Martin & Stewart, 2019). We, therefore,

see the knowledge of risks in relation algorithm-based news aggregators interesting to measure since it is yet to be regulated.

2.3 Social construction of technology (SCOT)

The previous research regarding the relationship between humans and technology has developed over time and is now explained through two dominant paradigms - technological determinism and social construction of technology (SCOT) (Giotta, 2018). The question in focus is "Am I controlling the technology, or am I being controlled by the technology?". The first paradigm sees technology as the determining factor that can shape societies and people (Giotta, 2018). On the other side, there is SCOT, which is based on social constructivism, promotes the idea that it is the people that control how we understand and use technology (Yousefikhah, 2017). Technological determinism puts either a positive or negative value on technological products whereas, SCOT instead values all technological products as neutral. Since it is up to the person using the product to decide its purpose, SCOT implies that every product can be used for good and bad reasons (Giotta, 2018).

Further, SCOT is based upon four constructs; artifacts, interpretative flexibility, relevant social groups, and technological frame, these four will be further discussed and explained throughout the thesis.

2.3.1 Artifacts

Yousefikhah (2017) defines artifacts as the 'subject of innovation', thus, as technological products, solutions, and routines. Artifacts function as the main component of which the other three constructs are based around and upon (Yousefikhah, 2017).

2.3.2 Interpretative flexibility

Since social constructivism is based upon the idea that people together create a shared meaning of the understanding of reality through interactions (Craig & Muller, 2007), there is bound to be several interpretations or meanings of an object and this is what interpretative flexibility addresses in SCOT (Yousefikhah, 2017). Interpretative flexibility is defined as the flexible and varied meanings for an artifact and how to understand these interpretations one must understand the social environment the artifact exists and is used within (Yousefikhah, 2017).

2.3.3 Relevant social groups

Artifacts are created and used by different social groups who have identified different problems in society and therefore different solutions due to their social environment (Yousefikhah, 2017). Humphreys (2005) identified four relevant social groups which are producers, advocates, users, and bystanders of the artifact. Based on their role in relation to the artifact, all of these social groups have established different relationships with the artifact.

2.3.4 Technological frame

Orlikowski and Gash defined technological frames as "the subset of members' organizational frames that is concerned with the assumptions, expectations, and knowledge they use to understand technology in organizations" (1994, p. 178). Hence, these are frames on an organizational level that explain the social dynamics, these have an effect on each individual and their interpretation of the social dynamics in the organization. This leads to several individuals creating similar meanings instead of creating a shared meaning from their own different meanings and interpretations (Yousefikhah, 2017).

Finally, we will use SCOT as the main perspective on the relationship between humans and technology. This will be examined in how we define algorithm-based news aggregators and other technology throughout this article, thus as neutral objects that are constructed and used by individuals that are affected by different social environments (Yousefikhah, 2017).

2.4 Social acceleration

Social acceleration is a social theory published in 2005 by Hartmut Rosa, with the English translation published in 2013. The theory is based on the paradox "We don't have any time although we've gained far more than we needed before" (Rosa, 2013, pp. 36). This paradox implies that even though our society, our routines, and our products have all sped up we experience more stress and lack of time than ever before. With the help of technological and societal advances, we are now able to attain more in a day than previous generations (Rosa, 2013). Rosa (2013) explains that we constantly try to save time by speeding up our everyday life and routines by for example ordering food instead of making it, traveling by plane instead of trains and multitasking frequently. Further, Rosa (2013) has distinguished three types of dimensions of acceleration namely; technical acceleration, acceleration of social change, and

acceleration of the pace of life. We find this theory interesting for the establishment and development of news aggregators since their function in our society helps us become more efficient in our everyday life. We therefore see this theory relevant for our result discussion.

2.4.1 Technological acceleration

Technological acceleration is recognized as the dimension that is the easiest to measure and demonstrate (Rosa, 2013). This dimension refers to all technological advances that have shortened our time spent on them such as traveling, communication, and production, for example, the amount of time it took to go by boat from Europe to New York compared to flying between the two continents have decreased immensely due to the technological advancements in transportations (Rosa, 2013). One example regarding a technical acceleration is the establishment of news aggregators since they collect all news at one location, making it possible for individuals to save time by not having to search for particular news at different sites or through different newspapers (Bastian et al., 2019; Calzada & Gil, 2020). Rosa (2013) defines technical acceleration as a form of SCOT since the acceleration is due to cultural, economic, and societal events and influences.

2.4.2 Acceleration of social change

The next dimension concerns the acceleration of social change which defines as "an increase of the rate of action-orienting experiences and expectation and as a contraction of the time periods that determine the present of respective functional, value and action spheres" (Rosa, 2013, p. 108). This relates to the acceleration in our social life such as more frequent changes in jobs, partners, and lifestyles (Rosa, 2013). This would also be prominent in how fast the society would adapt to a new invention, which would be determined due to the importance of the invention as well as how the rest of society behaves in relation to it (Rosa, 2013). In relation to the subject of the thesis, there is still an ongoing transition from traditional newspapers to digital news in society.

2.4.3 Acceleration of pace of life

Lastly, the dimension acceleration of the pace of life concerns how our lives have been affected by the technological and social advancements and how we currently can fit more activities in a day since every activity can be done faster (Rosa, 2013). Potentially, this creates greater efficiency since we now can use the time we save (Rosa, 2013). By using a news aggregator instead of reading several newspapers, we can now both eat breakfast and get our daily news in

the same amount of time as just one activity. In relation to this, there has been an evolution in news consumption, for instance, the newspaper was introduced at the end of the eighteenth-century due to the need of mapping what was going on in society (Rosa, 2013). Now in 2020, 4.54 billion people all over the world have access to the internet for quick communication and real-time news globally (Statista, 2020).

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

How and why new information technology has been adopted by individuals have been universally studied by previous scholars. However, the field of study has been somewhat shattered and has provided a wide range of alternative approaches to analyzing consumers' acceptance toward technology (Koivumäki, Ristola & Kesti, 2008). With the aim of uniting the field, Venkatesh, Morris, Davis & Davis (2003) developed the model Unified Theory of Acceptance and Use of Technology (UTAUT) which explains that technology usage behavior has a significant correlation with behavioral intention (Oechslein, Fleischmann & Hess, 2014). UTAUT is a comprehensive framework based on eight prominent models within the research field of technology adoption including Theory of Reasoned Action (TRA), Technology Acceptance Model (TAM), Motivational Model (MM), Theory of Planned Behavior (TPB), Combined TAM and TPB (C-TAM-TPB), Model of PC Utilization (MPCU), Innovation Diffusion Theory (IDT) and Social Cognitive Theory (SCT) (Venkatesh et al., 2003). The authors explain that TRA originates from social psychology and is one of the most influential theories of human behavior and aims to anticipate a wide range of human behaviors. TAM has the purpose to predict information technology acceptance, MM is used to explain behavior based on intrinsic and extrinsic motivational factors, TPB is an extension of TRA and aims to understand an individual's acceptance and usage of different technologies, C-TAM-TPB is a hybrid model based on TPB and TAM (Venkatesh et al., 2003). MPCU is mainly used when we want to predict intentions in using PC, IDT is grounded in sociology which also aims to study the individual acceptance towards information technology by using different parameters Venkatesh et al., 2003). The last model that is integrated into UTAUT is the SCT, which is one of the most essential theories in exploring human behavior (Venkatesh et al., 2003). Drawn from these eight previous models UTAUT consists of four key constructs, performance expectancy, effort expectancy, social influence, and facilitating conditions, that can be used as

powerful tools to assess the likelihood of individuals accepting new information technology Venkatesh et al., 2003).

2.6 Unified Theory of Acceptance and Use of Technology 2 (UTAUT2)

According to Cheng et al. (2020), UTAUT is mainly used when conducting studies from an organization's perspective. The UTAUT model was, for that reason, later extended to the UTAUT2 model which is supposed to be a better fit when evaluating acceptance towards technology from a user perspective (Cheng et al., 2020). The constructs of hedonic motivation, price value, and habit were added to the previous five main constructs and relate to a greater extent to consumer behavior and are more focused on the cognitive and psychological aspects that also affect technology adoption (Venkatesh, Thong & Xu, 2012). Considering the purpose of this study we see a greater fit to use the developed UTAUT model, UTAUT2, as our model of analysis since it adapts a consumer perspective. Cheng et al. (2020) presents an interesting study that gives us a great foundation for further research regarding news aggregators and personalization. However their purpose is to determine that personalization is another important factor for why people continuously use mobile news apps in India, by using an expanded model of UTAUT2. The study of Cheng et al. (2020) found that performance expectancy, habit, hedonic motivation, and facilitating conditions as the most significant factors for the continuous use of mobile news apps. Further, we will be able to compare our results to Cheng et al's (2020) study if we turn out to have similar outcomes which in turn can be a subject for future research. We, therefore, see this as a chance to examine people's acceptance and use algorithm-based news aggregators as well as if perceived risk shows a significant influence on the behavioral intention.

2.6.1 Performance expectancy

Performance expectancy is related to perceived usefulness and is defined as "the degree to which an individual believes that using the system will help him or her to attain gains in job performance" (Venkatesh et al., 2003, p.447). To test this construct and to make it more concrete, questions about time management and outcome expectations could be deployed (Venkatesh et al., 2003). In accordance with the purpose of this study, we will not put the focus on job performance but rather on the performance opportunities of algorithm-based news aggregators. The foundation for algorithm-based aggregators lies within social recommender systems, they are based on content-based filters, collaborative filters, and hybrid filters used in

social networks (Oechslein et al., 2014). The purpose of the filters is to personalize each and every user's feed by recommending items based on the user's previous interests and what other similar users prefer (Oechslein et al., 2014). This is similar to how algorithms function in news aggregators today, however, they use more parameters to create a more relevant newsfeed (Sullivan, 2009). Personalized recommendation technology also helps to filter out unwanted information and ease the information overload, which is a prevalent problem in modern society (del Aguila-Obra, Padilla-Melendez, Serarols-Tarres, 2007; Dong, Liu & Chai, 2016). Hence, if the quality of the news is perceived as high and more relevant to the individual the value will be greater (Dong et al., 2016; Oechslein et al., 2014). Another factor that is believed to have a positive impact on the user when reading news is recency (Kessler & Engelmann, 2019). If the news presented is continuously up to date and stays current with trends in the environment the users will have a positive experience with adopting the technology. Hence, the first hypothesis will be:

H1: Performance Expectancy has a significant influence on the behavioral intention to use and accept algorithm-based news aggregators

2.6.2 Effort Expectancy

The second construct is effort expectancy and is defined as "the degree of ease associated with the use of the system" (Venkatesh et al., 2003, p.450). To elaborate further on this construct Venkatesh et al. (2003) present the three root constructs that effort expectancy is based upon perceived ease of use, complexity, and ease of use. This study examines news aggregators which are gathering news updates from several other independent news platforms, nowadays there is no need for the user to seek through dozens of news apps to find relevant news in order to get continuously updated (Bastian et al., 2019). As mentioned by Calzada & Gil (2020), news aggregators make it possible for consumers to find what they are looking for more effortlessly. In addition, Cheng et al. (2020), continues on this note by detecting that personalization of a news app has a positive influence on the consumers' ease of seeking information relevant for them. Hence, the second hypothesis will be:

H2: Effort Expectancy has a significant influence on the behavioral intention to use and accept algorithm-based news aggregators

2.6.3 Social Influence

The construct of social influence is "the degree to which an individual perceives that important others think that he or she should use the new system" (Venkatesh et al., 2003, p.451). The social influence could also be called the social norm because it implies that human behavior is heavily influenced by what others think about us when we do or use certain things (Venkatesh et al., 2003). For example, items that have an influence on this construct could be if an individual believes the amount of others that use the system/technology is important, if a person thinks the usage of a certain technology will give him or her gains in social status or if peers closely related to the user is encouraging the adoption of the technology (Venkatesh et al., 2003). It is shown that people in general, have a positive view towards recommendations made by people close to them, such as friends or family (Oechslein et al., 2014; Wu, Yin, Guarda, Lopes & Rocha, 2019).

Algorithms are already integrated with the current news aggregation apps relevant for this study hence, the consumers do not have the choice to use it or not, it happens automatically. Thus, we will in this construct solely focus on if the social environment influences an individual with their usage of news aggregators. Also, in Oechslein et al's (2014) study it is said that by having the algorithms integrate information from a user's social network it will result in a positive effect on the intentions of using the system. Hence, the third hypothesis will be:

H3: Social Influence has a significant influence on the behavioral intention to use and accept algorithm-based news aggregators

2.6.4 Facilitating conditions

Facilitating conditions are defined as "the degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system" (Venkatesh et al., 2003, p.453). More specifically, facilitating conditions is built upon if an individual perceives that they have behavioral control when using the system. As well as the degree of compatibility with an individual's expected values, needs and experiences and the accessibility of guidance when using the system (Venkatesh et al., 2003). Every individual's news feed is tailored to fit their preference, and one important aspect regarding how the infrastructure supports the purpose of the algorithms is by enabling the right position for relevant news (Kessler & Engelmann, 2019). According to the authors, the position of news at the news site has a significant impact on the possibility if the individual selects to read it or not. Algorithmic

based news aggregators have the function of enhancing the perception of control by enabling the user to exert power over what types of news recommendations should be presented (Kessler & Engelmann, 2019). This is done by having the individual selecting their own areas of interest which in turn will increase the possibility of getting presented with relevant and interesting news (Bastian et al., 2019), this will create meaning and enhance the experience for the consumer (Cheng et al., 2020). Hence, the fourth hypothesis will be:

H4: Facilitating Conditions has a significant influence on the behavioral intention to use and accept algorithm-based news aggregators

2.6.5 Hedonic motivation

Hedonic motivation is one of the three constructs that were added to the UTAUT model and contributed to the development of UTAUT2. It refers to "the fun or pleasure derived from using a technology" (Venkatesh et al., 2012, p.161) and is said to heavily influence the acceptance and usage intention of the technology. Hedonic motivation refers to emotions such as pleasure, enjoyment, and positivity (Cheng et al., 2020) and could be expected to have a correlation to the feelings one gets when the news feed is relevant and interesting. According to Cheng et al. (2020), a website whose content is aligned with each individual's preferences and interests is more likely to be perceived as positive and the probability to revisit that website later is greater. Hence, the fifth hypothesis will be:

H5: Hedonic Motivation has a significant influence on the behavioral intention to use and accept algorithm-based news aggregators

2.6.6 Price Value

The sixth construct is price value and could be defined as "consumers' cognitive trade-os between the perceived benefits of the applications and the monetary cost for using them" (Venkatesh et al., 2012, p.161). Thus, if the perceived value of using technology is greater than the perceived cost of using them this construct will have a positive impact on the behavioral intentions of the individual (Venkatesh et al., 2012). The news aggregators which are being a subject for this thesis are freely available for anyone. According to (Parker & Van Alstyne, 2008) every intermediate platform consists of at least two sides, where one is the subsidy side and the other is the money side. The subsidy side is the one that is being prioritized by the platform (Parker & Van Alstyne, 2008), in this case, the people that have the opportunity to

download the news aggregators for free. The other side, the money side, is the one that enables the survival of the business as well as enabling the subsidy to have something for free. It could for example be companies that want to advertise themselves, the developers, or the founders (Parker & Van Alstyne, 2008). This implies that the personal data economy has expanded immensely these past years due to the fact that developers release free apps in order to make a profit on ad sales and data sales (Thurm & Kane, 2010). That is why the prevailing currency used is personal data and not money (Bean & Koeppel, 2012), in 2017 data even surpassed oil as the most valuable resource worldwide (Siele, 2017). In addition, they found that some people would be willing to accept advertising in exchange for a free app (Thurm & Kane, 2010). Hence, the sixth hypothesis will be:

H6: Price Value has a significant influence on the behavioral intention to use and accept algorithm-based news aggregators

2.6.7 Habit

In general, habit could be defined as "the extent to which people tend to perform behaviors automatically because of learning" (Venkatesh et al., 2012, p.161). However, according to the author, habit has in previous studies been looked upon from two different perspectives. One that takes direction towards a view of habit as prior behavior and the other takes the direction of habit as a behavior that is automatic (Venkatesh et al., 2012). Thus, if users learn that a specific news aggregator is performing well or engaging with a specific news aggregator will fulfill their needs, they are more prone to repeat the usage of that particular news aggregator in the future (Cheng et al., 2020). From a marketing perspective, habits are entirely performed without any extensive deliberation (Verplanken, Aarts & van Knippenberg, 1994), thus, buying something out of habit is a low-involvement purchase (Bosnjak & Rudolph, 2008). A low-involvement product is a product that just needs to fill its purpose, there is little to no risk in buying the product which makes the deliberation time for choosing a product much shorter (Kotler & Keller, 2016). Also referred to as convenience goods, they are products that are used on a regular basis with a small or no price, they become a habitual purchase (Kotler & Keller, 2016). We consider news aggregators to be low involvement/convenience services since they offer a free service that consumers use regularly on a daily basis, which implies that consumers would make a habitual choice for which news aggregator to use. On another note, many corporations conduct media monitoring in order to keep up with world events that possibly could affect their daily business (Zhang & Vos, 2014), which implies that plenty of people use

news aggregators for their job, making media monitoring a habit. Hence, the seventh hypothesis will be:

H7: Habit has a significant influence on the behavioral intention to use and accept algorithm-based news aggregators

2.6.8 Perceived risk

Today, algorithms are already integrated into the majority of our technology which makes it extremely difficult to avoid interaction with some form of algorithmic function. Even though the specific algorithm that we are taking into consideration in this study serves as the function of increasing value for the user, it might also result in future negative consequences. For one, individuals are getting stuck in a filter bubble or an echo chamber (Sindermann, Elhai, Moshagen, & Montag, 2020). Filter bubbles and echo chambers are the consequences of having personalized information that is based on personal preferences (Sindermann et al., 2020). Möller, Trilling, Helberger & van Es (2018) also refer to it as a self-confirming feedback loop where there is a great lack of diversity in the information flow and where an individual's current opinions are constantly being reconfirmed. This makes it possible for news aggregators to prioritize political opinions or other beliefs, which limits the consumer's objective news consumption (Garrett, Carnahan & Lynch, 2013; Sindermann et al., 2020; Zuiderveen Borgesius et al., 2016). This potentially becomes a problem when people do not realize that they are alone in their filter bubble meaning that each individual is trapped in their own individual filter bubble (Zimmer, Scheibe, Stock & Stock, 2019). With traditional news outlets, people had the possibility to choose which articles to read or not, but now the recommender algorithms in the news aggregators choose for them (Bastian et al., 2019; Zimmer et al., 2019). Also, another result of being trapped in filter bubbles is that it will have an immense impact on what individuals choose to communicate with others through sharing information on their social network platforms. According to Ghaisani, Handayani and Munjanat (2017), people these days seek a lot of information and knowledge through social media. This implies that people with the same opinions could more easily find each other by looking at what one have shared and together amplify the self-confirming feedback loop. On another note, in order to personalize the feed for each individual, the system would need to collect previous data about the consumer's behavior and preferences (Bastian et al., 2019; Constantinides, 2015). This implies that news aggregators collect consumers' personal information in order to present them with better content whilst they also sell consumer's data to a third party that will use it for marketing

purposes (Bastian et al., 2019). It could be said that the crucial currency online is no longer money, but personal information (Bean & Koeppel, 2012). This brings us to one of the perceived risks with news aggregators - the collection of personal data. As Bastian et al. (2019) suggest, the collection of data raises ethical concerns since this might have an impact on what people choose to say, read and think if they know that this might be used for other purposes. Further, the personal data economy has gotten even larger because of developers that release free apps in order to make a profit on ad sales and data sales (Thurm & Kane, 2010).

Furthermore, we found Diakopoulos' (2019) book *Automating the news* to be very significant and interesting for our research, Diakopoulos examines and discusses the new consequences and problems that arise when we get all of our news from algorithm-based gatekeepers. Firstly Diakopoulos (2019) suggests that individuals now have to track the events and news relevant for them on another level since the algorithms are able to administer the visibility of the news, and this could affect both individuals and society in a democracy. Furthermore, the people creating these attention-mediating algorithms are themselves affected by their values and previous experiences which in turn could alter the algorithm's purpose and performance (Diakopoulos, 2019). This assertion is related to SCOT, which explains why the people creating and implementing these algorithms have the power to decide which news should be seen as public knowledge and which should be available for personalization (Diakopoulos, 2019; Yousefikhah, 2017).

Furthermore, there are perceived risks of algorithm-based news aggregators that could have a future impact on our society (Diakopoulos, 2019). We have narrowed them down to be: collection and use of personal data as well as the phenomenon of filter bubbles reconfirming consumers' current beliefs. Hence, the eighth hypothesis will be:

H8: Perceived risk associated with algorithms has a significant influence on the behavioral intention to use and accept algorithm-based news aggregators

2.7 Research model

As our hypotheses clarify, we expect that the hypotheses H1-H8 will have a significant influence on the behavioral intention. As seen in the model below, behavioral intention

naturally affects use behavior, thus each hypothesis that is significant for behavioral intention is also significant for use behavior.
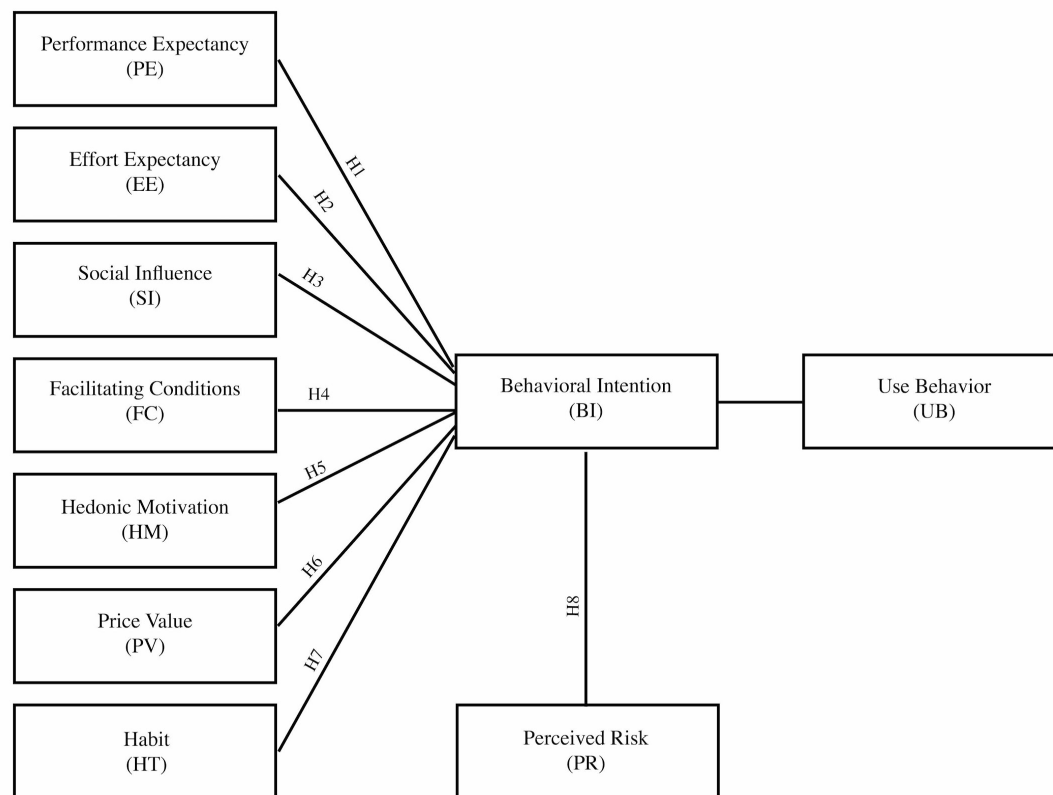
Figure 1 - The extended UTAUT2 model with the additional construct - perceived risk.

3. Methodology

The following chapter will present the methodology of our study which includes the research design, sampling & data collection, survey design including item development, pilot study, method of analysis, ethical considerations and method reflection. We have chosen to collect empirical data by an online survey and then analyzed our data by a multiple regression analysis, this will be further explained in this chapter.

3.1 Research design

This is a small scale quantitative study and we will therefore use a deductive approach where we deduce hypotheses from previous theories in order to either reject or confirm them (Bryman, 2012). This will be done by gathering previous research concerning UTAUT2, news aggregators, and people's use, behavior, and acceptance in order to come up with a hypothesis

for each of our categories in our expanded UTAUT2 model. Further, our main purpose is with the help of our data collection, determine which of our eight categories, including our additional category - perceived risks, is the most significant on people's acceptance and use of news aggregators. Lastly, we will perform an inductive action by revising our findings in relation to the previous research as a final step in our deductive approach (Bryman, 2012).

This study is based on a positivistic research philosophy, Bryman (2012) states that positivism is the most relevant epistemological perspective to use when testing hypotheses, which makes it relevant for this study. Objectivity and testability are the main foundations for positivism (Bergman, 2016), which is why we will conduct a survey to attain objective results that later will become testable statistics. As previously mentioned, we will use SCOT as the perspective on technology in this study in combination with positivism.

3.2 Sampling & data collection

Our data collection method is an online survey, we found this to be the most appropriate method for our purpose to understand people's use and acceptance of news aggregators. According to Trost & Hultåker (2016), surveys are an effective course of action when the purpose is to study people's attitudes, knowledge, and behaviors. We chose to make the survey open to all nationalities as we did not see the purpose to exclusively focus on only Swedish consumers. Thus, our target population for this study is any individual globally that uses news aggregators in their daily life. Although, due to the lack of time and resources during this research project we will use the non-probability sampling method of convenience sampling. Using a convenience sample is a sampling method that builds on accessibility, e.g., the researcher gathers responses from the people that are available to them (Bryman, 2012; Pallant, 2003). The question has been raised concerning how many responses one would need in order to repeat the result in the sample, foremost by Stevens (1996), and Tabachnick and Fidell (2007). Tabachnick and Fidell (2007) have come up with a formula for calculating sample size requirements: $N > 50 + 8m$, where m is the number of independent variables used. Hence, we will need at least 114 survey responses with our eight independent variables ($N > 50 + (8 \times 8 = 64) = 114$), in order to gain a sample that is replicable. We used Facebook groups and our personal LinkedIn pages in order to spread the survey. Unfortunately, although Facebook is a great network to reach respondents, we are not aware of how many that chose not to participate or did not see the survey which limits our knowledge of the external omission

(Pallant, 2003). Furthermore, out of our 183 answers, 120 were usable, meaning that 63 respondents did not use news aggregators and are therefore not qualified as respondents of this study. In addition to this we removed the responses showing extreme outliers resulting in 117 usable answers.

3.3 Survey design

We created a survey in Google Forms since it was an efficient way for us to collaborate on creating the items. The respondents that answered the questionnaire were first presented with basic information about why we were conducting this survey and how we would manage the responses ethically. We also included our definition of a news aggregator in the introduction text to make sure the respondents agreed to the same definition in order to increase validity. The respondents were then asked to answer three demographic questions (age, gender, and educational level) and one about their use of news aggregators since we wanted to eliminate the respondents that do not use news aggregators. We chose to divide the age groups in brackets of generations in order to easier detect patterns and possibly add an additional dimension to our discussion. However, the age range for the generations is not collectively determined, we have therefore chosen to use the Pew Research Center's definition of the generational cohorts (2019). Dimock (2019), from the Pew Research Center, explains the different ages for each generation to be as followed: people born between 1997-2020 is referred to as *generation Z*, 1981-1996 are *millennials*, 1965-1980 are *generation X*, 1946-1964 are *boomers* and lastly 1925-1945 are *silent*. In the next section of the survey, presented below in section 3.3.1, we introduced the respondents to 33 items formulated as assertions, semi-divided into the nine categories of our expanded UTAUT2 model each category had 3-5 items. Every assertion is answered by a Likert-scale ranging from 1-Strongly disagree to 7-Strongly agree. As proposed by Barmark & Djurfeldt (2015), we used a casual language that suited the target group with a concise and relevant assertion for each of the items. Items such as performance expectancy, effort expectancy, social influence, facilitating conditions and behavioral intention were derived from Venkatesh et al.'s (2003) and Cheng et al.'s (2020) studies. Furthermore, the items for hedonic motivation, price value, and habit were inspired foremost from Cheng et al. (2020) as well as other studies concerning more of a marketing perspective. Lastly, for our own expanded category- perceived risk, we used previous research from Nechustai & Lewis (2018), Sindermann et al. (2020), and Diakopoulos (2019) in order to create reasonable and relevant items. To address concerns about the validity, our items needed to be as closely related to the

theoretical definition as possible (Wrench, Thomas-Maddox, Richmond & McCroskey, 2013), which is why we based our items on previous studies that were also using the UTAUT2 model. By requiring the respondents to answer every item, we were able to reduce the internal omission of the study. We further reduced the internal omission by asking "Do you use news aggregators?" in the beginning, in order to eliminate any responses from people that do not use news aggregators. As mentioned, this resulted in the total number of respondents going from 183 to 120. Reliability measures the random error in the study, this can happen if the questions are ambiguous and faint (Barmark & Djurfeldt, 2015). In order to address the issues with reliability, we have conducted a pilot study to eliminate any unclear wordings in the survey.

3.3.1 Item development

Performance Expectancy
PE-1: By using news aggregators I get news that are relevant for me
PE-2: News aggregators help me stay updated
PE-3: By gathering all news at one place news aggregators increase my productivity
PE-4: Using news aggregators saves me time
PE-5: I use news aggregators because I want to get exposed to news from different perspectives

Effort expectancy
EE-1: I find news aggregators easy to use
EE-2: My interaction with news aggregators is clear and understandable
EE-3: I find it easy to control my news feed

Social influence
SI-1: The majority of my friends and family use news aggregators
SI-2: People whose opinion I value use news aggregators
SI-3: It is expected of me to use a news aggregator, for example at work
SI-4: I was recommended by a friend of a family member to use news aggregators

Facilitating conditions
FC-1: My device's operating system (e.g iOS/Android) supports the use of news aggregators and let me use them without any problems
FC-2: I can use the same news aggregator on all my devices
FC-3: I know how to filter out news that fit my areas of interest

Hedonic motivation
HM-1: Using news aggregators is entertaining
HM-2: I enjoy news aggregators because they give me a personalized news feed
HM-3: I find the majority of the news in my news aggregator fun and interesting to read

Price value
PV-1: I use news aggregators because they are free
PV-2: I can accept the amount of ads in the news aggregator because it is free
PV-3: I would pay for a news aggregator I really liked
PV-4: I would rather use a free news aggregator with ads than pay for one without ads

Habit
HT-1: The use of news aggregators have become a habit for me
HT-2: I have always used the same news aggregator
HT-3: I am required to use news aggregators daily, e.g for my workplace or studies

Perceived risk
PR-1: News aggregators could keep the logs of my data
PR-2: News aggregators could use my personal information without my permission
PR-3: News aggregators could provide my personal information to other companies without my consent
PR-4: News aggregators could provide me with news reaffirming my political inclinations
PR-5: News aggregators could present me with news reconfirming my current opinions

Behavioral intention
BI-1: I intend to continue using news aggregators in the future
BI-2: I intend to use news aggregators on a daily basis
BI-3: I plan to keep using news aggregators as regularly as I do now

Table 1 - Items and assertions

3.4 Pilot study

We conducted a pilot study for our questionnaire on the 13th of April 2020 in order to test the survey and eliminate any small errors that could affect the validity or reliability (Olsson & Sörensen, 2011). We asked a group of people to complete the survey with the purpose to give us feedback on the formulations of the items as well as the construction of the survey. We settled with seven participants since Wrench et al. (2013) suggests that a pilot study should consist of 5-10 percent of our targeted sample and as presented earlier we need 114 respondents for a repeatable sample (seven out of 114 participants comes to 6.14%). According to the participants of the pilot study it took approximately 5-7 minutes to complete the survey, which we later used in the introduction of the survey in order to let people plan their time. The majority of the pilot study group found the survey easy to understand with only a small issue with a formulation of one of the items, which we modified for easier understanding before we sent the survey out for further responses.

3.5 Method of analysis

This section will present the method used for the analysis of the collected survey data. Since we conducted the survey using Google Forms we could easily recode the nominal and ordinal variables into numerical values which were later transferred into SPSS for further analysis. In order to receive more distinct results we eliminated all of the extreme outliers in the data, fortunately, this still left us with a sample above 114 responses for every parameters, the new sample came to 117 answers.

We chose to conduct a multiple regression analysis (MRA) in order to make use of all of our variables. With the MRA we were able to see how much of the dependent variable (BI) is explained by the independent variables (Djurfeldt, Larsson & Stjärnhagen, 2018). This means that we were able to determine which of the independent variables was most significant for the behavioral intention to use and accept algorithm-based news aggregators. The MRA compares two components of the variance, firstly it examines how much of the total variance is due to the independent variables, this is called the regression, further, it also comes up with the residual which is the variance that is not explained by the independent variables (Djurfeldt et al., 2018; Pallant, 2003). In order to conduct an MRA we had to group all of the separate items into their UTAUT2 categories, meaning that we created index variables for each of the categories. Due to the fact that we had different amounts of items for each parameter we proceeded by adding

the items' values together and dividing them by the quantity, in order to receive comparable numbers. Before doing this we controlled the Cronbach's Alpha coefficient for the independent variables we were to use, in order to examine if they measure the same construct, this is also referred to as internal consistency (Pallant, 2003). DeVellis (2003) recommends that the Cronbach's alpha should be above 0.7, however, if the index variable used less than ten items it is common that one would receive a lower value. If this was the case we removed one of the items that were causing the reduction of the Cronbach's alpha. Since we had less than ten items for each index variable, we found it appropriate to present the mean of the inter-item correlation between the items as well, the ideal would be a number between 0.15-0.5 since a number above 0.5 would suggest too repetitive questions (Clark & Watson, 1995; Pallant, 2003). To further strengthen the reliability we chose to use the Cronbach's alpha and mean inter-item correlation values in combination with each other.

Next, we addressed the multicollinearity, which investigates if the independent variables are too closely related since this can affect the outcomes from the MRA. It is important that the independent variable correlates somewhat with the dependent variables (value above 0.3) but for the independent variables to correlate too much with each other (value above 0.7) does not make for a good MRA (Pallant, 2003). Pallant (2003) further explains that the variance inflation factor (VIF) is a good measure for multicollinearity and this value should preferably be below 10.

By looking at the R Square, we were able to see the percentage of the variance explained by the independent variables which is one of the main focal points in an MRA (Pallant, 2003). However, since we have a smaller sample than 200 responses we chose to present the Adjusted R Square instead since this creates a better estimate for our sample (Djurfeldt et al., 2018). The Adjusted R Square can vary a great deal, seeing as some reports in the social sciences just receive values around 0.10, whereas some studies get a remarkably larger number (Djurfeldt et al., 2018; Pallant, 2003). However, the R square has no value if the p-value for the ANOVA test shows no significance (Pallant, 2003). In order to find the construct that contributes the most to the explanation of the dependent variable, we will refer to the standardized beta coefficient (Pallant, 2003). Pallant (2003), explains that the variable with the largest beta coefficient gives the largest unique contribution in explanation of the dependent variable, we can therefore, discover which of the constructs in our UTAUT2 model makes the greatest contribution to the behavioral intention. We looked at the significance level in the coefficients

table in order to either confirm or reject our hypotheses by using the significance level of 0.05. Lastly in the MRA, there is a Normal Probability plot which shows how related the two datasets are (behavioral intention vs. the UTAUT2 parameters), this is used in order to visualize the skewness of the distributed values (Thode, 2002), preferably, the dots will be following the diagonal line since this would propose no peculiar deviations (Pallant, 2003). When the MRA is completed we present the results and either confirm or reject our hypotheses, this will be followed by an analysis of the results.

3.6 Ethical considerations

This section will address the ethical considerations made in regard to this study. Lind (2014), advocates that the people involved in a study should have the opportunity to exit the study whenever they feel like, have their data managed with respect and away from the public eye. Furthermore, the respondents should obtain the necessary information before the start of the study, in addition to this they should be offered full anonymity in order to protect their integrity and privacy (Bryman, 2012). Participation in this study was completely anonymous and the data collected was exclusively used for this study. We did not gather any sort of identification of the respondents in order to achieve complete anonymity, implying that we do not have the possibility to find out which respondent sent in which answer. Moreover, we studied a neutral subject that is not closely related to any triggering issues which eliminates items that would be either degrading or violating for the respondents. Before conducting the study, the respondents were presented with the necessary information for them to understand the purpose of the study as well as the subject and the definition of news aggregators. This was done in order to equalize the respondents' understanding of news aggregators. All respondents had the opportunity to exit the study at any time if they did not feel comfortable submitting their results.

3.7 Method reflection

Since the study was conducted from a consumer perspective, we chose to only rely on UTAUT2 since the model covered the purpose with our study, nevertheless, the study could have been more comprehensive using additional research models. Furthermore, we chose to disregard the demographic characteristics for our hypotheses which are usually used for the UTAUT2 models in similar studies considering that we did not have the time and resources available for that kind of study. Instead we added the additional construct, perceived risk, as an independent variable

for our research model in order to fulfill our purpose with this study. However, this construct of perceived risks could be divided into two parts where PR-1 to PR-3 would be one cluster and PR-4 to PR-5 would be another (see 3.3.1). Why we see this as an alternative is because it could be said that these clusters test different types of risks. This might have an effect on the results, but since our test of Cronbach's alpha showed a significant value we did not see any reason to divide the construct. We chose to do a convenience sampling and unmistakably, a convenience sample is not ideal due to the lack of possibility to gain generalizable results (Bryman, 2012; Pallant, 2003). However, our hope is to create further interest in this subject and to find common links to other studies, which can promote future research. Since we chose to use a convenience sampling method there was a risk that we would end up with a skewed population distribution regarding the demographic characteristics. Yet, we did not see this as an invalidation of our results since our main purpose is to raise awareness and spread the interest concerning algorithm-based news aggregators and not to generalize our results to a larger population. On another note, we had to remove some of the items for our independent variables that were causing lower reliability rates for the Cronbach's alpha as well as the mean inter-item correlation, which does have an effect on the final results.

4. Results and Analysis

This chapter will present the results from the analyzes done in SPSS, these are - the demographic characteristics, reliability tests, and the multiple regression analysis. We will use the abbreviations for the UTAUT2 parameters throughout this section, these are as follows performance expectancy (PE), effort expectancy (EE), facilitating conditions (FC), social influence (SI), hedonic motivation (HM), price value (PV), habit (HT) and perceived risk (PR).

4.1 Demographic analysis

Demographic characteristics		Frequency	Percentage
Gender	Female	68	56.7
	Male	52	43.3
Age	1997-2020	46	38.3
	1981-1996	56	46.7
	1965-1980	15	12.5
	1946-1964	3	2.5
Education	High school degree	20	16.7
	Bachelor's degree	53	44.2
	Master's degree	38	31.7
	PhD degree	9	7.5

Table 2 - Demographic characteristics

The demographic statistics show that out of the 120 participants 56.7% were female and 43.3% were male, making the female participants the majority by a few. The overall majority were born in the younger age groups with 38.3% participants born between 1997-2020 and 46.7% participants born between 1981-1996, implying that roughly half of our sample are millennials. Further, 12.5% participants were born between 1965-1980 and finally just 2.5% participants were born between 1946-1965. As seen in the table above, there were 16.7% respondents that have a high school degree, 44.2% respondents with a bachelor's degree, 31.7% respondents with a master's degree and lastly 7.5% with a doctor's degree. The educational statistics display that the majority of our sample (84.9%) have pursued higher education after high school. In addition to the demographic characteristics, we gathered data on which news aggregator that was used most among our sample, in this section it was possible to select multiple answers. As seen in Table 3, we found that 72 (60%) of our sample use Google News, followed by 39 (32.5%) people who use Apple News, the use of OMNI came in third place with 32 (26.7%) users. These three apps are certainly used the most within our sample with the remaining 52 votes spread out between the apps Yahoo News, Bing News, Flipboard, News360, Feedly, NTV, Newsmav, TDLR, and Muzli.
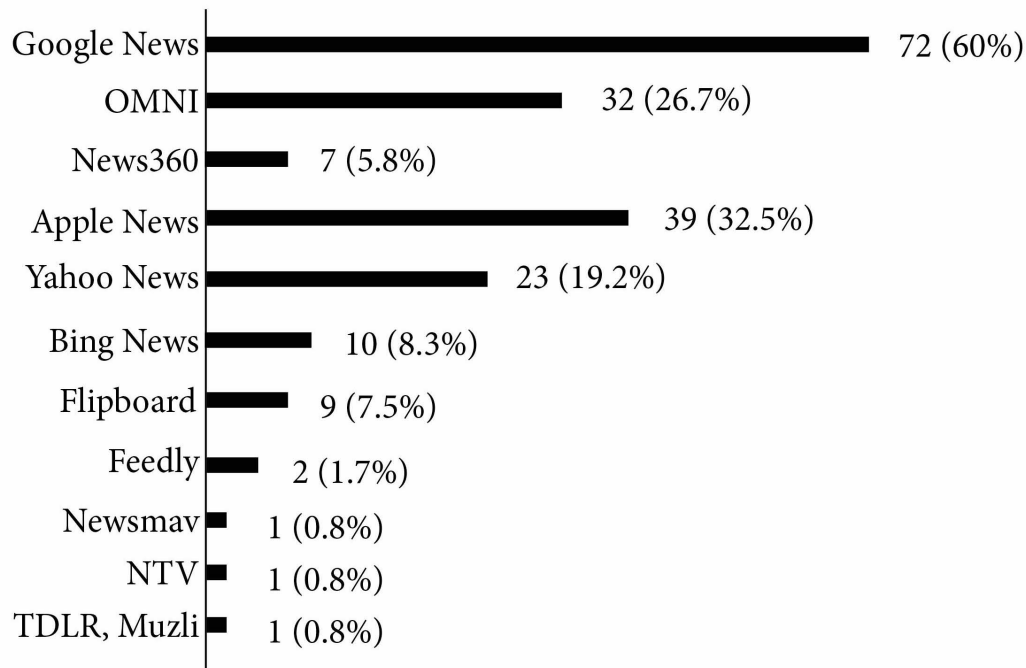
Google News ████████████████████████ 72 (60%)
OMNI ██████████████ 32 (26.7%)
News360 ███ 7 (5.8%)
Apple News █████████████████ 39 (32.5%)
Yahoo News ██████████████ 23 (19.2%)
Bing News ████ 10 (8.3%)
Flipboard ███ 9 (7.5%)
Feedly ██ 2 (1.7%)
Newsmav █ 1 (0.8%)
NTV █ 1 (0.8%)
TDLR, Muzli █ 1 (0.8%)

Table 3 - Use of news aggregators distribution

4.2 Reliability & Validity

Constructs	Cronbach's Alpha, α	Mean inter-item correlation	No. of items
Performance Expectancy	0.784	0.441	5
Effort Expectancy	0.665 (0.730)	0.428 (0.525)	3 (2)
Social Influence	0.737	0.424	4
Facilitating Conditions	0.248 (0.363)	0.121 (0.224)	3 (2)
Hedonic Motivation	0.827	0.614	3
Price Value	0.456 (0.684)	0.211 (0.422)	4 (3)
Habit	0.535 (0.590)	0.303 (0.420)	3 (2)
Perceived Risk	0.828	0.492	5
Behavioral Intention	0.838	0.666	3
		Total items:	33 (29)

Table 4 - Reliability testing: Cronbach's alpha & Mean inter-item correlation

The reliability tests show that most of our constructs meet the required value of 0.7 for the Cronbach's alpha, however effort expectancy (EE, 0.665), facilitating conditions (FC, 0.248), price value (PV, 0.456) and habit (HT, 0.535) have a value below 0.7 for the index variables when including all of the items. Moreover, EE only fulfills the requirement for Cronbach's alpha when item EE-3 (see 3.3.1) is removed from the index variable (0.665-> 0.730). By

removing one item on each of the index variables that do not fulfill the requirement we are able to raise the value somewhat but not enough to pass the required value. As mentioned earlier in the method section, the Cronbach's alpha value might suffer due to the inadequate number of items for each index. Since we only have between 3-5 items on each variable, the low Cronbach's alpha value was to be expected. For this reason, we have in addition to Cronbach's alpha, presented the index variables mean inter-item correlation, which should be between 0.15-0.5 in order to be similar but not too repetitive. As presented in Table 4 above, every variable except HM (0.614) and BI (0.666) meets these terms. Further, the high value implies a repetitive nature which could be due to the items being similarly formulated, this could be due to the guide from Cheng et al. (2020). However, since HM (0.827) and BI (0.838) does fulfill the requirement for the Cronbach's alpha we still see them as reliable. In order to get more reliable results, we have chosen to remove the items from the constructs that lower their Cronbach's alpha value. The actual values are presented on each row and for the ones with two values, it is the value in parenthesis that is used. We would have preferred that the values for the Cronbach's alpha and the mean inter-item correlation to be acceptable for all constructs. Although due to the relatively small sample and that we had less than ten items for each construct this was to be expected.

4.3 Descriptive statistics

	PE	EE	SI	FC	HM	PV	HT	PR	BI
Mean	5.7128	6.0431	3.9875	6.0721	5.5345	5.6524	5.2983	4.8136	5.8490
Std. Deviation	0.83847	0.81179	1.29918	0.82805	0.99066	1.07068	1.33772	1.28575	0.98698

Table 5 - Descriptive statistics: mean & standard deviation

In the table above we have the mean and standard deviation for each of the construct index variables, this is used to summarize the data. This tells us that EE (6.0431) and FC (6.0721) have the highest mean scores on the Likert-scale, our Likert-scale went from 1-"strongly disagree" to 7-"strongly agree", implying that the mean value for EE and FC is equivalent to "agree" on our Likert scale. Since most of our items were formulated like assertions presenting different advantages (PE, EE, SI, FC, HM, PV and HT) with news aggregators the Likert-scale

made it possible for the respondents to choose what advantages they like or not. Implying that a high mean score indicates that the majority of the respondents find the particular advantage with news aggregators the most appealing. Moreover, the mean for SI (3.9875) and PR (4.8136) are the lowest with high standard deviations (SI: 1.29918; PR: 1.28575) indicating that these two constructs had answers that were more spread out compared to the other constructs. The mean for SI is equivalent to a "neither agree or a disagree", whereas the mean for PR indicates more of a lean towards the "agree"-side by being equivalent to a "slightly agree". In addition to SI and PR having high standard deviations they are joined by HT (1.33772) and PV (1.07068) as well, HT has the highest standard deviation out of all constructs. In this situation, we can see that each of the constructs mean ranges between 4.8136-6.0431 which is quite a short-range considering the scale 1-7, it is as well skewed more to the agreeing side. Finally, even though there are some differences to the standard deviations the values are still quite low implying that the answers are quite close to the mean. As we can see in table 5, all our results have rather high mean values indicating a ceiling effect that might have had an effect on our regression analysis due to the fact that the variance is not measured above a certain level (Garin, 2014).

4.4 Multiple regression analysis (MRA)

4.4.1 Adjusted R Square

Model summary

Model	R	R Square	Adjusted R Square
1	0.709	0.503	0.467

Table 6 - R Square results

The R Square shows that 50.3% of the variance for BI is explained by the independent variables (PE, EE, SI, FC, HM, PV, HT, PR). However, due to the fact that we used a relatively small sample, we will refer to the Adjusted R square for a better estimation of the explanation of the dependent variable. The Adjusted R square came to 46.7% which is a good and respectable number for studies in the social sciences. The p-value shown in the ANOVA table (table 7) in the SPSS output shows that our result is highly significant with a value of 0.000 (<0.0005), which makes the MRA valuable and useful.

ANOVA

Model		Sum of Squares	Sig.
1	Regression	56.848	0.000 (<0.0005)
	Residual	56.151	
	Total	112.999	

Table 7 - ANOVA

4.4.2 Coefficients

Multiple regression, dependent variable: BI

Constructs	Standardized Coefficient	Sig.	Collinearity Statistics
	Beta	p <0.05	VIF
Performance expectancy	0.187	0.045	1.907
Effort Expectancy	0.218	0.010	1.531
Social Influence	0.135	0.074	1.258
Facilitating Conditions	0.197	0.006	1.101
Hedonic Motivation	-0.019	0.817	1.546
Price Value	0.058	0.470	1.439
Habit	0.286	0.000	1.405
Perceived Risk	-0.082	0.238	1.062

Table 8 - Coefficient values: Beta coefficient, p-value & VIF value

Table 8 above shows the results from the MRA with the adapted index variables, with adapted we imply that some of the items are eliminated. In clarification, we have excluded the items EE-3, FC-3, PV-3, and HT-3 for higher internal consistency. Since we used the significance level of 0.05, we got the results that PE (0.045), EE (0.010), FC (0.006), and HT (<0.0005) are significant for the explanation of BI. Furthermore, FC and HT do not fulfill the requirement for a reliable Cronbach's alpha however, their mean inter-item correlation value is between the recommended range which implies that they are still valuable. We have also achieved great multicollinearity values (VIF) which eliminates the idea that our constructs would be too similar to each other. Furthermore, we can see by the standardized beta coefficient that HT (0.286) and EE (0.218) are the two constructs that contribute most to the explanation of the dependent

variable (BI). Our final result is therefore that the construct of HT has the biggest significance and explanation for the behavioral intention to use algorithm-based news aggregators.

4.4.3 Pearson correlation

Pearson Correlation

Variable	BI	PE	EE	SI	FC	HM	PV	HT
PE	0.528							
EE	0.500	0.503						
SI	0.333	0.295	0.083					
FC	0.337	0.200	0.267	0.024				
HM	0.339	0.535	0.346	0.298	0.114			
PV	0.360	0.466	0.375	0.282	0.034	0.403		
HT	0.537	0.444	0.348	0.348	0.117	0.352	0.336	
PR	-0.193	-0.094	-0.124	-0.115	-0.096	0.048	-0.001	-0.109

Table 9 - Pearson correlations

For the Pearson correlation we received results indicating that seven out of the independent variables (PE, EE, SI, FC, HM, PV & HT) show somewhat of a correlation to the dependent variable which is desirable. However, the correlation value between BI and PR (-0.193) illustrates less of a correlation than the proposed limit of 0.3, this can be due to the fact that this is an additional construct in the UTAUT2 model and has not gone through the same level of development as the other constructs. Fortunately, in addition to this we obtained results showing that neither of our independent variables coincides overly much (<0.7) with each other, making them all available for a joined MRA.
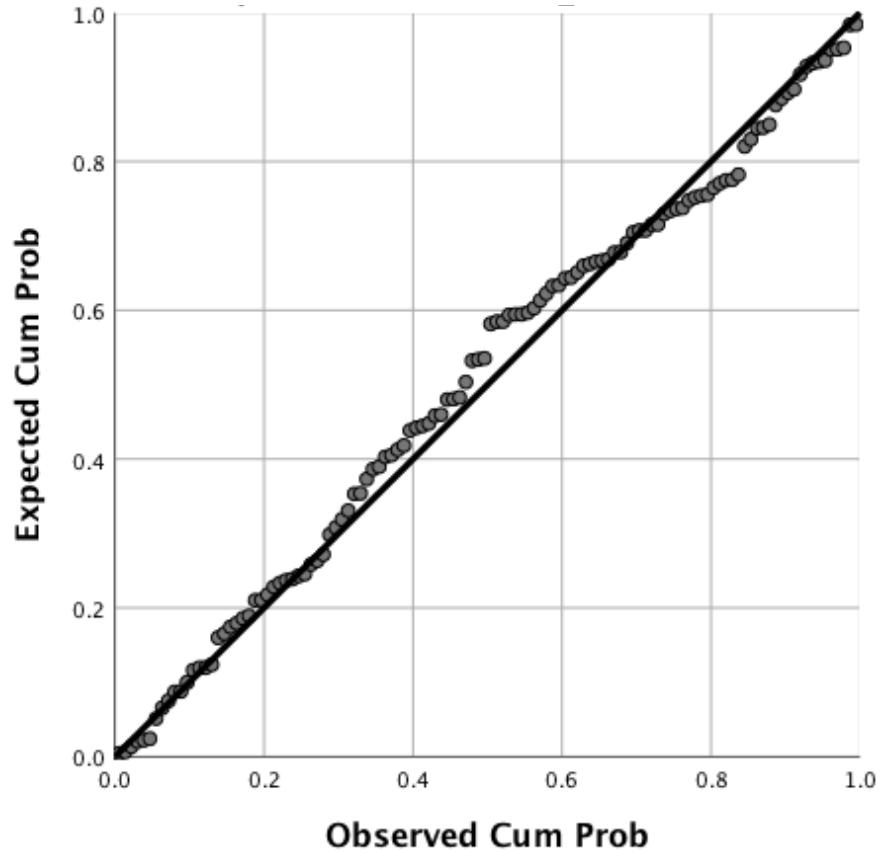
4.4.4 Normal probability plot

Figure 2 - Normal P-P Plot of Regression Standardized Residual

Considering that the dots are relatively close to the diagonal line we can see that there are no major deviations from normality. There are a few minor deviations in the 0.4-0.6 box as well as further up the diagonal line however this is not enough to cause any issues for our analysis.

4.5 Hypotheses testing

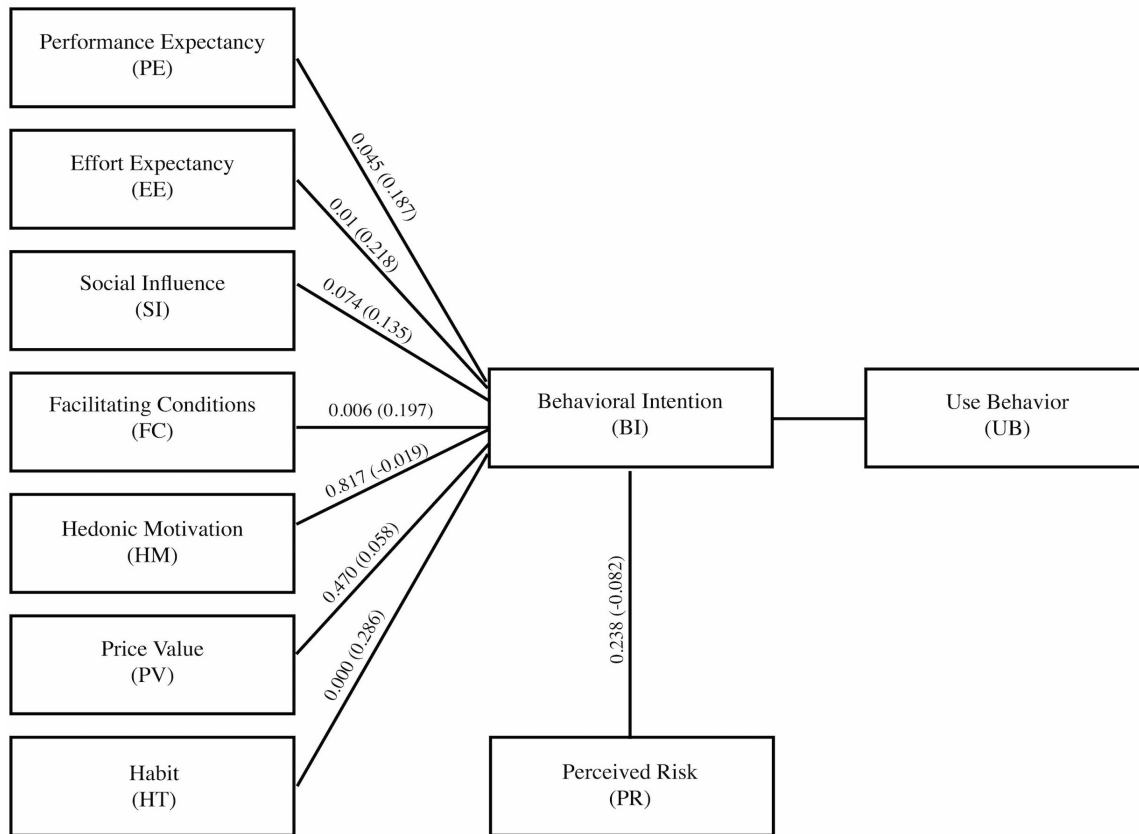| Hypotheses	Abbreviation
Performance Expectancy has a significant influence on the behavioral intention to use and accept algorithm-based news aggregators	H1
Effort Expectancy has a significant influence on the behavioral intention to use and accept algorithm-based news aggregators	H2
Social Influence has a significant influence on the behavioral intention to use and accept algorithm-based news aggregators	H3
Facilitating Conditions has a significant influence on the behavioral intention to use and accept algorithm-based news aggregators	H4
Hedonic Motivation has a significant influence on the behavioral intention to use and accept algorithm-based news aggregators	H5
Price Value has a significant influence on the behavioral intention to use and accept algorithm-based news aggregators	H6
Habit has a significant influence on the behavioral intention to use and accept algorithm-based news aggregators	H7
Perceived risk associated with algorithms has a significant influence on the behavioral intention to use and accept algorithm-based news aggregators	H8

Table 10 - Hypotheses with their abbreviations

In table 11 we have compressed the factors involved when making the decision to either support or reject our hypotheses. As seen in the table above, we have included what type of effect we assume the hypothesis to have, the standardized beta coefficient, the p-value as well as our decision. We were able to support four of our hypotheses (H1, H2, H4 & H6) and reject four (H3, H5, H6 & H8). PE (p: 0.045) and EE (p: 0.010) both had a p-value below 0.05 making them significant for the behavioral intention to use and accept algorithm-based news aggregators and therefore H1 and H2 were supported. SI (p: 0.074) did not not have a significant influence on the behavioral intention, thus H3 was rejected. FC (p: 0.006) was observed to have a significant influence on the dependent variable BI, therefore H4 was supported. Both HM (p: 0.817) and PV (p: 0.470) did not show a significant influence on behavioral intention, hence both H5 and H6 were rejected. HT (p: 0.000) was significant for BI and therefore H7 was supported. Further, hypothesis H8 was rejected as well, as PR (p: 0.238) was non-significant for the behavioral intention to use and accept algorithm-based news aggregators.

Hypotheses	Effect	Beta	Sig.	Decision
H1	PE→BI	0.187	0.045	Supported
H2	EE→BI	0.218	0.010	Supported
H3	SI→BI	0.135	0.074	Rejected
H4	FC→BI	0.197	0.006	Supported
H5	HM→BI	-0.019	0.817	Rejected
H6	PV→BI	0.058	0.470	Rejected
H6	HT→BI	0.286	0.000	Supported
H8	PR→BI	-0.082	0.238	Rejected

Table 11 - Overview of hypothesis testing with direct effect

When looking at table 11 along with figure 3, it can be observed that HT (β: 0.286) makes the greatest unique contribution to the explanation of the behavioral intention to use and accept algorithm-based news aggregators. HT is followed by EE (β: 0.218) as the second greatest contributor to the explanation of BI. Both FC (β: 0.197) and PE (β: 0.187) contribute a fairly similar amount for the explanation of the behavioral intention. Considering that the range from the highest beta coefficient to the lowest (0.286-0.187) for the significant variables is quite small, we understand that all four constructs create comparable amounts of the explanation for the dependent variable.

Performance Expectancy (PE) — 0.045 (0.187)
Effort Expectancy (EE) — 0.01 (0.218)
Social Influence (SI) — 0.074 (0.135)
Facilitating Conditions (FC) — 0.006 (0.197)
Hedonic Motivation (HM) — 0.817 (-0.019)
Price Value (PV) — 0.470 (0.058)
Habit (HT) — 0.000 (0.286)
Behavioral Intention (BI)
Use Behavior (UB)
Perceived Risk (PR) — 0.238 (-0.082)

Research model with p-value and standardized beta
coeffcient inside brackets.

Figure 3 - Research model with MRA results: P-values and Standardized Beta Coefficients

5. Discussion and Conclusion

In this section, we discuss our results from the SPSS analyzes in relation to the theoretical framework, we will present the conclusion of our research, as well as present our contributions and suggestions for further research.

5.1 Discussion

This study's main objective was to examine what parameter is most important for the consumer when using a news aggregator. We did this by applying the UTAUT2 model and looked at which of the seven original constructs of the UTAUT2 model that provides the substantial part of the explanation for the behavioral intention to use and accept algorithm-based news aggregators. We sought to reveal if the perceived risks with algorithm-based news aggregators had an effect on people's behavioral intention when using news aggregators. The research

model included performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, price value, habit and perceived risk as independent variables, these were analyzed with behavioral intention as the dependent variable.

Our results from the MRA analysis in table 8, showed that the constructs of habit, effort expectancy, facilitating conditions and performance expectancy had a significant influence on the explanation of the behavioral intention to use news aggregators. This implies that our sample's intention to use news aggregators is mainly influenced by the habit, the ease, the supporting surroundings, and the opportunities with using the app. Hence, social influence, hedonic motivation, price value, and perceived risk showed little to no explanation of the dependent variable making them insignificant for the behavioral intention to use news aggregators. These results show correlation with similar studies, for example Cheng et al's (2020) study covering news apps in India, found that performance expectancy, habit, hedonic motivation, and facilitating conditions to be significant for the continuous use of news apps. Nevertheless, they added the construct of personalization where we added perceived risk making the studies divergent from each other and this could have had an effect on the findings of the studies.

In our introduction, we presented the two sides of algorithm-based news aggregators - firstly, they give us a personalized feed by collecting the news we desire all at one place, however, they also collect our data by selling it to third parties and put us in a filter bubble. One of our interests with this study was to understand if people are aware of the risks with algorithm-based news aggregators and if they consider this when using the app. As mentioned earlier we found that the sample perceives that the advantages of news aggregators exceed the risks since the construct of perceived risk showed no significance for the behavioral intention to use and accept news aggregators. Furthermore, our result indicates unawareness concerning what an algorithm-based news aggregator does to our personal data, this is due to the fact that we had constructed items with some of the genuine risks with using news aggregators. E.g one of the items under perceived risks read "News aggregators could keep the logs of my data" (see table 1 - items and assertions). Implying that if people actually would know what news aggregators do, which risks are prominent, they would have answered agree/strongly agree on the items for our perceived risk construct. The usage of "could" in the formulation could have an effect on how people interpret the meaning of the item, which might have affected the results. Although, we found that the index for perceived risk had one of the lowest mean scores with the mean

indicating a score between *neither agree or disagree* and *slightly agree,* furthermore the score showed one of the highest standard deviations indicating that the answers for these items were more spread out in relation to the other constructs (Pallant, 2003). This implies that a large part of our sample simply does not realize what some of the real risks are with algorithm-based news aggregators or they do not perceive these things as risks. However, it is also possible that some respondents do not care about the risks. Additionally, we did formulate the items as assertions of what news aggregators could do and not whether the participants would perceive these acts as risks. Meaning that we measured people's knowledge of which risks are prominent in news aggregators and not their perception of a risk. There is a possibility that some of the respondents might have interpreted the item as something they would be willing to accept rather than something they know and understand. In relation to this we found it interesting that 84.9% of our sample have pursued higher education after high school indicating a well-educated group, the assumption can, therefore, be made that they should have a more critical mindset. We obtained a sample with well-educated people that do not fully realize the possible and true risks with the news aggregators they use mostly out of habit. For this reason, could the unawareness be due to partial blindness? Could the opportunities and efficiency with using news aggregators be too advantageous, that people do not want to give up their favorite apps making them blind to the idea that there are risks and threats associated with algorithm-based news aggregators? Evidently, we found that people value the advantages over the risks, but would they do the same if they were more educated in the matter?

It is our obligation to stay updated with the happenings in the world and many of us have made it a habit to stay current with the relevant news. In section 3.8.7 we mention that news aggregators could be seen as a form of low involvement product that people use out of habit. There are two sides to this, for one, when algorithm-based news aggregators are used out of habit it could mean that the person has stopped reflecting about what the ulterior consequences or risks might be. On the other hand, there are advantages with habitual use, such as effortlessly getting regular updates about what is going on in the world. As citizens of a democratic society, we are expected to make an educated choice when voting. What choices we then make is highly affected by the information we get from different sources. News and media function as one of the most important sources from where we obtain information and could, therefore, be seen as a pillar for a functional democracy. It is therefore reasonable that our sample showed that habit resulted in the greatest explanation for the behavioral intention to use and accept news aggregators.

On another aspect, the technological revolution has brought us plenty of new innovations and updates to previous problems, making everything more accessible and compliant with our needs. It is therefore natural for us to expect certain updates to our news outlet. It is normal to expect them to be more personalized to our needs which they have managed by bringing us news that fits our area of interest. As well as making it possible for us to gather all news at one location, as a result we found that the consumers' performance expectancy for news aggregators is one of the constructs that showed significance for the use of algorithm-based news aggregators. This can possibly be due to the user-friendliness of the interface of the apps and websites which in turn makes it reasonable that the construct facilitating conditions were significant for the behavioral intention to use and accept news aggregators as well. They are easy to use and they let consumers use them without any issues which build loyalty and value creation for the consumer. Hence, when only considering the advantages there is no reason to go back to the original news outlet which does not offer the same amount of benefits. We can now get fed with news that we actually have an interest in without having to go through a sea of information. However, this advantage also comes with a consequence that has already been pointed out - filter bubbles. But the question remains, do we really feel that filter bubbles are a threat? As we found, our sample does not find the risks with a personalized feed important enough to affect their behavioral intention. The filter bubble makes the app more fun and interesting, and for social media that is effective, but when this happens in one's news aggregator you suddenly lose the possibility to get news from several objectives. When one person only gets news reconfirming their current opinions they are not susceptible to news from another perspective, which has the possibility of creating stronger oppositions for each view, which can potentially be harmful to democracy.

As the results showed, the ease and efficiency (effort expectancy) were one of the constructs that made one of the largest unique contributions for the explanation of behavioral intention to use news aggregators. We found this to be highly legitimate due to the idea of social acceleration that was mentioned in an earlier section. In a time where we want everything to constantly go faster in order for us to achieve more in a day, the function to get all news in one place saves us plenty of time. It is therefore reasonable that effort expectancy showed significance for the use of news aggregators due to our society and our goals. We put so much focus into this expected acceleration, maybe even to that length that we do not realize what we are giving up, for example our privacy. However, one important aspect to realize is that our

fellow citizens are the ones that create both the advantages and risks with news aggregators. This connects to the very core of SCOT, as every object is neutral and it is up to us to choose how to use the object for good or bad. We mentioned it before, algorithms are not something that just appeared out of the blue, there is always a human behind the creation of the algorithm. We must, therefore, understand that it is people in our society that create the specific algorithm that causes the filter bubble issue and implements them in our favorite news aggregators. The issue with news aggregators is that the advantage and risk go hand in hand, in order for consumers to get personalized content the company behind the aggregators need to collect their data and sell it to relevant third parties.

Continuing on the theory of SCOT it is suggested that everyone interprets the risks with technology differently due to the interpretative flexibility. Considering that the risks with news aggregators is not a thoroughly discussed subject in the media, there is prone to be incomprehension to the risks, especially among the people that have not tried to understand them. At the same time, the people that work in the industry might be very well informed of the risks but proceed with carelessness due to other societal factors that we might not be aware of. Based on our research and results we understand that different social groups have different risk perceptions in general due to their upbringing and their environment and therefore we cannot expect that the risks should affect everyone's behavioral intention to use algorithm-based news aggregators in the same way.

Neither of the constructs: social influence, hedonic motivation, or price value had any significant influence on the use of news aggregators. Could the lack of significance for social influence be due to the fact that we already expect everyone to use some sort of news outlet since it still functions as a cornerstone for our society? It is possible that it is the specific or current news that is in focus when talking with friends and family, and not the news outlet. Further, we, unlike Cheng et al. (2020) did not find the pleasure and enjoyment (hedonic motivation) of using news aggregators crucial for the behavioral intention to use them. This might be due to the possibility that our sample values the easy usage, opportunity, routine, and facilitating conditions more than the enjoyment since there are plenty of apps that already exist solely for entertainment. A news aggregator functions as an effective personalized news outlet where the main focus might not be entertainment, which is why it is reasonable that hedonic motivation showed no significance for our sample.

Furthermore, our sample did not indicate that the construct price value was crucial for their intention to use and accept news aggregators. Even though the majority of the news aggregators are free and the consumers would "only" need to pay with personal information, most apps are free and offer the same trade. Therefore it is justified why this might be an expectation for news aggregators as well and not an advantage that makes a substantial difference. Further, we noticed that there is unawareness of the fact that these apps collect the consumers' personal data which could also have affected these results.

Lastly, one approach of strategic communication is to adapt the communication for the intended target group and by doing so, it is possible to reach a common understanding. Nonetheless, have we been so acclimated to that goal that we do not realize the harm it can do or the risks that come with it? Implying that the lack of risk communication in regard to news aggregators is so limited that people do not perceive these risks as risks. Strategic communication is an innovation that has improved a lot but when applying SCOT, humans have the opportunity to exploit the motive of strategic communication in an unethical manner in order to make more money. By recording the consumers' data and selling it to a third party that will provide them with ads and content that fit their needs and wants, algorithm-based news aggregators put consumers in a filter bubble. As mentioned in the introduction, strategic communication scholars propose that the new digital innovations create great opportunities but also ethical problems with the same intensity. Strategic communication has long focused on the idea that more personalized communication that speaks to the receiver will have a larger effect, which is what news aggregators are doing today. Unfortunately, this function comes with several risks that showed no significance for our sample, meaning that the consumers now can affect their society and democracy on another level without actually realizing it.

5.2 Conclusion

Finally, our study focused on revealing if either the advantages or the risks weigh more in the intention to use algorithm-based news aggregators as well as detecting which construct is most significant. We found that the advantages outweigh the risks and the results from our sample showed that habit makes the greatest unique contribution for the explanation for our dependent variable followed closely by effort expectancy, facilitating conditions, and performance expectancy. Our results indicated that our additional construct perceived risk does not show a significant influence on the intention to use news aggregators. This implies that we could

confirm four hypotheses and reject four of them. Implying that the consumers of algorithm-based news aggregators accept both parts of the offer, however, this can be due to unawareness of which risks are prominent in news aggregators and what they are able to do to each consumer, as well as to our society as a whole.

5.3 Contributions

Our research will contribute to the existing literature on news aggregators, the UTAUT2 model, and news apps. We do see our research as unique in its purpose since no previous research has measured and focused on the risk factors in algorithm-based news aggregators. We, therefore, see our contribution as significant for further research and interest concerning risks in news aggregators on a global level. Furthermore, our use of the UTAUT2 model further expanded and added to the research field of news apps and news aggregators from a consumer point of view. We also see our research as a contribution to the development of new news aggregators since the app developers will gain insight into which aspects some consumers of news aggregators value most which will save them time when doing market research. As presented in the result section, the aspects of habit, effort expectancy, facilitating conditions, and performance expectancy are the most forceful for the continuous use of algorithm-based news aggregators based on our sample.

As we did not receive results indicating that the perceived risks with news aggregators are significant for the use of them, this indicates a good platform to further develop the news aggregator for the tech companies as well as the publishing houses. However, this indicates a major concern for the democratic society if the rise of the news aggregators continues and the knowledge of the risks remains inadequate.

We see it as essential for app developers and companies offering news aggregators, to promote and enable an effortless daily use that encourages the habit of using the app every day. This can be done by cherishing their current users by developing loyalty programs that build on encouraging consumers to use the app every day, which will get them something in return. Another aspect of cherishing their current consumers can be to gather critique and suggestions from the current users in order to make the app more user friendly for their daily life. This leads us to the aspect of effort expectancy which also showed a great significance for the intention to use news aggregators. The goal with this aspect is to make the app as effortless and as easy to

use as possible, this can be done by using more personalization algorithms that will distinguish the articles each consumer seeks. In addition, app developers could make the interface of the app more user friendly which will play a crucial role in how the consumer finds the app and the use of it. Further, for the continuous use of news aggregators it is crucial to facilitate the conditions in relation to the app, implying the importance of making the app compatible with other systems the consumer might use. For example, if the consumer uses Google News they may need the news aggregator to work well on both Google based systems as well as the Microsoft and Apple systems. By including more facilitations it will embrace more consumers which in turn will affect the consumer's choice to keep using the news aggregator. Lastly, our data displayed that the importance of app performance plays a significant role in the use of the news aggregator, implying that the consumers have certain expectations of the general performance of the app that will assist them in being more effective.

5.4 Future research

To give this subject more of an in-depth understanding, we would suggest making a larger quantitative study using similar models and frameworks in order to gain generalizable results, which we were not able to do. The UTAUT2 model is very efficient when analyzing technological products and services from a consumer perspective and to use this model with all constructs as well as the age, gender, and experience additions would make it possible to create explaining results to a greater extent. We obtained results indicating that the perceived risks were not significant for the behavioral intention to use and accept news aggregators but it would be interesting to understand why this is. For instance, this might be due to our sample exclusively, we would, therefore, find it interesting with a more thorough investigation indicating which age group, gender or experience have the greatest and the least effect on this result. In addition, this result is due to change over time and would be applicable for a longitudinal study. Moreover, a larger study could include what consumers actually perceive as risks in relation to news aggregators. Considering that we turned out with comparable results to Cheng et al. (2020) we do find an interest in a similar study on a global level that could compare different nations' results. Another idea for a follow-up study would be to conduct a more qualitative study using interviews to analyze and discuss what consumers of news aggregators consider when choosing and using their news aggregator.

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7. Appendices

7.1 Survey presentation

Hi and welcome to this survey about news aggregators!

We are currently working on our bachelor thesis in Strategic Communication at Lund University in Sweden. The purpose of our study is to research how and why people accept and use algorithm-based news aggregators.

This survey is only applicable for people that regularly use news aggregators. With news aggregators, we mean digital news outlets that gather news from several different independent news sources. e.g. OMNI, Google News, Apple News, Yahoo News, Bing News, Feedly, News360, Alltop, Flipboard, etc.

We would like to thank you in advance for completing this survey and helping us with our thesis! The survey will take about 5-7 minutes to complete and consists of 33 items. If you have any questions or inquiries regarding this survey let us know!

Kind regards,
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