Adoption intention towards e-kronan

An exploratory mixed-methods study of the Swedish public

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Abstract

Sweden is quickly heading towards becoming the first-ever cashless society. Partially fuelled by a payment market evolving at a staggering rate, along with shifted consumer trends towards newly introduced digital service suppliers Swish, iZettle and Klarna to name a few (Berg, 2017). Riksbanken is therefore evaluating the possibility of introducing a new form of digital central bank money (a CBDC), called e-kronan (Julin, 2017). In 2014, Ecuador launched their equivalent to e-kronan, the e-peso. Only shortly after to revoke the currency due to an insufficient volume of end-users adopting the system (H. White, 2018). This certainly provides “food for thought” when conceptualising about the degree of adoption intention towards e-kronan in Sweden?

Therefore, the overall purpose of the present study is to explore the adoption intention towards e-kronan of the Swedish public. More specifically, to explore the degree of predictive power for a selected group of variables in a constructed research framework inspired by TPB and TAM, in potentially influencing adoption intention towards e-kronan. Carried out through an exploratory sequential mixed-methods approach, combining aggregated regression findings with qualitative data in a cross-over fashion.

Through the construct of eight variables, the findings showed predictive power for seven out of eleven hypothesised relationship. In that, the constructed research model gained favourable exploratory power, proving its scientific capacity. Perceived benefit and attitude attained strong influential power for intention adoption. Perceived usefulness also showed a positive power for impacting attitude and intention, potentially stemming from high levels of alignment with Swedish social and cultural values. Perceived ease of use was regarded as primarily acting through the intermediate variable perceived usefulness. Subjective norm and perceived behavioural proved no significant effect. Lastly, perceived security risk on intention was the only negative relationship significantly impacting adoption intention towards e-kronan. Although the negative relationship could potentially be diminished, due to Riksbanken seemingly favourable role in ledgering e-kronan.

Key words: CBDC; e-kronan; adoption intention; TPB; TAM

Preface

Almost three years have passed since first entering the Stockholm School of Economics. At this point, it is safe to say that it has been a journey full of many challenges, unexpected turns and certainly the occasional doubt. Most of all, it has augmented our belief in the silver lining ever-present in the most dire of situations, when surrounded by loving people. Therefore, we would like to express gratitude and appreciation to the graduating Retail Management class of 2019. We would also like to express gratitude to our thesis supervisor Sara Melén and the SSE professors providing well-acknowledged support during the production of our final thesis.

Hence, along with a bitter-sweet sensation of closing yet another chapter in life, we are proud and humbled to put forward our final thesis on adoption intention towards e-kronan. An increasingly hot-topic on the current agenda, and a phenomena close to heart for the authors of this report. The report opens up to a largely unexplored research area and establishes exploratory findings highly relevant in contemporary monetary research.

Stockholm, May 16 of 2019

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1. Introduction

This introductory chapter explains the gap identification in the current knowledge-base, the purpose of the report, the background context and the expected research contribution of the present study. Lastly this chapter justifies the research scope, and provides a process overview to enhance the structure of the report.

Payments are evolving at a staggering pace. Customers are expecting more efficient payments, mirroring the intermediate impact of increased digitalisation in society (Julin, 2017). In course of current development, 70 percent of Central banks are investigating the need for issuing a Central bank-issued digital currency (CBDC) (Barontini & Holden, 2019). That is, a country's digital version of Central bank money, issued and regulated by the official monetary authority. Ecuador was first in line to move forward with the issuance of a CBDC, the e-peso back in 2014. Although it was quickly revoked, mainly due to an overestimation of the volume and frequency of end-users adopting the system (H. White, 2018). Ultimately this depicts few of the challenges evolving around the concept of CBDC globally.

Sweden currently has the lowest GDP to cash ratio on the globe, and hence quickly progresses towards becoming the first-ever cashless society (Arvidsson, 2013). To preserve a strong stance in the payment market, Riksbanken has therefore launched an investigation into the possibilities of issuing a Swedish CBDC e-kronan, functioning complementary to other forms of money. (Julin, 2018). On the contrary, critical gaps are discovered in the current knowledge-base for research focused around exploring the actual adoption intention towards e-kronan by the Swedish public, as well as lacking of a coherent research model to further examine that relationship. These gaps are addressed in the report, and a background context is provided in terms of payment trends in Sweden and factors for adopting e-kronan. Lastly, a process overview depicts the two phases incorporated into the sequential mixed-method design in the present study, outlining key activities and outcomes from Phase I and Phase II respectively.

1.1 Gap identification

In the ongoing e-krona investigation, Riksbanken projects that if the e-krona demand becomes high, it could greatly improve chances of steering interest rates, and hence through monitoring the system minimise negative effects on Sweden's financial stability. On the contrary if the demand becomes low, the benefits harvested from the e-krona system could be largely diminished (Julin 2017). The implications of the inability of attracting a large enough user base becomes evident in the failure of the e-peso, which Central bank estimated a end-user activity of approximately 500 000, although realistically turned out below 5000 (H. White 2018). Despite that, the adoption intention researched from an end-user perspective, namely the Swedish public, still goes widely unexplored (SNS, 2018). At present however, the majority of research on e-kronan is largely focused around the technical design (Lascar, 2018), monetary- and financial implications (Blomqvist & Christensen, 2018) and jurisdictional matters (Holmén, 2017). Therefore, a gap identified in the current knowledge-base is the lack of research focusing around the adoption intention from the end-user perspective, which in turn is paramount in predicting e-kronans viability long term, and more specifically the systems' ability in attracting a sufficient base of end-users (H. White 2018). This gap is addressed in the present study through exploring the adoption intention towards e-kronan of the Swedish public, ultimately enhancing the capacity of capturing the end-user perspective.

Furthermore, between the period of 2010 to 2016, the cash use in Sweden decreased 25 percent (Julin, 2017). Whilst modern payments solutions and suppliers Swish, Klarna and iZettle to name a few, gained increased strength in the market (Berg, 2017). Statistically however, only 9 percent the Swedish public have positive attitude towards a digital cash alternative, whilst almost half account for a highly sceptical attitude (Tieto, 2017). From that perspective, there are no significant evidence further elaborating on the underlying reasons behind the largely negative attitude towards e-kronan. Similarly, adoption intention towards e-kronan can be considered from the low level of cash in circulation in Sweden, however is not established. In turn, the current knowledge-base does not constitute any coherent theoretical basis for research into digital money (Thomas et al., 2016). Therefore, another gap identified is the theoretical lack of research models and variables adapted for the purpose of exploring adoption intentions towards e-kronan. Along with critical determinants further elaborating on the nature of that relationship. This

gap is addressed and incorporated into the purpose of the present study, ultimately with the aim of providing an applicable research framework for future studies on the area of adoption intention towards digital money.

Lastly, it has been distinguished that previous studies with the purpose of exploring acceptance towards e-kronan in Sweden only incorporates findings of a relatively limited age scope (20-30 years) (Gawell & Hed, 2018). This based on the notion that the younger generation is suggestively more prone to adopt e-kronan due to a greater overall understanding of technology. On the contrary, related studies on adoption intention for innovations suggest that psychographic parameters, for example lifestyle and interests, have gained higher predictive power over the relationship than demographics (Arts et al. 2011). This opens up the gap of the lack of mapping of adoption intention and acceptance on an aggregated scale of the Swedish public, which in turn could improve generalisation of empirical findings in the knowledge-base for acceptance of e-kronan. Therefore, this gap is addressed in the scope of the present study. Focused on exploring adoption intention not limited to demographic boundaries, more adequately mirroring the practical end-user base for e-kronan.

1.2. Purpose

The overall purpose of the present study is to explore the adoption intention towards e-kronan of the Swedish public. Within the purpose, the definition intended for explaining adoption intention is; *“The expressed desire or need by consumers to adopt an innovation in the foreseeable future”* quoted from Arts et al. (2011). It is critically distinguished from adoption behaviour, which instead explains the behaviour after adopting an innovation rather than before. This purpose ties back to the identified gaps, and hence establishes a rigorous research pursuit for the present study. Ultimately making the overall purpose of the report both pertinent and consistent with scientific challenges ubiquitous in contemporary monetary research (Mägi & Lerkkanen et al., 2011).

More specifically, the purpose of the report is to explore the degree of predictive power for a selected group of variables potentially influencing adoption intention towards e-kronan. Namely through the construction of an adjusted research framework, inspired by previous adoption intention studies applied in related research areas by Lee (2009) and Walton &

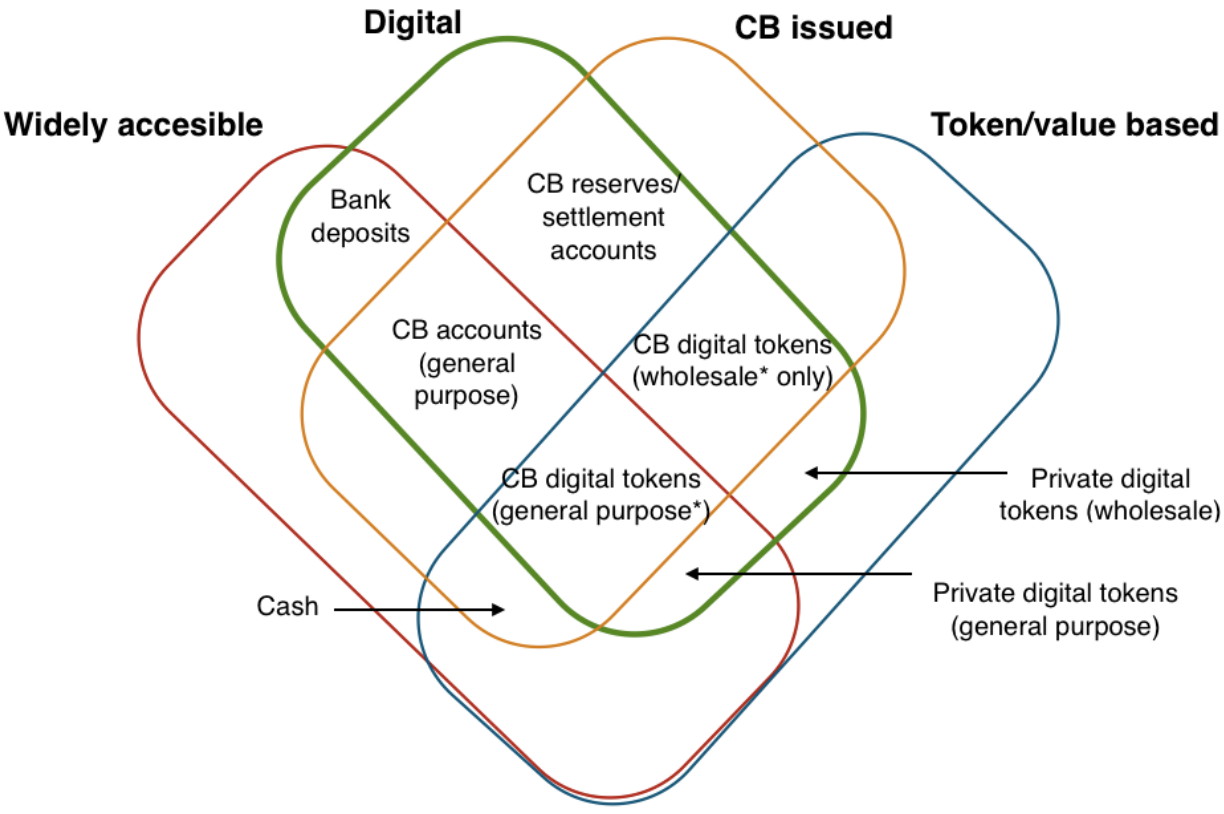
Johnston (2018). Hence ensuring significant theoretical contribution incorporated in the purpose, by critically applying behavioural models TPB and TAM onto a new scientific context (Alvesson & Sandberg, 2013). Hence this makes the purpose both researchable (White, 2017) and investigable (Major & Savin-Baden, 2012).

1.3. Background context

1.3.1. Central bank-issued currency (CBDC) & e-kronan

To provide a global context, 70 percent of Central banks are currently (or will soon be) engaged in CBDC activities. Collectively, these Central banks correspond to closer to 80 percent of the world's population, and over 90 percent of its economic output (Barontini & Holden, 2019), demonstrating the global abundance of CBDC and the contextual importance of the phenomena explored in the present study. To further grasp the role of Central Bank (CB) digital money in the taxonomy of money as a whole, **Figure 1** is provided. CB digital money is in this context commonly labelled as CB digital tokens.

Figure 1. Showing the taxonomy of money and role of CB digital money



CB digital tokens could be distributed either on a wholesale or general purpose scale. This distinction is not paramount to the present study, but shown in **Figure 1. above to provide increased understanding.*

Furthermore, Sweden is only one in five Central banks that has progressed into investigating a CBDC pilot project, the "e-krona project" (Julin, 2017). According to Riksbanken, the "e-krona project" is largely motivated by the pursuit of increasing safety aspects of payments and financial efficiency, as well as the ensuring the state's role in a potentially "less-cash" or "cashless" society (Julin, 2017). Riksbanken's proposed CBDC e-kronan, can be distinguished from reserves or settlement balances held by commercial banks at the Central bank (Julin, 2017). It is a centralised state-ledgered (CB) digital token by Riksbanken, separating it from unregulated privately owned digital tokens so-called cryptocurrencies, shown above. Therefore, CBDC's usually result in a higher degree of consumer protection, due to the fact that its backed an amount of monetary reserves (Löber & Houben, 2018).

At present, the intended design of e-kronan is a prepaid value, non-interest bearing and traceable currency, compatible with Riksbanken's legal mandate. Although an account-based e-krona is not ruled out for the future (Barontini & Holden, 2019). The possible characteristics of the two version are illustrated in **Extract 1**. below from Riksbanken.

Extract 1. Showing the possible characteristics of the two versions for e-kronan

Possible characteristics	Value-based	Account-based
Realtime payments	Yes	Yes
Underlying registration	Yes	Yes
Legal form	e-currency (prepaid value)	Lock-in (balance)
Interest bearing	No, not as a main rule	Yes
Anonymous payments	Yes (<250 euro)	No
Traceability	Yes (not in some cases, for instance when a prepaid card changes owner)	Yes
Offline payments	Yes	Yes

Both versions are intended to function alongside established forms money in society for instance coins, banknotes and bonds (Shobhit, 2018), making the differences mainly visible in underlying processes. Furthermore, the e-krona system would offer a payment availability of 24 hours a day seven days a week, primarily intended for lower-value payments. Hence, primarily affecting payments for consumers or small-medium firms rather than corporate giants (Julin, 2017).

1.3.2. Shifted payment behaviour

The Swedish GDP to cash ratio is currently 1,38 percent, whereas the Eurozone equivalent is approximately 10 percent (Barontini & Holden, 2019). The circulation of cash in Sweden has indirectly generated a shift of consumers payment behaviour, both visible in terms of the decreased volume of cash payments, and in cash withdrawals from ATM's (Julin, 2017). The shifted payment behaviour could be explained as a consequence of vastly introduced innovative payment solutions, and structural changes of the payment market as a whole (Julin, 2018). This trend becomes statistically evident in the increasing market numbers for digital payment solutions and innovative service suppliers Swish, Klarna, iZettle and Trustly (Julin, 2017).

Considering the rise of innovative systems, it increases the pressure for clarifying factors for adopting e-kronan. As it stands, these factors currently include a value offering of safe and convenient payments (Julin, 2017). The Swedish public is regarded as frequently exposed to new technology and digital systems, which could prove key factors in chances for adopting a new payment options (Berg, 2017). Historically, Sweden has a relatively high level and cultural tradition of trusting governing bodies, which Riksbanken values as a potential in e-kronan being adopted by end-users (Julin, 2018).

1.4. Expected research contribution

In general terms, the research is expected to contribute with an enhanced understanding of the ever-changing monetary landscape, and factors for adopting digital money, at a time where the payment market is rapidly changing (Berg, 2017). From a scientific viewpoint the study is expected to increase understanding of the end-user perspective, through exploring degrees of predictive power in variables impacting adoption intention, within the

field of digital monetary research. Theoretically, the study aims to propose a coherent research framework and predictive variables, through developing existing models, in the academic area of intention adoption for digital money. For decision-makers and managerial parties, the study attempts to assist as a tool primarily in the business case process, by improving the decision-making foundation with relevant consumer insights and end-user priorities in relation to e-kronan.

1.5. Research scope & process overview

1.5.1. Research scope

The scope of the present study is limited to Swedish nationals currently residing in the country. The scope captures individual's adoption intention, rather than corporations, financial institutions, and/or governmental bodies, in line with the practical target group for e-kronan. Due to the fact that an e-krona issuance would not be limited to any specific location, other than within the national borders, this is regarded as a suitable determination of scope. The present study focus is limited on examining variables impacting and influencing attitude and intention towards e-kronan, further supporting the need for targeting end-users.

More specifically, the study is narrowed down to the behavioural aspects of the e-kronan, rather than a full scale, detailed study investigating implications for different technical design options. This makes the scope of the research narrowed to specific behavioural aspect of the concept of e-kronan, enabling the research subjects to participate in the study without necessarily needing extensive knowledge of e-kronan. This scope also aligns with the limited time frame 1st to 31 of March for collecting meaningful data, and establishing subsequent findings.

Lastly, the scope of the study is limited to eleven hypotheses to explore the most fundamental relationships potentially affecting consumer demand in the case of an issuance of e-kronan. Ultimately, the scope of the hypotheses makes the findings both comparable to previous research and outlines the exploratory power for thoroughly selected relationships, potentially applicable to prioritisation in further research.

1.5.2. Process overview

To ensure a structured approach, a process overview is constructed. It outlines activities and outputs in each sequential phase, and is provided in **Table 1,** below. Initially an "idea study" is conducted with a Professor Emeritus at the department of finance at the Stockholm School of Economics, and a Spokesperson for the non-profit, politically independent organisation representing Sweden in the forum of International movement for monetary reform (IMMR), to augment understanding of the most critical gaps in the current knowledge-base.

Table 1. Showing the process overview with matching activities and predicted output

Phase or Process	Activities	Output
Phase: "idea" study : Assessing the validity and feasibility of the area explored in the present study	Examining relevant theoretical models, potential research areas, questions, and focus	Primary information of exploration, and research challenges accordingly
	Interviewing of experts within the field of macroeconomics, and monetary policy	Knowledge on potential study focus, research areas and gaps
Phase I: Quantitative research exploring the aggregated adoption intention towards e-kronan in Sweden	Review literature of CBDC, intention adoption and e-krona	Knowledge of previous studies on related research areas, and adoption intention
	Construction of research framework from innovation models, and literature	Research framework
	Quantitative data collection	Raw data
	Regression analysis of collected data	Accepted/rejected hypotheses
	Construction of in-depth interview questions for Phase II	Interview structure
Phase II: In-depth interviews expanding on the quantitative insights, and integration of findings in the interpretation stage	Interview sessions	Raw material
	Transcription of interviews, and categorisation	Recorded, transcribed, analysed findings
	Crossover and integration of findings	Aggregated findings, with exploratory insights

2. Theoretical framework & review of literature

Based on the problem identification, relevant studies and models are discussed in this chapter, hence decreasing the risk of repeating previous work (Bryman & Bell, 2017). Due to insufficient theoretical support on adoption intention towards CBDC and e-kronan, inspiration is drawn from related research findings on adoption intention. This, primarily through mixing the behavioural models TPB and TAM along with adding perceived benefit and security risk. Leading up to generating of research hypotheses, and potential determinants respectively. The hypotheses are then presented in context of our constructed research framework, and corresponding research references.

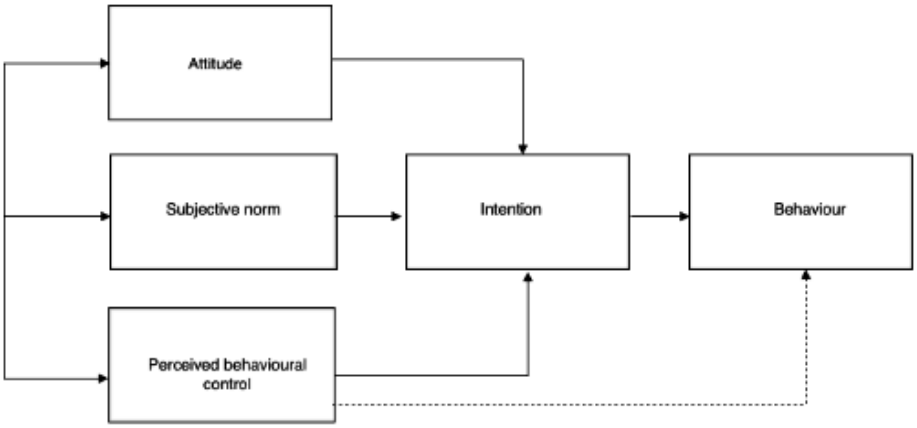
2.1. Mixing of TPB and TAM

There is a range of technology acceptance and adoption intention models, with the theory of planned behaviour (TPB) and the technology acceptance model (TAM) being ubiquitous (Venkatesh et al., 2003). Over the last decade, the mixing of TPB and TAM has been applied to studies analysing factors influencing the adoption of internet banking (Lee, 2019) and adoption of cryptocurrencies (Walton & Johnston, 2018). Hence, it is regarded suitable approach in the process of constructing our research framework in the present study. Since the adoption process towards e-kronan could share considerable similarities with findings within the area of internet banking and digital currencies. The behavioural variables in the classical models have been significantly validated in previous empirical findings (Walton & Johnston, 2018), and hence could improve the accuracy of the hypothesised relationships on adoption intention towards e-kronan below.

2.1.1. Theory of planned behaviour (TPB)

The theory of planned behaviour (TPB) has proven effective and sufficient in predicting human behaviour intention, across various information technologies (Ajzen, 2002 & 1991). It is adopted from the theory of reasoned action (TRA), which have been highly recommended for the assessment of intention to adopt for high-involvement products (Fishbein & Ajzen, 1975). TPB intention is a function of three primary determinants; attitude, subjective norm and perceived behavioural control (Ajzen, 1991), see **Figure 2,** below.

Figure 2. Showing the classical TPB model



In the present study, the definition adopted for attitude is an individual's favourable or unfavourable assessment regarding a particular behavioural intention. A favourable and unfavourable attitude directly impacts the strength of a certain behaviour and belief in terms of the expected outcome. The favourable assessment could stem from various determinants such as subjective norm, perceived usefulness, ease of use and perceived benefits of an innovation, which impacts will be discussed in further paragraphs (Ajzen, 1991). A positive attitude has proven to have a significantly positive impact to act as a determinant of consumer intention to adopt online banking (Lee, 2009), and the strongest evidence in positively influencing the intention to adopt cryptocurrency Bitcoin (Walton & Johnston, 2018). Therefore, as online banking and private digital currency adoption are regarded as adoption processes similar to that of a digital money it is hypothesised that;

H1: Attitude positively influences the intention to use e-kronan

Furthermore, the subjective norm in this case defines the perceived social pressure of a person from opinions of referents (i.e., family, friends, co-workers), who intends to perform a specific behaviour. It is rooted in normative belief, which embodies the expectations of other people (Ajzen, 1991). Social pressure has in certain cases proven insignificant in enabling adoption intention (Mendoza-Tello et al., 2018). However, research also show that social acceptability is a crucial determinant for adoption intention when uncertainty surrounding the innovation is high (Rogers, 1994). In line with social risks connected to adoption of a product or service increases, end-users are more inclined to adopt the

attitude that referents might approve less (Featherman & Fuller, 2002). Therefore, subjective norm has shown positive effect on increasing the intention towards internet banking adoption (Lee, 2009), although the effect could prove less powerful in an voluntary setting (Venkatesh, & Davis, 2000). Similarly, subjective norm was recorded to have a slight positive impact on intention to use Bitcoin (Walton & Johnston, 2018). E-kronan is considered an innovation with a relative high degree of uncertainty, and based on the discussed findings it is hypothesised that;

H2: Subjective norm positively influences the intention to use e-kronan

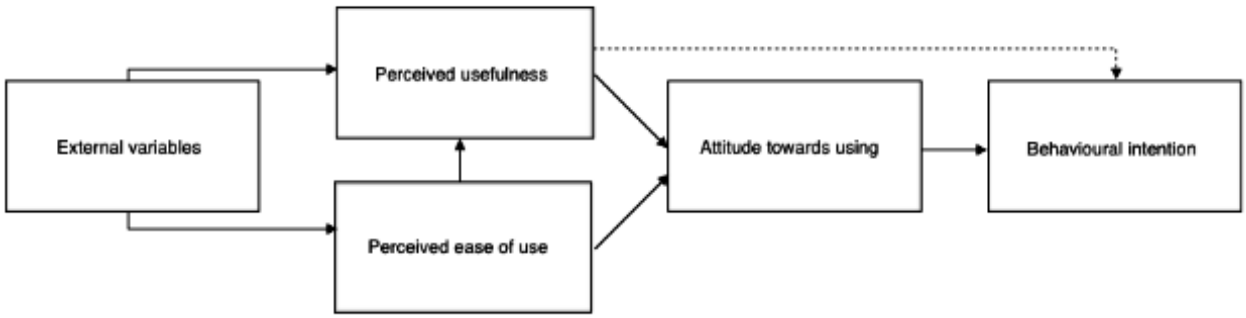
Perceived behavioural control (PBC) is a behavioural predictive variable determining the perceived ease of use, or level of difficulty in regard to implementing a certain behaviour. According to the TPB base model and in previous research, PBC can be used to directly predict behavioural achievement (Ajzen, 1991), as well as sharing a positive relationship with the propensity to adopt information systems (Weigel et al., 2014). Additionally, online systems are becoming increasingly standardised (Lee, 2009), making consumers more competent in using them. Hence this could make the perceived behavioural control less important for adopting, due to improved self-efficacy (Walton & Johnston, 2018). Perceived behavioural control has indicated to have a positive impact on intention to adopt internet banking services and cryptocurrency, which yet again can be scientifically compared to reasoning relevant for exploring e-krona adoption intention. Hence this provides the following hypothesis;

H3: Perceived behavioural control positively influences the intention to use e-kronan

2.1.2. The technology acceptance model (TAM)

The technology acceptance model (TAM) comprises two beliefs; perceived ease of use and perceived usefulness, as determinants of attitude towards intention (Jiang, 2009). TAM has proven significant in influencing information technology intention to use (Davis et al., 1989) and positively affected user's attitude towards technology (Taylor & Todd, 1995a). TAM is outlined in **Figure 3,** below.

Figure 3. Showing the classical TAM model



Perceived usefulness is defined as the level to which an individual have “a belief about that the use of a system will enhance their performance.” (Davis,1989). Perceived usefulness is influenced by external factors for instance interests, prior experiences and social norms to name a few (Diatmika, Irianto & Baridwan, 2016). Another external factor to predict perceived usefulness towards potential adoption, is the digital money readiness index (Thomas et al., 2016). The digital money readiness index shows a relative ranking among 90 countries of the readiness to adopt digital money. Based on the level of adult literacy, buyer sophistication and social network use, where Sweden is ranked number one. Hence Sweden is regarded as having the highest likeliness of adopting digital money. The digital money readiness index proposes an advantage in the explanatory relationship of intention, rather than simply looking at cashlessness in society. Snellman et al., (2001) also found a trend of European countries having a greater propensity to adopt card-based digital money through the perceived usefulness. Lastly, the perceived usefulness of an innovation is linked to e-government trust, positively impacting the perceived usefulness of e-government services (Horst et al., 2007), which is relatively high level in Sweden (McCarthy, 2018). Perceived usefulness has been significantly proven to positively influence mobile internet adoption (Jung et al., 2009), internet banking (Lee, 2009) and cryptocurrency adoption intention (Walton & Johnston, 2018). The latter finding also supports that users perceived usefulness positively impacts attitude towards Bitcoin. Therefore, it is hypothesised that;

H4: Perceived usefulness positively influences attitudes towards the use of e-kronan

H5: Perceived usefulness positively influences the intention to use e-kronan

Perceived ease of use depicts the degree to which a person believes that; *"using a system will be free from effort"* (Hill et al., 1986). In accordance with TAM, perceived ease of use and perceived usefulness significantly impact user' attitude towards using a system. That is, the favourable or unfavourable evaluation toward the system. Studies show that perceived ease of use primarily acts through the determinant perceived usefulness in affecting intention (Davis et al., 1989) and attitude towards a technology (Lee, 2009). Therefore, it is hypothesised that:

H6: Perceived ease of use positively influences attitudes towards the use of e-kronan

H7: Perceived ease of use positively influences the perceived usefulness of e-kronan

2.2. Adding perceived benefit and security risk

In the present study, it is proposed to integrate TPB and TAM with perceived benefits and perceived security risk for adoption. The hybrid of TPB and TAM has gained increased popularity due to greater explanatory power for predicting intention adoption for modern innovations, and related research studies (Lee, 2009 & Walton & Johnston, 2018) have been seen integrating significant determinants perceived benefit and risk.

2.2.1. Perceived benefit

Digital financial services are often considered the most effective forms of payment , with perceived benefits that supersedes offline payment alternatives (Haung et al., 2005). Research is currently exploring the potential to maximise these perceived benefits, and hence increase the degree of adoption propensity, which is crucial in exploring different stage adopters since an innovation must be widely adopted to self-sustain (Dauda & Lee, 2015). There are two main categorised benefits; direct and indirect benefits (Lee, 2008). Direct benefits are tangible advantages received directly from using the service (i.e., information transparency, faster transaction speed) and indirect are intangible (i.e., able to use system from various sites, hours of the day). Online banking adoption has been confirmed to generate direct benefits of lower transaction costs, better information transparency and indirect benefits for instance 24-hour services (Oh et al., 2008). Perceived benefit positively impact the rate of e-business adoption (Zheng et al., 2006), and corporate website adoption (Beatty et al., 2001). The perceived benefits of an

innovation is affected by the degree of prior knowledge (Rogers, 1994), where experience with components or the innovation itself positively influences the propensity to adopt. Prior knowledge is also influenced by factors such as internet habits and personal characteristics, positively influencing the relative advantage and compatibility with values of the individuals in the social system.

The relative advantage shows the relative increase in effectiveness or time saving from adopting a new system, which supersedes that of its precursors (i.e., coins, bills, private bank notes) including economic benefits, convenience and satisfaction (Maddux & Rogers, 1983). Relative advantages of mobile banking service positively influences the intention to adopt, comparable to other mobile banking services generally (Jiang, 2009). Compatibility measures the alignment between an innovation and potential adopters values or previous experiences, indicating the level of consumer perceived “fit” of an innovation (Taylor & Todd, 1995b). Compatibility is negatively affected if the innovation is perceived as violating social or cultural norms (i.e., privacy and anonymity), decreasing the perceived benefits for adopting. Compatibility of an innovation is also reflected in the intermediate need for digital money (Taylor & Todd, 1995b). Hence compatibility positively impacts the adoption intention towards an innovation (Tornatzky & Klein, 1982) (Cooper & Zmud, 1990). Compatibility has showed evidence of being a stronger indication for adoption intention than relative advantage (Arts et al., 2011). Psychographic variables such as lifestyle and interests (i.e. media proneness, innovativeness) are among the variables most frequently used to explain compatibility in the digital payment market, with greater predictive power than socio-demographics (Arts et al., 2011). Complexity depicts the degree of difficulty to adopt, learn or operate an innovation. Low perceived complexity for an innovation has proven to significantly increase adoption intention (Rogers, 1994). Although higher levels of complexity could in some cases positively affect intention adoption, and negatively influence actual adoption behaviour (Taylor & Todd, 1995b). All things considered, the desirability and benefit to adopt a new product or service is higher in the case where the potential adopter perceives the innovation to be advantageous and compatible with their needs (Arts et al., 2011). Therefore, it is hypothesised that the collective determinants based on prior knowledge, relative advantage, compatibility and complexity will lead to;

H8: Perceived benefit positively influences users’ attitudes towards the use of e-kronan

H9: Perceived benefit has a positive influence on intention to use e-kronan

2.2.2. Perceived risk

The perceived risk theory comprise five facets; performance, financial, time, social, privacy/security (Jacoby & Kaplan, 1972), where security/trust risk most significantly affect consumer intention adoption towards internet banking. Security risk could have both a direct (i.e. monetary loss) and indirect (i.e., violates users privacy) effects for adoption intention (Littler & Melanthiou, 2006). Riksbanken has a deposit guarantee towards the public of Sweden, meaning that they are ensured a value of SEK 950,000 as the legitimate institution in the payment market (Riksgälden, 2019), which could diminish the perceived direct security risk.

Furthermore, the higher degree of internet use has also be noted to decrease the indirect perceived security risks (Lee, 2009). Similarly social commerce habits have also been found to increase the trust and intention to use digital currencies. A digital currency will most likely result in the creation of vast amounts of data, which could be more invasive of individual privacy than existing technologies, potentially increasing the perceived indirect security risk. On the contrary it could also help identifying people and firms carrying out transactions, and decrease the perceived risk for criminal activities (Thomas et al., 2016). Increased digitalisation of society and money could open up an array of unprecedented challenges, such as the security risk for hacking and computer fraud, negatively impacting adoption intention (Julin, 2017). The shift from physical money to digital money also potentially present some of the greatest security benefits, due to inherent risk associated with cash (Carlström, 2018).

Empirically security risk has shown evidence of acting as a the primary inhibitor for adopting online banking (Lee, 2009) and cryptocurrency Bitcoin (Walton & Johnston, 2018), both directly and indirectly, mainly stemming from concerns of money monetary loss or internet fraud (Littler & Melanthiou, 2006). Hence it is hypothesised that;

H10: Perceived security risk negatively influences users' attitude towards the use of e-kronan

H11: Perceived security risk negatively influences users' intention to use of e-kronan

2.3. Construction of research framework

Based on the previously outlined theories and hypotheses, there are eight constructs in our theoretical framework, which includes independent variables perceived ease of use, perceived benefit, perceived security risk, intervening variables perceived usefulness, attitude, subjective norm, perceived behavioural control, and intention to use e-kronan as the dependent variable. See **Figure 4. Table 2,** is attached showing corresponding hypotheses generated for in the research framework.

Figure 4. Showing constructed research framework for adoption intention on e-kronan

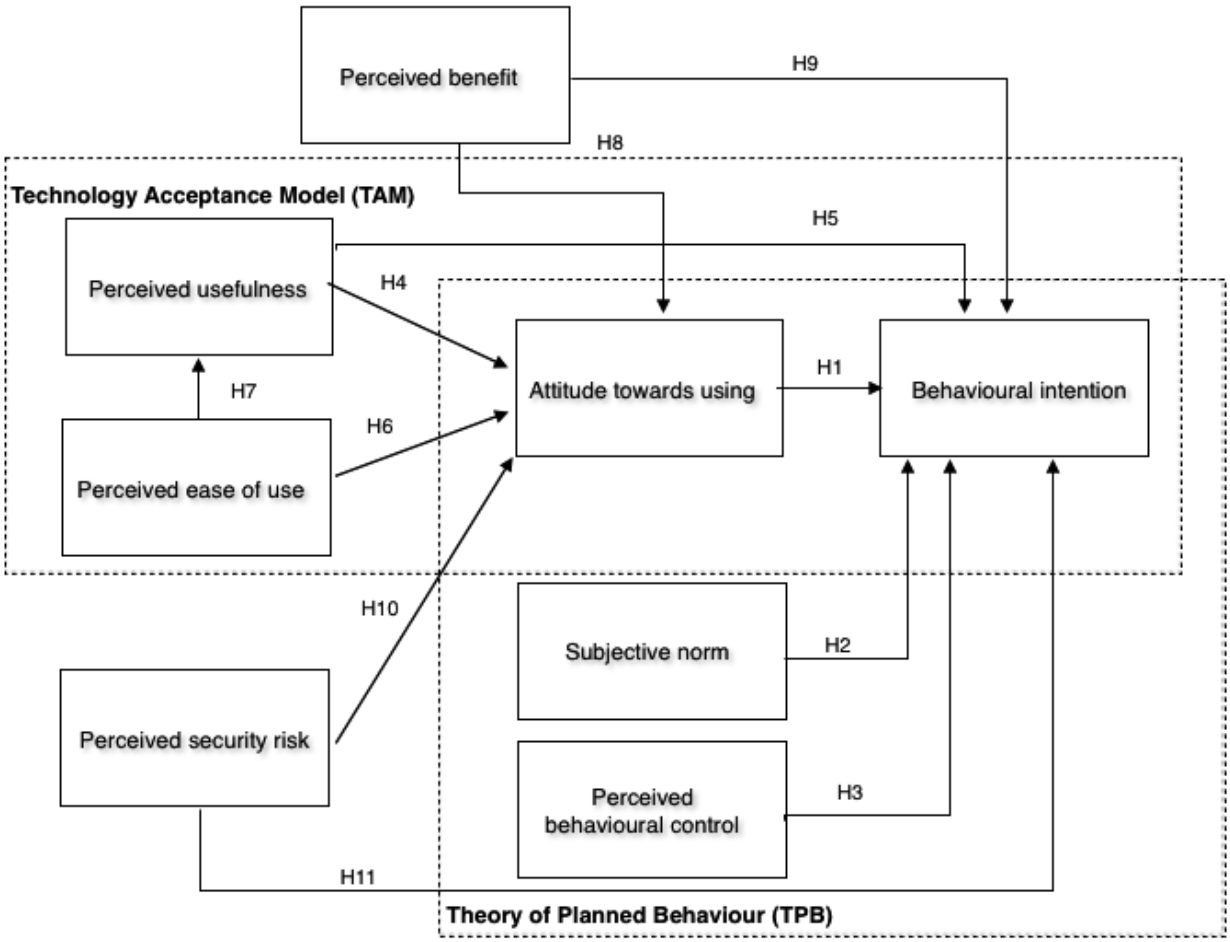


Table 2. Outlining corresponding hypotheses depicted in the constructed framework

Hypothesis	Description
H1	Attitude positively influences the intention to use e-kronan
H2	Subjective norm positively influences the intention to use e-kronan
H3	Perceived behavioural control positively influences the intention to use e-kronan
H4	Perceived usefulness positively influences attitudes towards the use of e-kronan
H5	Perceived usefulness positively influences the intention to use e-kronan
H6	Perceived ease of use positively influences attitudes towards the use of e-kronan
H7	Perceived ease of use positively influences the perceived usefulness of e-kronan
H8	Perceived benefit positively influences users' attitudes towards the use of e-kronan
H9	Perceived benefit has a positive influence on intention to use e-kronan
H10	Perceived security risk negatively influences users' attitude towards the use of e-kronan
H11	Perceived security risk negatively influences users' intention to use of e-kronan

Related questionnaire items corresponding to each variable investigated in the hypotheses above are outlined in **Table 8,** Appendix.

2.4. Comprised variables and determinants

In order to summarise the variables in the constructed research framework and their relevant determinant items from literature, **Table 3,** below is constructed. It shows the references used for deriving each hypothesis and the theoretical origin corresponding to each hypothesis.

Table 3. Showing hypotheses related determinants & references

Variables	Determinants	References	Hypothesis	Origin
Attitude	Favourable/unfavourable assessment (subjective norm, ease of use, usefulness, benefits)	Ajzen, 1991. Lee, 2009. Walton & Johnston, 2018	H1	TPB
Subjective norm	Normative beliefs, social acceptability, social risk, voluntariness	Ajzen, 1991. Rogers, 1994. Featherman & Fuller, 2002. Lee, 2009. Venkatesh, & Davis, 2000. Walton & Johnston, 2018	H2	TPB, literature
Perceived behavioural control	Behavioural achievement, standardization online systems, self-efficacy	Ajzen, 1991. Weigel et al., 2014. Lee, 2009. Walton & Johnston, 2018	H3	TPB, literature
Perceived usefulness	Voluntariness, experience, subjective norm, digital money readiness index, e-government trust, adopt card-based digital money	Davis, 1989. Diatmika, Irianto & Baridwan, 2016. Thomas et al., 2016. Snellman et al. 2001. Horst et al., 2007. McCarthy, 2018. Lee, 2009. Walton & Johnston, 2018. Jung el al., 2018	H4, H5	TAM, literature
Perceived ease of use	Ease of use	Hill et al., 1986. Davis et al., 1989. Lee, 2009	H6, H7	TAM
Perceived benefit	Direct/indirect benefits, prior knowledge, relative advantage, compatibility, complexity	Dauda & Lee, 2015. Haung et al., 2005. Lee, 2008. Oh et al., 2008. Zheng et al., 2006. Beatty et al., 2001. Rogers, 1994. Maddux & Rogers, 1983. Jiang, 2009. Taylor & Todd, 1995b. Tornatzky & Klein, 1982. Cooper & Zmud, 1990. Arts et al., 2011	H8, H9	Literature
Perceived security risk	Direct/indirect risk, internet use, social commerce, subjective norm, hacking, fraud	Jacoby & Kaplan, 1972. Littler & Melanthiou, 2006. Riksgälden, 2019. Lee, 2009. Thomas et al., 2016. Julin, 2017. Carlström, 2018. Walton & Johnston, 2018	H10, H11	Literature

3. Methodology

This methodological chapter describes the selection of research topic, the selected research method and research reasoning applied in the present study. The methodology also explains the two-phased exploratory sequential design applied. Along with age and gender distribution of the empirical quantitative findings. Lastly, the process of crossover in findings, along with established research reliability and validity are outlined.

3.1. Selection of research topic

As for today, e-kronan is a critically hot-topic on the current financial agenda in Sweden. That being stated, attention paid to the subject of the actual propensity for adoption by end-users is virtually negligible to zero. This became all too evident last fall when listening to the SNS podcast E-kronan and Sweden's cashless future, monitoring the debate between the Deputy Governor of Riksbanken, an Executive Advisor at Nordea and a Professor Emeritus in Economics, highlighting the landscape of adoption uncertainty in the case of e-krona (SNS, 2018). Hence, the research topic was perceived as worth pursuing due to its unique prominence in time, as well as the possibility to explore a largely uncharted area and deliver highly relevant scientific findings.

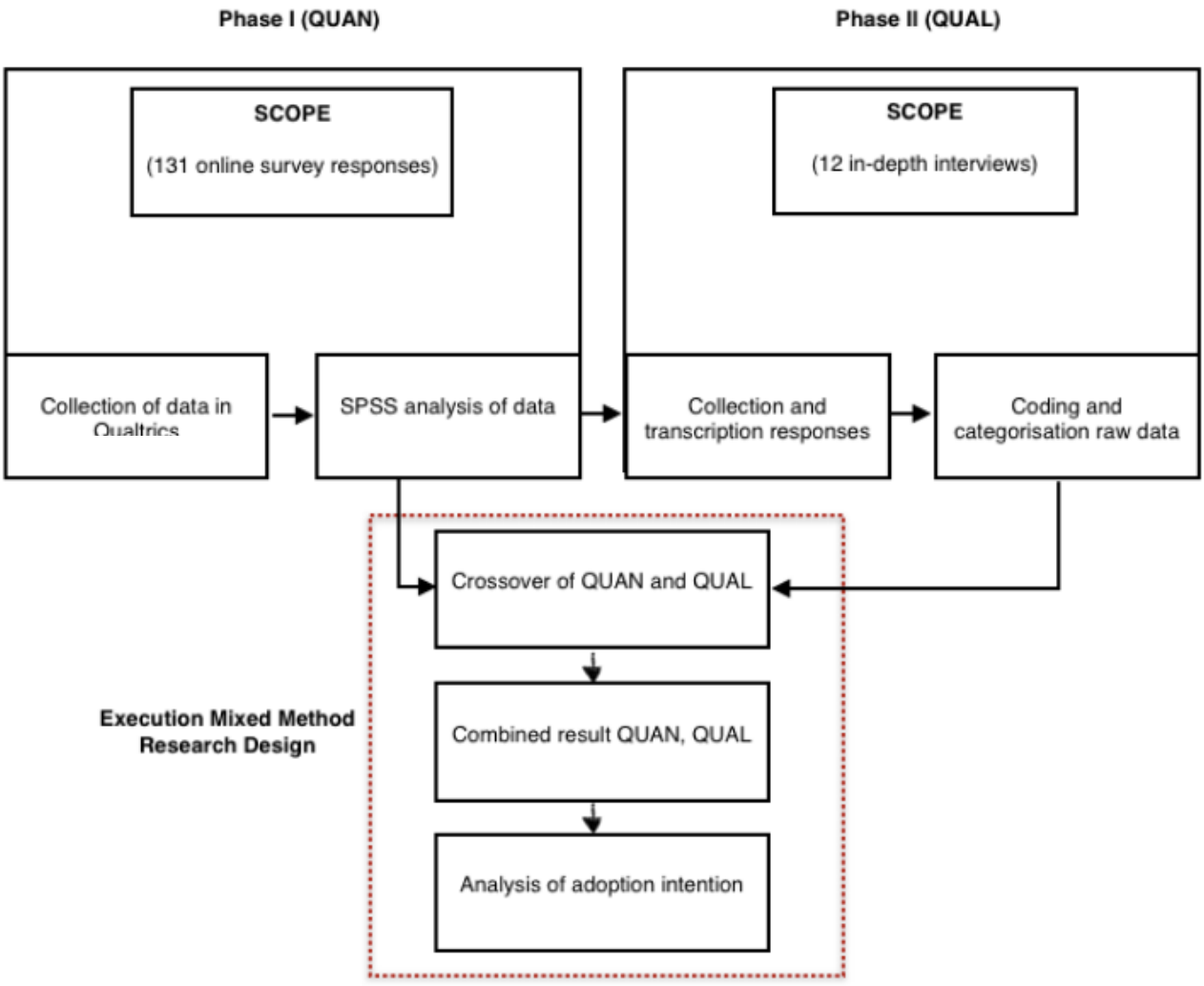
3.2. Selection of research method

For the present study, a mixed research method is used, in order to be able to apply quantitative and qualitative data in combination to enhance the exploratory approach (Creswell, 2003). In this manner the data ultimately allows for the mixing, quantising and qualising data. The qualitative component is driven by the quantitative results, which increases the strength of the method, due to its data-driven and emergent nature (Ivankova et al., 2006). On the down-side a mixed method is more time consuming than a singular research method, although it could provide greater nuance to the findings. A mixed method approach faces the challenges of providing ambiguous, even contradictory insights (Creswell & Clark, 2011). Yet again, this could be considered a strength since it minimises the risk of the findings becoming far too one-sided, and prone to research confirmation bias.

3.3. Research design

The present study follows a two-phase research design, were quantitative data is initially collected through an online survey and analysed in Phase I. Based on the patterns gathered in Phase I, qualitative data is compiled through conducting in-depth, peer-to-peer interviews, making the approach an explanatory sequential design (Creswell, 2003). The main purpose of applying an exploratory sequential design is to allow expanding and exploring the identified quantitative findings using qualitative insights (Ivankova et al., 2006). The methods are combined in the creation of Phase II, as well as during the analysis and discussion see **Figure 5**, below.

Figure 5. Depicting mixed-methods sequential research design in present study



3.4. Research reasoning

Since the study follows an exploratory sequential design with a mixed methodology, two different approaches of research reasoning is incorporated into the research design. The mix of two research reasonings strengthen the study by providing a systematic and complementary method to its exploratory nature (Miller & Brewer, 2003). A deductive approach is applied in Phase I to evaluate theories and generate hypothesis, by gathering and assessing of existing literature (Blaikie, 2011). In Phase II, an inductive approach is applied as a component to deeper investigate and explore the variables influencing e-krona adoption intention, generated in Phase I (Fox, 2012).

3.5. Collection of data

Data is collected using both primary and secondary data. The primary data is gathered through the distribution of online surveys to 131 people, and 12 physical in-depth interviews, illustrated in Figure 4. Secondary data is gathered through online research journals, databases, websites and library assets, with references available in the paragraph 2.4 Comprised theoretical variables and determinants from framework.

3.5.1. Quantitative data collection

The survey is conducted using the online software service Qualtrics, which is a widely recognised service commonly applied in research data generation (Barnhoorn et al., 2015).

3.5.1.1. Survey sampling

The purpose of the survey is to capture the public's adoption intention, without high costs and geographical constraints. Therefore, a non random convenience sampling method is applied (Etikan et al., 2016). The aim with the sampling is to generate a representative distribution for age and gender among the respondents, the outcome is illustrated in **Table. 4.** The collection of data is conducted through sharing a Qualtrics link in various online forums, primarily LinkedIn and Facebook.

Table 4. Showing age- & gender distribution of the sample population

Age/gender	Frequency SPSS	Percentage
Gender		
Male	60	49%
Female	63	51%
Age		
<21	8	7%
21-30	69	56%
31-40	14	11%
41-50	10	8%
51-60	14	11%
>60	8	7%

3.5.1.2. Survey design & variables

The survey starts off with a paraphrased text extracted from Riksbanken website, describing e-kronan and the design, see **Appendix Figure 6.** The text summarises the main characteristics and background to e-kronan, without deeper explanation of the underlying technical aspects, considering the scope of the study. The survey is designed with a total of 41 questions, divided into five sections. Out of the 41 questions, 36 are constructed on likert scale, inspired by significantly tested questions in related research studies (Walton & Johnston, 2018). Two are polar questions assessing previous knowledge of e-kronan and digital currencies, and one control question see **Appendix Table 5.** The control question is validating that the respondent has grasped the fundamentals of the initial text (Liu & Wronski, 2018). Lastly there are two demographic questions. The likert scale questions follow a scale between 1 “Strongly disagree” to 7 “Strongly agree” to measure the extent to which the respondent are likely to agree with a certain statement. These likert scale questions aims to construct indexes for the variables applied in the theoretical framework of theory of planned behaviour (TPB) and technology acceptance model (TAM). They also aim at exploring the underlying determinants included in the hypotheses generated, allowing for cross-over between the quantitative and qualitative findings.

3.5.2. Qualitative data collection

3.5.2.1. Collection interviews

The in-depth interviews aim to, in conjunction with the quantitative findings, seek deeper knowledge and patterns of values, experiences, interests, cultural knowledge and adoption decisions of the interviewees. The interviews are conducted on a peer-to-peer basis, in order to avoid the risk of participants conforming to social pressure and “group-thinking”. The peer-to-peer interview approach is intended to increase understanding of the generated hypotheses relationships from phase I (Johnson, 2011). An “affinity level” is reached after conducting a total of 12 interviews, regarding the answers exhaustive. All interviews are recorded, with a mean time of 34 minutes. These are ultimately transcribed, categorised and analysed.

The interviews are conducted by a “general interview guide” approach. This approach ensures that the same general information are gathered from each participant. This provides a focus to the research scope, and gives the participant a degree of freedom, and flexibility during the interview session. The interviews are semi-structured and open-ended, meaning that the same questions are asked all interviewees, without predetermined answers (Roulston, 2010). The interviews have also been carried out in accordance with the research ethics principles (Vetenskapsrådet, 2011).

3.5.2.2. Interview sampling

The interviewees are chosen by a non-random convenience sampling method, due to the time frame of the study. 12 easily accessible and geographically reachable interviewees are chosen by the researchers (Etikan et al., 2016). All interviewees initially conduct the survey, ensuring an adequate general knowledge-base about the research topic (Roulston, 2010). The interviewees are selected based on the criteria that they answer “Yes” on the control question in the survey. The sampling method aims to accomplish a demographic variance corresponding to the survey sampling see **Table 6.**

Table 6. Showing age- & gender distribution of interviewees

Age/gender	Frequency	Percentage
Gender		
Male	7	58%
Female	5	42%
Age		
<21	1	8%
21-30	4	33%
31-40	1	8%
41-50	0	0
51-60	3	25%
>60	3	25%

3.5.2.3 Interview questions

The interview questions are based on the survey that is used in the quantitative study in Phase I. The interview basis for Phase II contains 26 questions, see **Appendix Table 7.** The initial seven questions aims at generating deeper exploration of the variables applied in TPB and TAM, along with perceived security risk and perceived benefit. The additional 19 questions are psychographic and socio-demographic questions.

3.6 Data analysis

3.6.1. Quantitative data analysis

Before conducting the analysis of the quantitative data, raw data is exported as a CSV file from qualtrics online. This comprises a file with a total of 131 survey answers. Subsequently, the CSV file is imported into IBM SPSS Statistics.

3.6.1.1. SPSS-analysis & statistical tests

To analyse the quantitative data in this research, linear regression analysis is conducted in IBM SPSS Statistics. In the statistical analysis, the lowest significance level of $p<0,05$ is applied in this research and marked with (*). The significance level of $p<0,01$ is marked

with (**) (Söderlund, 2005). In the regression analysis, statistical findings are validated by the amount of heteroscedasticity, autocorrelation and multicollinearity (Berry, 1993).

3.6.1.2. Selection of sample & reliability

The initial selection of data in SPSS is conducted by a “select cases” for the control question. All respondents failing by answering “no,” are excluded from the dataset. Hence, the sample size is reduced from 131 to 123. Cronbach alpha tests are conducted to ensure adequate indexes for merging questions corresponding to the same variable within the research framework. This, to increase the reliability through ensuring that the questions measure the same factor in terms of construct validity. An cronbach alpha acceptance level of 0,7 is applied (Söderlund 2005), see **Table 8 in Appendix.** Statistical standards are applied to ensure reliability of the regression analysis. Hence, the Durbin-Watson values close to 2,0, indicate of low autocorrelation (Berry, 1993), and are considered acceptable. Multicollinearity is measured by inter-correlations between the independent variables and condition index. The inter-correlations coefficients are between 0,04 and 0,88 degrees between the variables, all below 1,0 (Morrow-Howell, 1994). The condition index is 13,3 and 28,5 and should be under 30 to be acceptable (Montgomery et al., 2012). Heteroscedasticity is measured by examining the scatter plot of the regression analysis (Alin, 2010), and shows no signs of heteroscedasticity, see **Appendix Table 9.**

3.6.2. Qualitative data analysis

3.6.2.1. Transcription, coding & categorisation

The qualitative interviews are recorded, transcribed and structured into text. The transcribed interviews are then reworked with a content analysis as a process of categorising the verbal responses by classifying, thematise and summarise the data (Maxwell, 2018). This method is conducted in a comparative manner by categorising overall themes, frequency categorisation, notable quotes and word-count, which apply to the variables in the research framework. The content analysis helps reducing the material into a reasonable amount of categories and helps aggregate the insights. This raises focus on selected aspects of specific meaning, namely those that relate to the hypothesis relationship in the present study Maxwell, 2018).

3.6.3. Crossover findings

The structured, thematised and categorised data is consequently compared to the quantitative data by delivering cross-over findings (Williams & Vogt, 2011). The cross-over of findings is conducted by comparing the previously coded and thematised interview material to the quantitative regression findings. This cross-over enables the researchers to compare the two data sets to further explore underlying variables affecting adoption intention towards e-kronan.

3.6.4 Internal validity

The internal validity measures to what extent there is a casual relationship between the tested variables, in other words the primary effect on the dependent variables (Mills et al., 2009). To ensure the internal validity a mixed research method is applied to rule out potential external factors influencing the e-krona adoption intention. Aimed at enhancing the understanding of the cause and effect relationship of the intention of a potential e-krona adoption. Previously tested survey questions and models are applied to ensure high construct validity . A potential threat to internal validity is the convenience, non random sampling method used, potentially generating sampling error or bias (Mills et al., 2009). This challenge is addressed in ensuring a spread among the respondents and careful consideration in the construction of questions.

3.6.5. External validity

The external validity is the extent to which the results of this research can be generalised into another context, both across situations and people (Mills et al., 2009). To ensure the external validity, a representative sample of potentially practical end-user is researched. With a sufficient amount of knowledge to contribute with relevant findings. In being able to deliver findings that could find support in previous models and studies, it could potentially increase the generalisability and hence ensure external validity (Mills et al., 2009).

4. Empirical results

In the following chapter the empirical findings from Phase I and Phase II are detailed. The standardised-coefficients and significances are outlined, establishing the accepted or rejected relationship of generated hypotheses. Thereafter, in correspondence with the methodological approach, the qualitative findings are used to expand on the discovered quantitative relationships. The outlined findings are presented through our constructed research framework and variables, to ensure a structured delivery of the findings.

4.1. Adoption intention on an aggregated level

4.1.1. Regression findings

The following linear regressions are derived from raw data collected in the online survey distributed for the Swedish public, see **Table 10**. The regression analysis has an adjusted r square of 0,94 for intention to use, 0,90 for attitude towards use and 0,92 towards usefulness of e-kronor see **Appendix Table 11**. **Table 10,** outlines the aggregated empirical findings. It also establishes the relationships between the dependent and independent variables for each hypothesis, looking at the two-tailed p-value and standardised beta, in accordance with the prerequisites established in the methodology.

Table 10. Showing the relationship between dependent and independent variables

Dependent variable	Independent variable	Related hypothesis	P-value (two-tailed)	Standardised β	Accepted/ rejected hypothesis
Intention to use e-kronan	Attitude	H1	0.044	0.217*	Accepted
Intention to use e-kronan	Subjective norm	H2	0.486	0.027	Rejected
Intention to use e-kronan	Perceived behavioural control	H3	0.159	0.051	Rejected
Attitude towards e-kronan	Perceived usefulness	H4	0.000	0.483**	Accepted
Intention to use e-kronan	Perceived usefulness	H5	0.000	0.310**	Accepted
Attitude towards e-kronan	Perceived ease of use	H6	0.100	0.146	Rejected
Perceived Usefulness	Perceived ease of use	H7	0.002	0.280**	Accepted
Attitude towards e-kronan	Perceived benefit	H8	0.000	0.859**	Accepted
Intention to use e-kronan	Perceived benefit	H9	0.000	0.752**	Accepted
Attitude towards e-kronan	Perceived security risk	H10	0.266	-0.290	Rejected
Intention to use e-kronan	Perceived security risk	H11	0.048	-0.267*	Accepted

In line with the prerequisites established in paragraph (3.6.1.1) SPSS-analysis & statistical tests, the regression tests β coefficients show significance for the following seven relationships; attitude towards the intention (H1), perceived usefulness towards the attitude (H4), perceived usefulness towards the intention (H5), perceived ease of use towards perceived usefulness (H7), perceived benefit towards the attitude (H8), perceived benefit towards the intention (H9) and perceived security risk towards the intention (H11). Hence, these hypothesised relationships are accepted in the study.

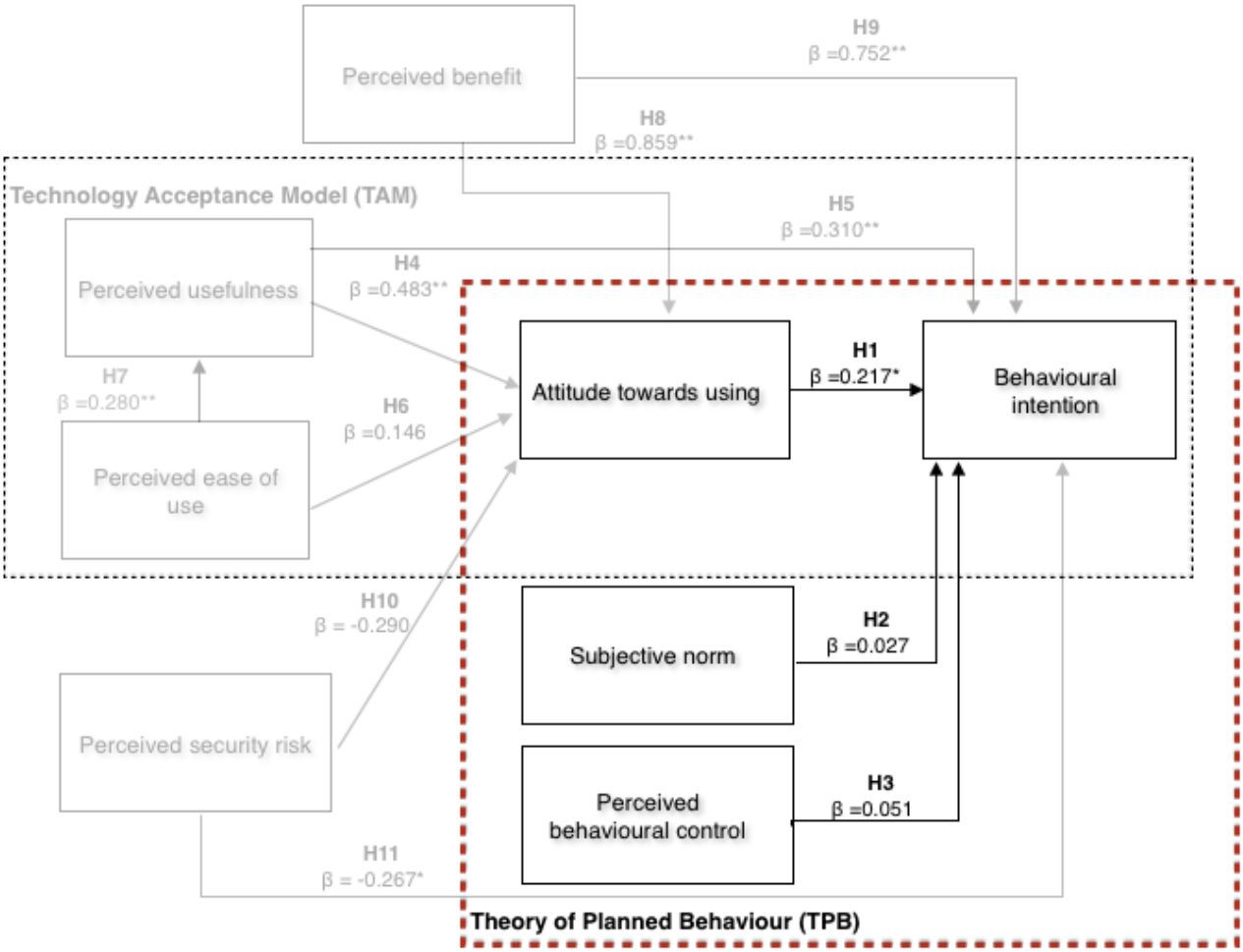
The remaining four relationships are rejected, applying the same principle. These are; the subjective norm towards the intention (H2), perceived behavioural control towards the intention (H3), perceived ease of use towards the attitude (H6), and perceived security risk towards the attitude (H10).

4.2. Qualitative findings expanding on empirical relationships

4.2.1. TPB findings

The β coefficients corresponding to the TPB network are visualised in **Figure 7,** below. It depicts the attitude, subjective norm, and perceived behavioural control dimensions (H1-H3). The established aggregated findings are integrated with qualitative insights, adding nuance to the nature of the relationships established.

Figure 7. Showing relationships & β coefficients for TPB variables



4.2.1.1. Attitude positively influences the intention to use e-kronan (H1)

Figure 7, indicates that H1 is accepted (β=0,217*) and hence the attitude towards using e-kronan positively influences the intention to use e-kronan. According to the interviews approximately 67 percent have a positive attitude towards e-kronan. The main reasons for this is categorised as a "misallocation of power to commercial banks," (37,5 percent), followed by "e-kronan being in line with societal and technological developments" (25 percent), "that it could provide a smooth payment solution" (25 percent), and "high-levels of trust in Riksbanken" (12,5 percent). This is for instance implied through quotes such as; "It feels wrong that Riksbanken needs to intervene to save commercial banks when they go bankrupt, and still are able to make huge profits in good times" or "by using e-kronan I wouldn't become to dependent on the commercial banks, and I don't want them to control my life or financials". On the contrary, in the group of people that states they have a negative attitude towards e-kronan the primary reasons are categorised as "confusion in terms of practical implications of e-kronan" (50 percent) and "no existing need for e-kronan" (50 percent). For instance one person states that; "I don't think I really understand the practical implications" or "the two main issues for adopting e-kronan is cyber-security and that there is no explicit need". The general theme for the relationship between attitude towards intention could be determined as positive in its influential power.

4.2.1.2. Subjective norm positively influences the intention to use e-kronan (H2)

According to **Figure 7**, the β coefficient for H2 is not significant, and it is rejected. In the qualitative data however, 67 percent of the interviewees answers are categorised as "would be more inclined to use e-kronan if someone recommended" or "if people in their inner circle started using it they would most likely use it as well". This is confirmed through quotes such as "of course I'm affected by what people around me do" or "if more people would use e-kronan I believe it would create social pressure to use it." The remaining are categorised as "would be more affected by expert opinions" or "is not affected by opinions of others." Supported by quotes such as "I would trust expert opinions more" or "I don't get affected by other people." In general, the overall theme of subjective norm in influencing intention to use e-kronan is regarded as slightly less influential than attitude.

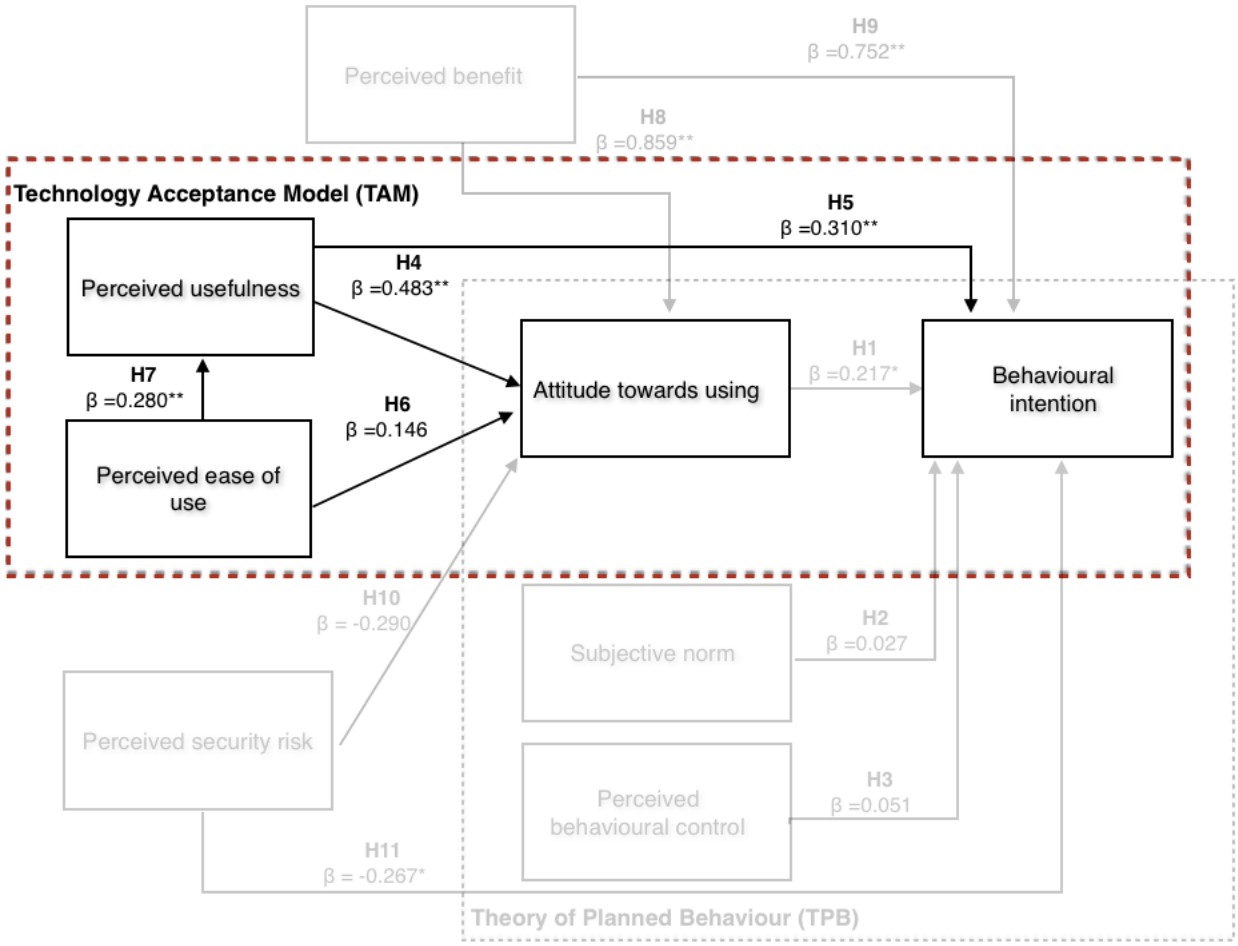
4.2.1.3. Perceived behavioural control positively influences the intention adoption (H3)

According to **Figure 7**, perceived behavioural control and intention to use e-kronan shows a positive intermediate relationship (β=0,051), not significant. The interview findings indicate a categorisation of approximately 92 percent as "believing they would have behavioural control over e-kronan in its proximity to cash" and "control to use e-kronan in established system similarities." This is confirmed through quotes such as "I think e-kronan would be similar to cash, except that its digital" or "if you try using the e-krona system I don't think it would be that different from other payment solutions, like with Swish." The overall theme of the relationship of perceived behavioural control towards intention appeared to be less problematic and, decisive in the general adoption process.

4.2.2. TAM findings

Moving on from there, the β coefficients corresponding to the TAM network are visualised in **Figure 8,** below. It depicts the perceived usefulness and perceived ease of use dimensions (H4-H7).

Figure 8. Showing relationships & β coefficients for TAM variables



4.2.2.1. Perceived usefulness positively influences the attitude and intention (H4/H5)

According to **Figure 8**, H5 and H6 are accepted, indicating that there is a positive correlation between perceived usefulness and attitude (β=0,483**) as well as intention (B=0,310**) to use e-kronan. According to the interviews approximately 67 percent are categorised as “perceiving e-kronan as useful towards attitude due to already existing digital habits, either in terms of social media, e-commerce or online payments” and “usefulness towards intention stems from perceived proximity of e-kronan to established systems.” This is confirmed through quotes such as “I don’t think the attitude towards the usefulness of e-kronan is determined by age, but rather if you have access technological influences” or “if you use the internet it makes you familiar with digital solutions, and then you will probably perceive intention towards e-kronan as more useful.” The overall of theme of the qualitative insights for perceived usefulness towards attitude and intention are positive in the variables influential power.

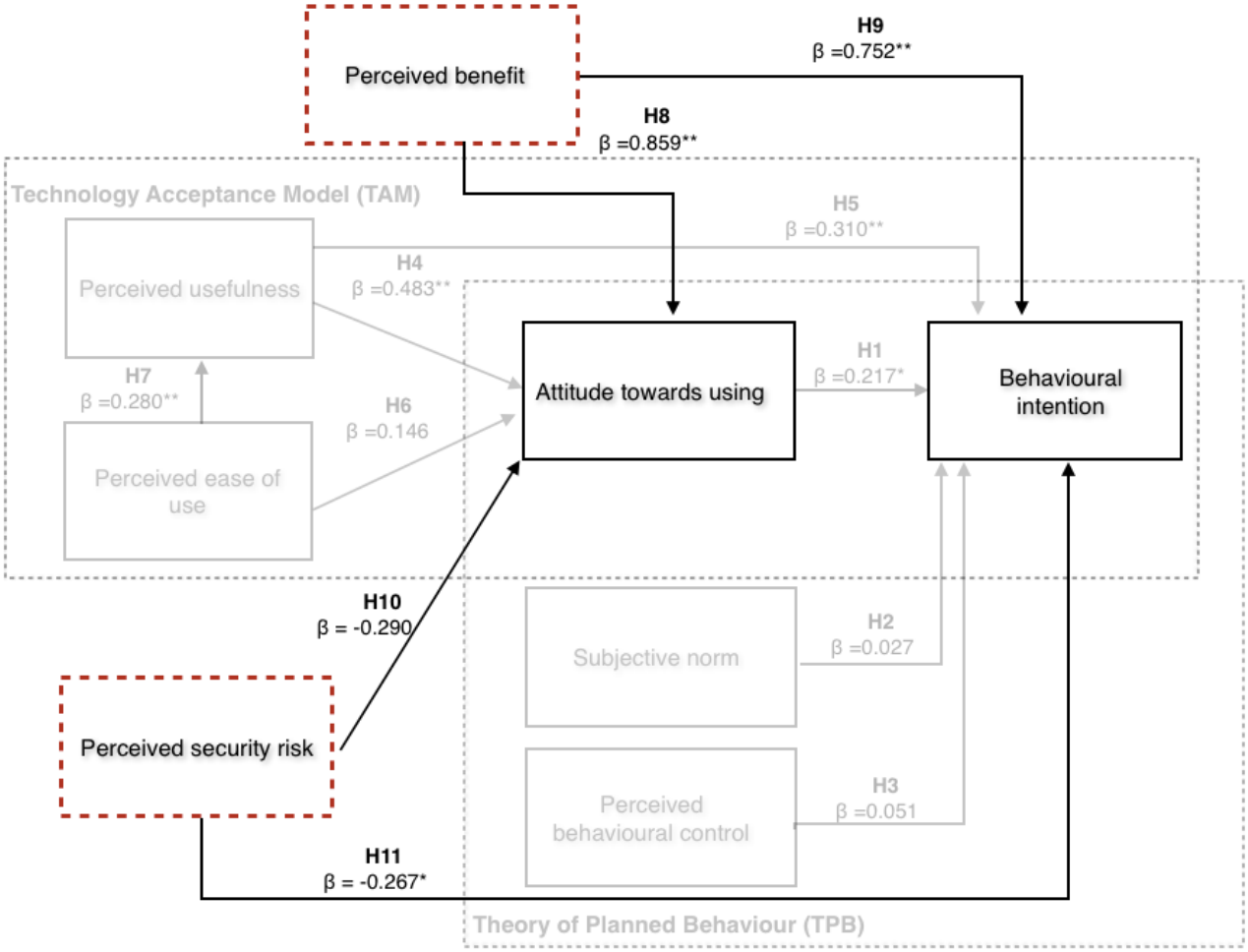
4.2.2.2. Ease of use positively influences the attitude and usefulness (H6/H7)

In looking at **Figure 8**, perceived ease of use positively impacts the usefulness (β=0,280**) of e-kronan, however not the attitude (β=0,146). According to the transcripts, the highest frequency of adjectives used to describe motivation for adopting a positive attitude and perceived usefulness of e-kronan are; smooth (17 times), followed by easy (13 times) and fast (5 times). This abundance of ease of use adjectives is confirmed through quotes such as “if the e-kronan system is smooth it would definitely be more useful” or “I would be more positive towards e-kronan if payments were carried out fast and instantly.” Generally, the overall theme for the insights on perceived ease of use indicated that it is positively influential for both adopting a positive attitude and greater degree of usefulness.

4.2.3. Perceived benefit and security risk findings

Lastly, the β coefficients corresponding to the perceived benefit and security risk are depicted in **Figure 9**, below, showing H8-H11.

Figure 9. Showing relationships for perceived benefit & security risk



4.2.3.1. Perceived benefit positively influences attitude and intention (H8/H9)

According to **Figure 9**, perceived benefit positively influences the attitude (β=0,859**) and intention (β=0,752**) to use e-kronan. According to the interviews 67 percent are categorised as "believing that having or using e-kronan would be compatible with their daily life," and the rest as "not compatible". In regard to the determinant of compatibility, a large proportion were categorised as "anonymity is more important in theory than in practice." This is visible through quotes such as "I don't wish to live in a supervised community, but on the other hand I always use my card where everything is traceable. So in theory I think you should be able to be anonymous but I don't use it in practice. It might be because I don't feel a need for it today, but it could probably change if society as we know it did". A certain interviewee even stated that; "it is a relative advantage if payments are traceable because in that way it is possible to detect money laundering and have a

system that prevents those activities". Furthermore, from the aspect of relative advantage only 33 percent are categorised as "seeing a relative advantage with cash." Within this e-krona sceptical group, a large fraction is categorised as "cash being beneficial in crisis and in situations without functioning power systems." This groups scepticism is contradicted by the remaining group categorised as "seeing a relative advantage with e-kronan or other digital systems." This is confirmed through quotes such as "it is only a hustle carrying cash, they are heavy and take up a lot of space" or "for e-kronan not to work it would require an extensive collapse of society, and if Sweden's entire network crashed there would not even be any running water. So in that situation I don't even believe that cash would even help." Generally, complexity is not a reoccurring hinder for adopting a positive attitude or intention to use e-kronan, according to the transcripts. The overall theme of benefits influencing attitude and intention is generally regarded as a positive relationship.

4.2.3.2. Perceived security risk negatively influences intention (H10/H11)

According to **Figure 9**, perceived security risk negatively influences the user's intention (β=-0,267*) to use e-kronan. Perceived security risk also negatively impacts on attitude (β=-0,290) to use e-kronan, however not to a significant degree. 92 percent of interviewees are categorised as "perceiving a decreased security risk in attitude and intention due to Riksbanken guaranteeing e-kronan." This, compared to private decentralised actor or commercial bank. This is confirmed through for instance interviewees stating that; "I believe that the fact that Riksbanken stands behind e-kronan affects the perceived security risk, and it is probably a reason for succeeding or not" or "Riksbanken insinuate trust, since they are under far more scrutiny than commercial banks, which could improve chances for adopting". Moreover, the underlying determinants for a vast proportion having this belief is categorised as either "Riksbanken needing to demonstrate a physical equivalence of the value of e-kronan" or "the system design of e-kronan should not constitute the feeling of being monitored." As for the overall theme, Riksbanken's role in influencing the perceived security risk is a recurring topic, for instance "in Sweden we have great confidence in the state in comparison to other countries where they have a history of corrupt governance and controlling methods, this would most likely improve the chances of trusting and adopting e-kronan" or "the security risk of e-kronan will be the same as for cash, since the same actor (Riksbanken) guarantees them, people who understand that will not perceive a higher risk." This is also

compared to differences pointed out for cash, also regulated by Riksbanken, such as “there are other risks associated with physical money, you can lose them, get robbed and that sort of stuff” and “I believe that the risk would be higher for carrying cash than e-kronor.”

5. Discussion

The discussion is intended to function as a link between the research purpose of exploring adoption intention towards e-kronan, and the power of selected predictive variables established through the research framework. In doing so, it also ties back to the problem definition, empirical findings and previous studies. The discussion is carried out in line with the constructed research framework and significant empirical findings established in the present study. Hence it is critical to remember that the arguments discussed are not to be interpreted as absolute truth in any way, shape or form, but rather potential explanations of the outcome of the present study.

5.1 Overall discussion of findings

The overall findings of this study support the research framework in **Figure 4,** and seven out of the eleven hypothesis established are accepted. The overall explanatory power of the variables applied in the research framework have an R-square of 94% for intention, 90% for attitude and 92% for perceived usefulness see **Appendix Table 11.** Therefore, it is possible to generally argue that the research framework is capable of the explaining a great extent of the variation in the adoption intention towards e-kronan. However, the high values of R-square can be a consequence of the high correlations between the variables tested in the regression analysis, implying potential multicollinearity see Appendix **Table 9**.

5.2. The role of TPB variables in adoption intention towards e-kronan

5.2.1. Attitude

As for TPB, one of the primary variables with high impact on the intention to use e-kronor is attitude (β=0,217*) (H1). This impact appears to be caused by the findings indicating that a majority have a positive attitude towards e-kronan, combined with the imbalance of power between commercial banks. Therefore, it is reasonable to believe that the Swedish public's positive attitude towards e-kronan highly influences the actual intention to use it. In that regard, it is possible to explain this relationship through the outlined digital money readiness index (Thomas et al., 2016). This increases the notion that Sweden's high readiness score could be considered a proxy for a positive e-krona adoption intention.

Partially explained by the institutional environment and partially technological aspects. Consequently, this relationship could become critical in the aspect of ensuring the overall success of the e-krona system adoption.

Moreover, the institutional environment could in this case be argued as being linked to the limited competition between commercial banks the so-called big four (CFI, 2018), and hence enhance the public's positive attitude for e-kronan. The technical aspect of of the readiness index could therefore potentially explain the positive attitude towards e-kronan (Thomas et al., 2016), based on the notion of it being in line with societal changes as a whole, and ledgered by Riksbanken. On the contrary, the empirical findings suggest that the actual need, and ambiguous practical implications of e-kronan could potentially lower the attitude towards e-kronan. Nevertheless, the overall relationship has augmented the notion of predictive power of the variable is high, in terms of positively influencing intention to use e-kronan. This also goes in line with previous research in related scientific areas that attitudes positively influence on adoption intention towards internet banking (Lee, 2009) and Bitcoin (Walton & Johnston, 2018), which could indicate alignment between the construct of the attitude variables in the constructed research framework.

Key insight I: Attitude positively influences intention, potentially acting through institutional and technological determinants.

5.2.2. Subjective norm

Moving on from there, the weak positive impact of subjective norm on the intention to use e-kronor (H2) (β=0,027) could not be significantly proven. However, the results shows that a majority of the interviewees stated that their adoption intention would be influenced by recommendations from their intermediate environment or inner circle. On one hand, this could in turn be considered a form of social pressure, and need to obtain social acceptance, which relationship is validated through similar research studies on internet banking adoption (Lee, 2009). This could also suggest that that the level of uncertainty around e-kronan is relatively high, and hence could increase the influence of social norm for adopting.

On the other hand, certain interviewees expressed subjective norm as insignificant in the adoption process, but rather perceived a value in being informed by experts or reading up on the subject themselves. This could potentially be explained as social risk (Featherman & Fuller, 2002) not being a particularly important determinant for adopting e-kronan. In considering the insignificant relationship of subjective norm and variance in the findings, it could also potentially be explained by the perceived degree of voluntariness of the e-krona system (Venkatesh, & Davis, 2000). Since it was not explained or established whether or not e-kronan would be a voluntary choice, it could explain some discrepancy between the aggregated and qualitative findings. Because of interviewees being able to ask follow up questions. Conclusively, the relationship of subjective norm positively impacting intention adoption towards e-kronan cannot be supported in the present study, due to insufficient scientific proof in the present study. Although, certain qualitative findings indicated that the role of subjective norm could become increasingly important in the future if an abundance of people used the system.

Key insight II: Social norm is not a significant factor in positively influencing adoption intention

5.2.3. Perceived behavioural control

The relationship for behavioural control could not be proven to positively impact intention to use e-kronan (H3) (β=0,051). Interestingly however, a vast majority of interviewees (92 percent) described a high level of confidence in being capable of using the e-krona system. This relationship could potentially be explained by digital systems becoming increasingly standardised (Lee, 2009) and aligned in their value offering such as Swish and iZettle, hence improving self-efficacy (Berg, 2017)). This development could also potentially explain the underlying reason for perceived behavioural control having less influential power on adoption intention, which can be linked to Sweden's overall high level of technical and innovative status (Julin, 2017). Similarly, it appears that the study sample was under the impression that the e-krona system would be in high proximity to cash and conventional digital money, which could further weaker the relative influential importance of perceived behavioural control in the adoption process.

Furthermore, the suggested low impact of behavioural control could also potentially be explained by the uncertainty of actual behavioural control before using e-kronan. Similarly, variance between findings for this variable could yet again find explanation in interviewees being allowed to ask for clarification, improving understanding of "having behavioural control over e-kronan." All things considered, the findings in the present study indicate deviations from previous studies that show that behavioural control influences adoption of new technologies (Thomas et al., 2016). In that, the variable does not to earn predictive power for the Swedish public's adoption intention towards e-kronan.

Key insight III: The insignificant relationship of perceived behavioural control could potentially find explanation in increasingly aligned digital systems and e-kronans proximity to established payment systems

5.3. The role of TAM variables in adoption intention towards e-kronan

5.3.1. Perceived usefulness

The relationship between variables perceived usefulness and attitude (H4) accounted for a strong-coefficient (=0,483**)), as well as for perceived usefulness and intention (H5) (=0,310**). The findings generally indicate that the digital aspect of e-kronan goes in line with perceived compatibility, both in terms of experiences and interest to adopt new payment methods. Similarly, the findings suggest that e-kronan does not violate social or cultural norms, which could potentially be an important determinant for the perceived usefulness influential power on adoption (Diatmika, Irianto & Baridwan, 2016). It could potentially be supported by evidence showing that European countries generally have a higher propensity to adopt card-based money (Snellman et al., 2001) and the digital money readiness index (Thomas et al., 2016), which potentially could be adopted as a proxy for adoption of digital money.

Furthermore, the factor of Riksbanken ledgering e-kronan could potentially further explain the level of perceived usefulness predictive impact on adoption intention. This stemming from the historical trend of Sweden having a high level of managerial and government trust (Julin, 2017). In that regard, the power of perceived usefulness towards e-kronan could also be thought to align with the daily routine and overall trust philosophy of

Swedish people, which was also a reoccurring theme in the qualitative findings. Therefore, it is reasonable to believe that Riksbanken's role in ledgering e-kronan could potentially be a critical determinant for improving the perceived usefulness of the digital currency. In that, the variable of perceived usefulness is suggested as a powerful determinant for exploring attitude and adoption intention towards e-kronan. Hence this strong positive relationship also aligns with related studies, supporting the significant applicability of the variable in the present study.

Key insight IV: Perceived usefulness is suggested as a strong predictive variable positively influencing adoption intention, potentially stemming from Swedish social and cultural alignment determinants

5.3.2. Perceived ease of use

Perceived ease of use has an insignificant low impact (β=0,146) on attitude (H6). On the contrary it showed significant predictive power in determining the perceived usefulness (H7) (β=0,280**). In that regard, it is possible to argue that the level of "easiness" of e-kronan influences adoption through the intermediate variable of perceived usefulness, where determinants of smoothness, easiness and fastness significantly impact the adoption intention towards e-kronan. In fact, adjectives for "easiness" were the most frequently sought after feature for e-kronan. This potentially suggests that perceived ease of use insignificant relationship to attitude could be explained by it acting as a hygiene factor for adopting e-kronan, in line with findings on system adoption (Lee, 2009). This also due to Sweden's already high level of technical and innovative structure (Thomas et al., 2016), making ease of use a potentially "taken for granted" determinant.

Furthermore, the outcome for perceived usefulness ultimately stresses the importance of high-quality software aspects in the potential issuance of an e-krona, to improve the attitude towards e-kronan. Perceived ease of use showed to be an important determinant in influencing of perceived usefulness. Therefore, it is reasonable to confirm that this increases pressure on creating a user-friendly experience of e-kronan to be well-received by end-users, in line with previous studies (Lee, 2009). Interestingly enough, this notion of perceived ease of use primarily acting through perceived usefulness is confirmed in related research studies. Therefore, it could be suggested that perceived ease of use

primarily impacts perceived usefulness in, which potentially could form a stepping-stone in further exploring the degree mediating variables the adoption process towards digital money.

Key insight V: Perceived ease of use primarily acts through the intermediate variable of perceived usefulness in positively affecting adoption intention

5.4. The role of perceived benefit and risk in adoption intention towards e-kronan

5.4.1. Perceived benefit

Perceived benefit accounted for a strong, positive impact on attitude (H9) (β=0,752**), as well as on intention (H8) (β=0,859**). It became evident that the level of prior knowledge potentially acted as an important determinant for the degree of perceived benefit, which was especially noticeable in the overall theme of the interviews. The direction of that relationship could be suggested as people being more knowledgeable of e-kronan, aslo perceiving a higher benefit (Rogers, 1994). Whilst, people with limited prior knowledge perceived e-kronan to have fewer benefits, also seemingly due to the inability to discover differences to other forms of money. It is therefore suggested that the extent of knowledge seemingly impacts the perceived benefit and positively influences intenton, aligning with previous adoption research (Rogers, 1994).

The relative advantage compared to other payment solutions, was also suggested as a factor determining the perceived benefit relationship. Partially explained by its suggested superiority to traditional money in terms of efficiency, and decreased direct and indirect associated risks (Haung et al., 2005). Interestingly enough, the qualitative findings augmented the belief that the relative advantage of e-kronan was primarily an efficient payment system, and at the same time ledgered by Riksbanken. This benefit could potentially be explained as a higher perceived direct benefit of decreased risk for monetary loss (compared to cash) and indirect benefit of decreased risk for fraud, due to the fact that Riksbanken being under far more scrutiny than commercial banks (Lee, 2008). Similarly, there seemed to be a negative attitude towards the benefit of holding accounts at commercial banks, which suggestively could have been impacted by the recent Swedbank money laundry scandal (Dyfvermark et al., 2019). On the contrary, it is

suggested that the relative advantage of e-kronan could potentially become diminished in the face of a crisis or collapse of society, where many argued that cash would be preferable to e-kronan.

Furthermore, it is reasonable to believe that the determinant of compatibility was important in influencing the positive relationship between perceived benefit on adopting e-kronan. Anonymity appeared to be a factor valued as highly important in theory for compatibility, but not in practice to the same extent. Similarly, traceability of e-kronan was generally considered an direct benefit in terms of increased information transparency, contradicting previous studies that anonymity would lead to potentially violating social or cultural norms (Taylor & Todd, 1995b). Yet again, the qualitative findings on compatibility suggest that there is a relatively high level of e-government trust in Sweden, which could potentially positively influence the perceived benefit on attitude and intention towards e-kronan. The findings derived from the interviews are in alignment with previous theory demonstrating the powerful influence of psychographic variables as determinants for potential adoption (Arts et al., 2011). These implications are important in terms of contradicting previous acceptance studies towards e-kronan in Sweden, limiting the scope to younger people based on the notion that they are more inclined to adopt digital money (Gawell & Hed, 2018). Therefore, it is suggested that the correlation between age and acceptance towards e-kronan, is potentially not the same as causation. Instead, it is evident that determinants such as technology interest and lifestyle shows greater predictive power in determining the level of compatibility of e-kronan.

Moreover, people who perceived a significantly high level of complexity seemed to adapt a negative tendency towards e-kronan, which contrasts certain previous findings suggesting that complexity is sometimes positive in terms of increasing adoption intention, and negatively affect actual adoption behaviour (Rogers, 1994). The perceived complexity of using e-kronor was primarily attached to the use during extraordinary circumstances (i.e. crises, collapse of society, network crash), emphasising operating difficulties rather than those connected with adoption intention. Therefore, it is suggested that complexity in regards to the adoption intention towards e-kronan most likely acts as a negative determinant on perceived benefit. Conclusively, the findings suggest that the perceived benefit earns high positive predictive power over attitude adoption intention towards e-

kronan in the present study. By potentially acting through the determinants of prior knowledge, the relative advantage and compatibility. A high level of complexity experienced was not perceived as a benefit for adopting e-kronan. Therefore, it is possible to argue that the added variable of perceived benefit is relevant and valuable in the present study.

Key insight VI: Perceived benefit positively influences the attitude and intention towards e-kronan, potentially through the determinants of prior knowledge, relative advantage and compatibility.

5.4.2. Perceived security risk

The variable of security risk is not significantly proven to negatively impact attitude (H10) (β=-0,290). However, security risk accounted for a negative strong impact (β=-0,267*) on intention (H11). This relationship suggests an alignment with previous research findings suggesting that security risk is the main impacting factor for intention to adopt internet banking (Lee, 2009). Qualitatively, it was discovered that the risks of losing money, getting robbed, and feeling supervised through transactions were the main determinants for impacting the security risk linked to e-kronan. Therefore, this supports previous evidence showing that direct and indirect security risk negatively impact adoption intention (Walton & Johnston, 2018). This could potentially find explanation in partially the indirect security risks attached to e-kronan discussed previously. Through the proposed traceable e-krona, the storing of personal information and activity, largely contrasts anonymous cash. Therefore it is reasonable to believe that it could potentially become a challenge ensuring that the e-krona system maintains the same integrity standards, and avoid invasive privacy data to be a barrier for adoption in the vast amount of data collected. In that regard, the qualitative findings suggest that the perceived security risk could potentially become diminished through social commerce and technology habits, due to people being more aware of the potential risks (Julin, 2017).

Moreover, the level of direct perceived security risk in terms of adopting e-kronan appears to be equivalent, or lower than the relative risk of carrying cash. Interestingly enough, this finding, along with people experiencing the security risk largely diminished through being ledgerd by Riksbanken, which could potentially lower the negative impact on intention

towards e-kronan. In turn, the shared notion from the findings suggests that the vast collection of data that the e-krona system could entail would not only create potential risk, but also benefits in terms of preventing criminal actions (Thomas et al., 2016). As of the present study, it is reasonable to suggest that the perceived security risk negatively impact the adoption intention towards e-kronan in Sweden. This is also interesting from the perspective that Sweden is a country of relatively high levels of trust (Julin, 2017), which makes it possible to believe that the variable of security risk could become an ever greater negative influence in countries with political and managerial distrust.

Key insight VII: Perceived security risk negatively influences the intention to adopt, although could potentially be diminished through a seemingly lower relative risk to other alternatives and a favourable role of Riksbanken ledgering e-kronan

6. Conclusion

In conclusion, the present study aimed at exploring the adoption intention towards e-kronan of the public in Sweden. Adoption intention in this context, referring to the consumers state of mind before adopting an innovation. More specifically the ambition of the report was to establish and enhance the robustness of a theoretical framework applicable in exploring adoption intention towards e-kronan in Sweden, by critically exploring two classical behavioural models TPB and TAM, along with added variables of perceived benefit and risk. The importance of the purpose at hand became augmented by the gaps identified in the current knowledge-base, through the lack of studies capturing the perspective of the end-user, insufficiency in exploratory predictive power of influencing variables, and studies representing the practical implementation scope. These problems are addressed and incorporated into the purpose of the present study, and a exploratory sequential mixed-methods study.

Through the construct of eight variables, the findings of the present findings showed predictive power on adoption intention towards e-kronan for seven out of eleven hypothesised relationship. The overall findings of the study also show that the constructed research model gained favourable exploratory power, proving its scientific capacity in predicting relationships influencing adoption intentions towards e-kronan by the Swedish public. The present study delves into a largely uncharted area. It has demonstrated the relevance of adding the variables of perceived benefit and security risk into the frequently used hybrid of TPB and TAM. Most notably, perceived benefit was suggested as the attaining strong influential power for both the variables of attitude and intention. Perceived usefulness showed a suggestively strong impact on attitude and intention, supposedly stemming from high levels of alignment with Swedish social and cultural values. It was suggested through the findings that perceived ease of use primarily positively acts on intention through the intermediate variable of perceived usefulness. Perceived security risk towards intention was the only significant relationship negatively impacting adoption intention towards e-kronan. Although the findings also suggested that the direct and indirect perceived security risk could potentially become diminished due to relatively lower risk compared to alternative and the seemingly favourable stance of Riksbanken ledgering e-kronan.

7. Limitations & future research

To begin with, a fundamental limitation of the present report, and a research challenge at large, is the generalisability of the findings. This becomes apparent in the case of non-random convenience sampling applied in the methodological approach, which partially was the less costly and reachable options. For another part, it could also potentially diminish the degree of generalisation for the adoption intention of the Swedish public. In combating this limitation, and improve generalisability, an improvement for future research is to use the relative importance explored through constructed and tested research framework to study consumer group in more detail. Similarly, it is recommended to improve the mapping of relationships for adopting e-kronan relative to diffusion of innovation (DOI) theory (Lee, 2009). Hence exploring the range of early and late adopters in adoption of the e-krona system, and further providing clues into the expected volume of end-users critical for the system to be viable long term. The reason for this not being explored in the present study was due to pressing prioritisation in primary mapping out variables significant in influencing adoption intention, and the potential role of underlying determinants accordingly. However, this phenomenon needs further investigations and validations. Hence, the replication of this study in future research on a more detailed scale with different national cultures could be essential in improved generalisation of findings, since generalisation in the findings could also manifest itself in the form of cultural and national limitations (Weber and Hsee, 1998). Lastly, the generalisability could potentially be limited by the statistical test conducted in the present study, in the regression condition index being close to the statistical threshold. Consequently, this could potentially give rise to intercorrelated and multicollinearity for the independent variable, lowering the strength of separating the impact of each variable influencing intention adoption. However, autocorrelation was not an issue due to a sufficient Durbin Watson values close to 2.0, increasing the reliability and generalisability of the findings. Similarly, there were no signs of heteroscedasticity in the scatter plots of the regression analysis.

Another limitation identified in the present study, is the cross-sectional nature of the study. The crossover of findings may have provided a snapshot of the determinants acting on adoption intention towards e-kronan, although it reasonable to believe that a longitudinal study could help improve the reliability of the findings over the course of time. Therefore,

an improvement for future research is to employ a longitudinal study to evaluate this aspect, and capture a broader scale of variables in distinct time periods. For instance, the variable of perceived benefit showed great capacity in the present study in predicting e-krona adoption intention, also largely due to the qualitative insights favouring the ledger role of Riksbanken in backing the currency. When conceptualising about this relationship it is possible to consider the notion of the Swedbank money laundering scandal having an impact on the criticism raised towards commercial banks, or the big-four, which in a reverse manner could have affected a seemingly favoured position of Riksbanken. However, within the realm of the present study this could be considered a chain of unexpected events unfolding and due to the limited time frame was not captured into the layers of the findings. That being stated, a longitudinal study in future research could improve monitoring of situational factors potentially affecting the outcome of adoption intention towards e-kronan. Therefore, a recommendation for future research is putting our constructed research framework to the test of time. To improve modelling of influencing factors over various periods, and hence further exploring their predictive power for adoption intention towards digital money.

8. Implications

Overall, the present study contributes to increasing the body of knowledge for the consumer intention adoption towards e-kronan. At a time where the digital payment market is rapidly changing. It has enhanced the perspective of the end-user perspective, which can be influential in other forms of modern monetary research in the sense that it provides clues into the network of variables with predictive power towards adoption for new monetary innovations. The study also highlights the perceived trade-offs and priorities for adopting e-kronan, in a financial landscape continuously changing, and ultimately could shift the contemporary concept of money.

8.1 Scientific & theoretical implications

From a scientific and theoretical perspective, this research provides an initial mapping of adoption intention towards e-kronan, which was previously lacking in the scientific knowledge-base. The implications of the study show that the hybrid of TAM and TPB is useful in predicting adoption intention towards digital money, and hence could establish prerequisites and priorities for other acceptance models in future research. The implications of the study have also generated improved understanding of the role of added variables perceived benefit and risk in the intention adoption towards e-kronan, as well as contrasting empirically derived findings on intention adoption towards internet banking and Bitcoin. From that perspective, the scientific approach of the present study could potentially contribute to the emerging literature and body of knowledge for e-kronan particularly, and CBDC generally. This is relevant considering that 70 percent of Central Banks worldwide are currently investigated CBDC (Barontini & Holden, 2019). This abundance of expected research on the subject further stresses the importance of the implications of the present study in establishing variables significantly predicting adoption intention towards a digital currency ledgered by the state. In that sense, it could be argued that the implications of the study could reach further beyond the initially expected outcome in solely exploring the adoption intention towards e-kronan in Sweden. As it could ultimately transform into a backbone for inspiration in the process of scientists and academics interested in exploring research models for central bank-issued digital currency on a global scale.

8.2 Managerial implications

The findings of this report emphasise potential predictive determinants impacting consumer intention adoption towards the digital currency e-kronan. The topic of e-kronan has been addressed through previous reports published by Riksbanken, discussing shifted payment behaviour and consumer trends (Julin, 2017). Nonetheless, the previously reports have not significantly dealt with the process of mapping out the intention adoption through the lenses of scientific models for actually adopting e-kronan. An implication of the present study is the exploration of significant variables positively or negatively impacting the attitude and intention to use e-kronan. These findings are paramount in further understanding of the relationship between underlying determinants potentially acting in favour or disfavour of adopting e-kronan.

Furthermore, the implications of the findings also makes it evident that Riksbanken should strive towards developing a digital currency providing a system for smooth and convenient transactions, due to these factors being a ubiquitous case for the preferred design. Therefore, Riksbanken could for instance cater to the perceived usefulness and ease of use, by implementing e-kronan into an established digital infrastructure. Hence increasing the compatibility, and suggest a positive impacting relationship for adoption intention towards e-kronan. The implications also suggest that managerial parties consider the findings as a stepping-stone in developing a trust-building mechanisms, insinuating positive benefits of traceability in the case of detecting criminal activities such as money laundering or identity theft. Hence, allowing for Riksbanken to harvest the potential suggested perceived benefits of e-kronan, without jeopardising creating an impact on the perceived security risk negatively affecting intention adoption.

9. References

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10. Appendix

Table 5. Quality reliance of previous knowledge and control question

Survey Question	Frequency SPSS	Percentage/population
Previous knowledge about e-kronan		
Yes	56	45%
No	67	55%
Previous knowledge about cryptocurrencies		
Yes	127	97%
No	4	3%
E-kronan is a digital currency		
Yes	123	94%
No	8	6%

Table 7. Interview questions for qualitative data collection in phase II, based on phase I

Questions	Description
1	Tycker du att det vore fördelaktigt att äga e-kronor, varför eller varför inte?
2	Tycker du det vore användbart att betala med e-kronor, varför/varför inte?
3	Är det troligt att du skulle använda e-kronor, varför/varför inte?
4	Tycker du det vore komplext att använda e-kronor, varför/varför inte?
5	Tycker du det vore kompatibelt att använda e-kronor i ditt vardagliga liv, varför/varför inte?
6	Hade det varit mer troligt att du använde e-kronan om du fick det rekommenderat, varför/ varför inte?
7	Om människor du bryr dig om använde e-kronor, är det större chans att du också skulle göra det? Varför/varför inte?
8	Vad motiverar dig, samt värdesätter du när det kommer till betalningar/pengar?
9	Hur ser du på användbarheten och lätthet att använda privata valutor (bitcoin)? Varför?
10	Skiljer sig denna uppfattning gällande e-kronan? Isåfall varför?
11	Hur pass skulle du säga att du litar på kryptovalutor? Ser du en skillnad i den tillit du ser till e-kronan? Varför isåfall?
12	Upplever du att det finns en relativ fördel i att ha kontanter sett till andra betalmedel?
13	Vad är din inställning när det kommer till kontanter? Anser du att det är mindre riskfyllt än digitala betalmedel eller mer?
14	Till vilken grad anser du att staten bör ha en mer aktiv roll på betalningsmarknaden?
15	Om så, eller inte varför?
16	Tror du att faktum att staten och inte privata aktörer står bakom e-kronan kan förbättra attityden och intentionen att använda? Varför/varför inte?
17	Att staten står bakom e-kronan är det något du tror påverkar den upplevda risken? Blir den större eller mindre? Varför?
18	Tror du att du skulle ha lätt för att använda e-kronor? Är det något du skulle ha kontroll över?
19	Skulle du anse att du har en hög internetvana (online handel, sociala medier)?
20	Tror du att din vana med medier påverkar din intention till e-kronan positivt eller negativt? Varför?
21	Hur pass insatt är du i ekonomiska och samhälleliga frågor? Anser du att du har hög medvetenhet eller låg?

Questions	Description
22	Hur pass viktigt är integritet för dig? Hur uttrycks det i samband med betalningar?
23	Har du en mer liberal inställning till frågor generellt, eller konservativ?
24	Känner du till e-kronan sedan tidigare? Hur kommer det sig?
25	Känner du till kryptovalutor, hur kommer det sig?
26	Tror du att kännedomen kan få en positiv inverkan på attityder och intentioner gentemot e-kronan? Varför/inte?

Table 8. Showing Cronbach Alpha test for creation of indexes

Variable	Item code	Questionnaire item	Cronbach Alpha
Attitude	Q1	I think it would be useful to own e-kronor	0,96
	Q3	In my opinion it is desirable to have an e-kronor currency	
	Q4	My belief is that it would be a good idea to pay with e-kronor	
Intention	Q5	I believe it would be preferable to use e-kronor to make payments	0,94
	Q6	Personally it is likely that I would use e-kronor	
	Q8	My opinon is that it is positive to use e-kronor in my daily life	
Perceived Usefulness	Q2	My belief is that e-kronor would be useful in practice	0,94
	Q7	To have e-kronor would according to me personally be useful	
Perceived Ease of Use	Q11	I believe it would be easy to use e-kronor	0,84
	Q12	To use e-kronor in practice is something I perceive as easy	
Subjective Norm	Q9	It would be a higher propensity for me to adopt e-kronan if it was recommended to me	0,81
	Q10	My belief is that I would be more likely to use e-kronan if people I care for did	
Perceived Behavioural Control	Q28	I believe that I would be able to control an e-krona for financial payments	0,87
	Q29	To use e-kronor lies out of my control	
Perceived Benefit	Q32	My belief is that it is less costly to use e-kronan than other forms of currency	0,82
	Q33	Personally I think it is more safe to use e-kronor than other payment methods	
Perceived Risk	Q30	I believe that using e-kronor has security risks	0,91
	Q31	My belief is that owning e-kronor would increase security risks	

Table 9. Inter correlations between variables tested in the regression analysis.

	Attitude	**Intention**	**Perceived Behavioural Control**	**Subjective Norm**	**Perceived Ease of Use**	**Perceived Usefulness**	**Perceived Security Risk**	**Perceived Benefit**
Attitude								
Intention	0,7							
Percieved Behavioral control	0,4	0,6						
Subjective Norm	0,5	0,4	0,1					
Percieved Ease of Use	0,8	0,6	0,5	0,1				
Percieved Usefulness	0,8	0,7	0,5	0,2	0,9			
Perceived Security Risk	0,7	0,7	0,3	0,4	0,7	0,7		
Percieved Benefi	0,8	0,8	0,0	0,3	0,8	0,8	0,7	

Table 11. Showing the reliability of each regression test in SPSS of adoption intention

	Regression I	**Regression II**	**Regression III**
Dependent variable	Attitude	Intention	Usefulness
N independent variables	(4) Usefulness, ease of use, security risk, benefit	(6) Benefit, security risk, attitude, subjective norm, behavioral control, usefulnes	(1) Ease of use
Significance	0,00	0,00	0,00
Adjusted R-square	0,94	0,90	0,92
Durbin-Watson (autocorrelation)	1,96	1,91	1,98
Multicollinearity (inter-correlations independent variables)	Range: 0,124 - 0,8	Range: 0,04-0,8	0,96
Multicollinearity (condition index)	13,3	28,5	3,7
Heteroscedasticity (scatter plot)	No signs	No signs.	No signs

‘

Figure 6. Online survey for quantitative data collection in phase I

Vänligen läs följande text från Riksbanken och besvara sedan frågorna i enkäten:

Användningen av sedlar och mynt minskar i samhället. Samtidigt pågår en snabb teknisk utveckling när det gäller elektroniska pengar och betalningssätt.

Riksbanken utreder därför om kronor behöver ges ut i elektronisk form, så kallade e-kronor. En e-krona skulle ge allmänheten tillgång till ett digitalt komplement till kontanter där staten står som garant för pengarnas värde.

Nästa steg är därför en pilotversion av den enklare, värdebaserade varianten av en e-krona, vilket innebär digitala värdeenheter som kan lagras centralt eller lokalt. De kommer inte att ha någon ränta utan kommer att påminna ganska mycket om kontanter och det ska finnas möjligheter att göra betalningar offline.

Efter att ha läst texten, hur skulle du säga att du instämmer med följande påståenden?

	1 (Instämmer inte alls)	2	3	4	5	6	7 (Instämmer helt)
Jag tycker att det vore fördelaktigt att äga e-kronor	○	○	○	○	○	○	○
Att inneha e-kronor skulle enligt mig vara användbart	○	○	○	○	○	○	○
Enligt min åsikt är det önskvärt att ha e-kronor som valuta	○	○	○	○	○	○	○
Jag tycker det vore en bra idé att betala med e-kronor	○	○	○	○	○	○	○

I vilken utsträckning instämmer du med följande risker?

	1 (Instämmer inte alls)	2	3	4	5	6	7 (Instämmer helt)
Personligen anser jag att e-kronor vore mindre riskfyllt än kontanter	O	O	O	O	O	O	O
Eftersom e-kronor ges ut av staten ökar det pålitligheten	O	O	O	O	O	O	O
E-kronor skulle minska risken att pengar förlorar värde vid kriser	O	O	O	O	O	O	O
Jag tror att jag skulle kunna hantera e-kronor	O	O	O	O	O	O	O
Enligt mig är det osäkert att använda e-kronor	O	O	O	O	O	O	O

Hur instämmer du med vikten av följande egenskaper?

	1 (Instämmer inte alls)	2	3	4	5	6	7 (Instämmer helt)
Anonymiteten i betalningar är viktigt	O	O	O	O	O	O	O
Jag föredrar att göra betalningar som inte kräver en fysisk närvaro	O	O	O	O	O	O	O
Jag anser att det är viktigt att kunna utföra betalningar i realtid	O	O	O	O	O	O	O
Det hade varit användbart att göra betalningar via ett laddat kort	O	O	O	O	O	O	O
Att ha ränta på pengar är alltid att föredra	O	O	O	O	O	O	O
Det är viktigt att kunna göra betalningar som inte kräver uppkoppling	O	O	O	O	O	O	O

Hur instämmer du med följande påståenden angående användningen av e-kronor?

	1 (Instämmer inte alls)	2	3	4	5	6	7 (Instämmer helt)
Jag tycker det vore fördelaktigt att använda e-kronor för betalningar	O	O	O	O	O	O	O
Det är troligt att jag skulle använda e-kronor	O	O	O	O	O	O	O
Jag tycker e-kronor vore väldigt praktiskt att använda	O	O	O	O	O	O	O
Min åsikt är att det är positivt att använda e-kronor	O	O	O	O	O	O	O
Det hade varit mer troligt att jag använde e-kronan om jag fick det rekommenderat	O	O	O	O	O	O	O
Om människor jag bryr mig om rekommenderade e-kronan vore det troligt att jag använde e-kronan	O	O	O	O	O	O	O
Att använda e-kronor känns lätt	O	O	O	O	O	O	O
Jag tycker det vore enkelt att använda e-kronor	O	O	O	O	O	O	O

Hur anser du att följande påstående stämmer in på dig?

	1 (Instämmer inte alls)	2	3	4	5	6	7 (Instämmer helt)
Jag handlar ofta saker på internet	O	O	O	O	O	O	O
Sociala medier är något jag använder ofta	O	O	O	O	O	O	O
Som person är jag generellt sätt väldigt insatt i samhällsfrågor	O	O	O	O	O	O	O
Har ett stort intresse för ekonomiska frågor	O	O	O	O	O	O	O
Swish är något jag använder ofta	O	O	O	O	O	O	O
Politiskt anser jag mig själv vara liberal	O	O	O	O	O	O	O
Integritet är något jag värderar högt	O	O	O	O	O	O	O

I vilken utsträckning instämmer du med påståenden nedan?

	1 (Instämmer inte alls)	2	3	4	5	6	7 (Instämmer helt)
Att inneha kryptovalutor anser jag som en god idé	O	O	O	O	O	O	O
Jag har tillit till kryptovalutor (ex. Bitcoin)	O	O	O	O	O	O	O
Jag ser ett värde i att använda kontanter	O	O	O	O	O	O	O
Kontanter bör finnas kvar i samhället	O	O	O	O	O	O	O
Jag har ett förtroende för statsmakten	O	O	O	O	O	O	O
Staten bör ha en mer aktiv roll på den framtida betalningsmarknaden	O	O	O	O	O	O	O

Ålder

Under 21	21-30	31-40	41-50	51-60	61-70	Över 70
O	O	O	O	O	O	O

Kön

- O Man
- O Kvinna
- O Annat

Känner du till e-kronan sedan tidigare?

- O Ja
- O Nej

Känner du till kryptovalutor sedan tidigare?

- O Ja
- O Nej

Utifrån det scenario du läst: är e-kronan är en elektronisk valuta

- O Ja
- O Nej