Internet Banking Apps

Malin Karlsson

Academy of Business, Engineering and Science,
Halmstad University, Halmstad, Halland, Sweden

Abstract

Purpose – The purpose of this study is to investigate how good internet banking apps (banking apps) are compared to other apps from a user perspective. The app categories included in the comparison are healthcare and fitness apps, news apps and navigation apps, which are all considered utilitarian apps.

Design/method – To achieve the paper's purpose, an online questionnaire was conducted with a sample of 200 Swedish users of banking apps. The questionnaire investigated the quality of banking apps compared to other apps through five items deriving from previous research.

Findings – The conclusion of the study is that banking apps hold a high overall quality compared to the other apps. When looking at the items severally, banking apps are considered somewhat inadequate regarding ease-of-use, sufficiency of features and app aesthetics. The two aspects which increases the quality of banking apps are that it is reliable in its performance and that it helps the user be more efficient.

Originality/value – The value of this study is that it identifies dimensions of banking apps which hold high quality and which do not. This can be helpful for banks when improving their apps since the study suggests where the improvements should be focused.

Keywords – Sweden, Internet banking, Internet banking apps, Quality, Utilitarian apps

Paper type – Research Paper

1. Introduction

The usage of smartphones and tablets has expanded quickly in recent years (Vitello *et. al.*, 2015) and along with this expansion, the popularity of mobile apps has also increased considerably (Hsiao, Chang & Tang, 2016; Xu, Peak & Prybutok, 2015). These are effects of the technological development, which has had a major impact on the business environment (Laukkanen, 2007). One industry that eminently takes part of the growing usage of mobile apps are banks through their development of internet banking apps (banking apps) (Bharti, 2016). Banking apps offer customers advantages such as convenience and interactivity, and makes it possible for people to do their banking wherever and whenever they want (Jun & Palacios, 2016). For banks it has quickly become a requisite for prosperity to offer the service of mobile banking (Jun & Palacios, 2016; Laukkanen, 2007).

Since there is a strong link between service quality and user satisfaction (Yaya, Marimon & Casadesus, 2011; Ribbink, van Riel, Liljander & Streukens, 2004), it is of great interest for banks to identify the factors which users perceive as crucial for the service's quality (Jun & Palacios, 2016). There has been substantial research identifying dimensions of service quality (Parasuraman, Zeithaml & Malhotra, 2005; Jun & Palacios, 2016). The identification of quality dimensions has also been done when it comes to internet banking (Yaya *et. al.,* 2011; Sohn & Tadisina, 2008), mobile apps in general (Xu *et. al.*, 2015) and banking apps specifically (Jun & Palacios, 2016).

The purpose of this paper is to investigate how good banking apps are and how good they are compared to other apps, according to users. In the context of this study, the word "good" applies to service quality. Quality is divided into

several influencing dimensions which are based on previous research. Furthermore, "other mobile apps" were distinguished using Kim, Park, Kim and Lee's (2014) categories for apps. Kim *et. al.* divide apps into utilitarian apps and hedonic apps based on their value. In their study, banking apps are a part of the finance category and are considered utilitarian. In order to achieve equitable comparability, the apps included in the comparison are utilitarian apps solely. Utilitarian apps are separated from hedonic apps since the value of using a utilitarian app is related to effectiveness, efficiency and utility. Hedonic values on the other hand focuses enjoyment and experiential values (Kim *et. al.,* 2014). To improve the comparability even more, the study focuses on three app categories which have similar downloading-frequency as the finance category. The selected app categories are *healthcare and fitness*, *news* and *navigation.*

The remainder of this paper is organized as follows. Section 2 consists of a review of previous literature on the subject. Section 3 presents the research methodology of the empirical study which is a questionnaire with a sample of 200 Swedish banking app users. The empirical findings are presented in Section 4 and Section 5 consists of an analysis deriving from the empirical findings. Lastly, Section 6 lays out the main conclusions, including limitations and implications for further research.

2. Review of Previous Literature
2.1 What is quality?
Quality has been described as the extent to which a product's performance fulfills the customer's expectations of its performance (Zeithaml, Berry & Parasuraman, 1988; Harris & Harrington, 2000). The customer's expectations can for example be established by past experience of the product or similar products, personal needs and word of mouth communication (Zeithaml *et. al.,* 1988). A requirement for achieving product quality is therefore to understand the customer's needs and thereafter design a service which meets those needs (Harris & Harrington, 2000).

2.2 Quality of online businesses
According to Ribbink *et. al.* (2004), the quality of online services is positively related to customer satisfaction. Product quality can be measured through different dimensions and many studies have been performed to develop such dimensions (Jun & Palacios, 2016). Regarding the quality of online businesses, Parasuraman *et. al.* (2005) have developed a general measurement instrument for measuring the quality of websites which is called E-S-QUAL. E-S-QUAL consists of 22 attributes divided into four quality dimensions. Those dimensions are efficiency, fulfillment, system availability and privacy. The *efficiency* dimension concerns how easily and fast the user can access and use the site and how it helps the user to be more efficient. *Fulfillment* measures the degree to which promises about delivery and availability of the site are fulfilled. *System availability* refers to the site's technical functioning, and *privacy* measures the site's safety and to what extent it protects user information.

2.3 Quality of internet banking
Apart from general measurement instruments for the quality of online businesses, there are also studies concerning the quality of internet banking

specifically. Yaya *et. al.* (2011) use the E-S-QUAL instrument to research users' apprehensions of internet banking quality. Through their study, Yaya *et. al.* draw the conclusion that efficiency is the most important dimension for customer satisfaction of internet banking.

Another instrument for measuring the quality of internet banking has been developed by Sohn and Tadisina (2008). Their measurement instrument consists of six dimensions; trust, customized communication, ease of use, website content/functionality, reliability and speed of delivery. The *trust* dimension is made up by the two components financial security and confidentiality of personal information. *Customized communication* means if the customer can receive personalized communication with the bank easily and furthermore, internet banking should be designed for their customers' *ease of use. Website content/functionality* concerns both appropriateness of the content of the website and the functionality of it. The *reliability* of the website depends on if the performance of the site is consistent and dependable, and lastly, *speed of delivery* regards how fast customer requests are responded.

2.4 Quality of banking apps

In a study, Jun and Palacios (2016), develop eight dimensions for measuring the quality of banking apps in particular. These dimensions are: "content; accuracy; ease of use; speed; aesthetics; security; diverse mobile application service features; and mobile convenience" (p. 315).

The *content* dimension refers to if the information and features on the banking app meets the customer's needs. The *accuracy* of the app is concerned with the level of error in the app, the interface and the accuracy of the information on the app. Furthermore, *ease of use* includes both what the customer think of the ease of understanding and of operating the app. The *speed* dimension refers to how fast the app loads, processes and updates information, and also to if the information is up-to-date. The app's *aesthetics* simply applies to what the customer thinks of its design and layout. The *security* dimension includes different safety aspects such as login security and the customer's privacy. *Diverse mobile application service features* refers to the diversity and width of the features on the and lastly, the *convenience* dimension refers to the time and effort perceptions of the app. Those of the above-mentioned dimensions which were proved to have the greatest impact on the level of customer satisfaction was accuracy, convenience, ease of use and diverse mobile application service features.

2.5 Factors deciding customer satisfaction with mobile apps

Xu *et. al.* (2015) divides the factors deciding if a customer is satisfied or dissatisfied with an app into four dimensions:

- *app utility* – "...the extent to which a person believes that using an app will deliver desired, superior outcomes..."
- *app quality* – "...reflects the quality of app features such as reliability, responsiveness and integration."
- *enjoyment* – "...the extent to which using an app is enjoyable in its own right, apart from any anticipated performance consequences."
- *app aesthetics* – "...aesthetics is an object-based belief about the visual appearance of a system." (Xu *et. al.,* 2015, p. 173)

Out of these four dimensions, Xu *et. al.* consider app utility and enjoyment as behavior-based beliefs which bring forth consequences of using the app. App quality and app aesthetics, on the other hand, are considered object-based beliefs which depends on the system itself. Xu *et. al.* also proposes a division of the dimensions into utilitarian benefits and hedonic benefits. Utilitarian benefits include benefits deriving from the functional performance of the app and hedonic benefits concern enjoyment and self-fulfillment. This division implicates that app utility and app quality are utilitarian benefits while enjoyment and app aesthetics are hedonic benefits.

3. Research methodology
3.1 Questionnaire and measurements
In order to fulfill the aim of the paper, a quantitative study was performed with a sample of Swedish users of banking apps. An online questionnaire was made for the purpose of this study, starting with a qualifying question used to seek only users of banking apps: "Do you use your bank's mobile app to do all or parts of your banking?".

The questionnaire was divided into three parts. The first part aimed at establishing a sample profile through a few categorizing questions seeking out the respondents' age, gender, and which bank they use. The respondents' banks were sought out through a list of possible banks. If the respondents used multiple banks they were asked to mark the one they used most frequently.

The second part of the questionnaire focused on banking apps and the respondents' perceptions of the one they use most frequently. Firstly, the respondents were asked to mark which matters they perform on their banking app. The matters performed on banking apps were sought out through a list of different bank matters including an open alternative for other matters. In the second part of the questionnaire, the respondents were also asked to grade their overall satisfaction of their banking app. This was done through a scale from 1-5, where the respondents had the alternatives very satisfied (5), satisfied (4), neutral (3), dissatisfied (2), very dissatisfied (1). The author's motive for identifying the respondents' bank and level of satisfaction with the bank's app was to be able to see if the level of satisfaction depends on which bank it refers to. Lastly, the respondents were given the opportunity to suggest desired improvements of the banking app.

The third part aimed at seeking out how good banking apps are compared to other mobile apps. As stated in the introduction, these other apps include the categories *healthcare and fitness, news* and *navigation*. In order for the respondents to understand the content of the categories, they were given examples of apps that belong to each category. When answering the questions, the respondents were asked to think of the app they use most frequently in each category. The comparison was done using Xu *et. al.*'s (2015) dimensions *app utility, app quality, enjoyment* and *app aesthetics*. Although, since the dimensions proposed in the mentioned previous studies do not include *enjoyment*, this dimension was excluded in the questionnaire. The three remaining dimensions were divided into items deriving from the review of previous literature (see Appendix). More exactly, the items were created through an integration of Xu *et. al.*'s (2015) dimensions and other dimensions from previous literature. All items were evaluated by five-point Likert-scales.
3.2 Data collection

The questionnaire was created on a website where you can both create the questionnaire and summarize the answers. A link to the questionnaire was distributed online to be able to reach respondents from varying parts of the country and with different characteristics, even if time and resources for the study was limited. According to Evans and Mathur (2005), two of the major strengths of online questionnaires are that it is a time effective method and that it broadens the reach of the study. The time effectiveness applies to both the data collection and the follow-up of the questionnaire. The possibility to require answers on specific questions to be able to complete the questionnaire is an additional strength of the online questionnaire found by Evans and Mathur. Another reason for the choice of online distribution was that the target group for the study is users of banking apps, which is an online service. Evans and Mathur (2005) describes that a weakness of online distribution is the risk of ending up with a demographically skewed sample. This is something that needs to be taken into consideration when analyzing the questionnaire results. Furthermore, since the target group consists of people with Swedish as their mother tongue, the questionnaire was written in Swedish to avoid obscurities and misinterpretations. In the two weeks that the questionnaire was distributed, 200 valid completed questionnaires from Swedish users of banking apps were retained.

4. Empirical findings
A summary of the characteristics of the respondents participating in the study shows the following structure of gender and age.
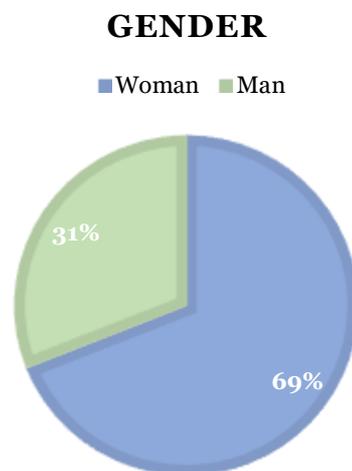
GENDER

Figure 1. Gender of the respondents

Since the exact proportion of men and women in Sweden who uses banking apps has not been identified in this study, the proportion is presumed to be half-and-half. As shown in Figure 1, 138 out of the 200 respondents are female.
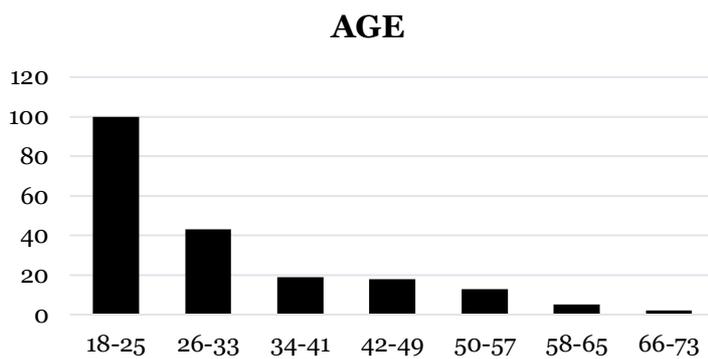
AGE

Figure 2. Ages of the respondents

Figure 2 shows that half of the respondents are 18-25 years old and almost a quarter of the respondents are between the ages 26-33. Only 7 of the respondents are older than 58 years.
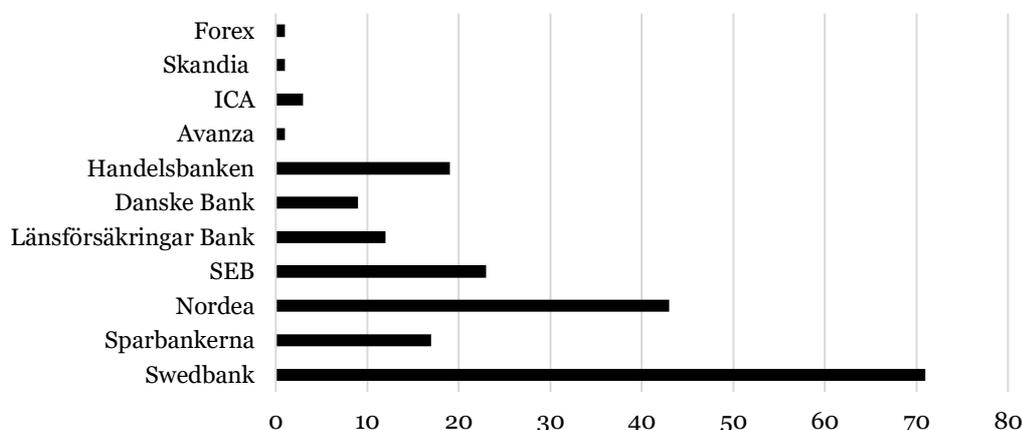
THE RESPONDENTS' PRIMARY BANK

Figure 3. Primary bank of the respondents

Figure 3 presents the proportion between the respondents' primary banks. The above proportion corresponds with the magnitude of the banks in Sweden in terms of household deposits, according to the Swedish Bankers' Association (2015).
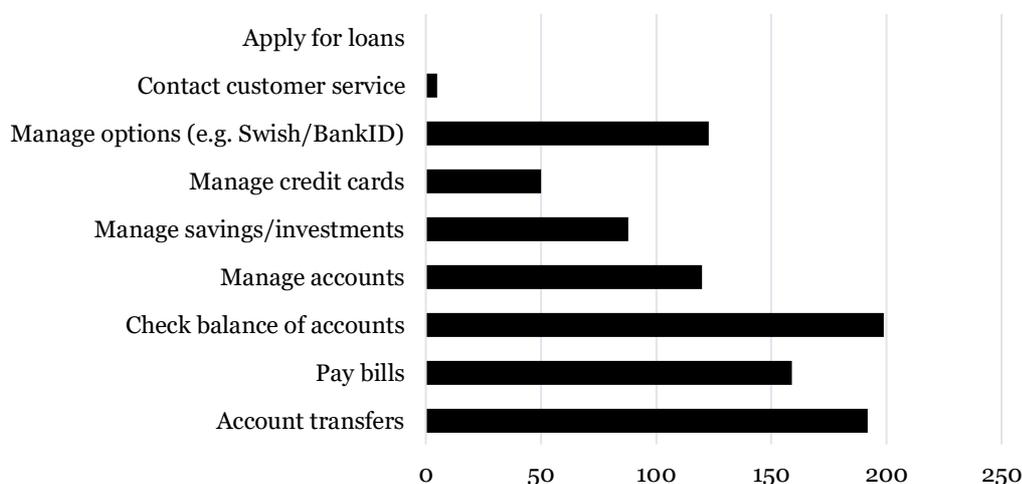
MATTERS PERFORMED ON BANKING APPS

Figure 4. Matters respondents perform on banking apps

The empirical study shows that the most frequently performed matters on banking apps are *check balance of accounts* and *account transfers* followed by *pay bills, manage options (e.g. Swish/BankID)* and *manage accounts*. Furthermore, *apply for loans* and *contact customer service* are the least frequently performed matters (*Figure 4*).
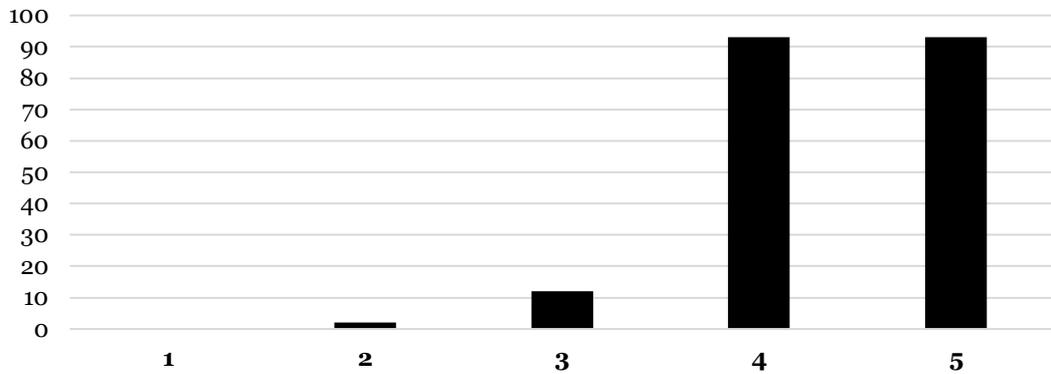

Figure 5. Respondent's level of satisfaction of their banking app

Figure 5 shows that the majority of the respondents are either satisfied (4) or very satisfied with their banking app.

Regarding suggestions for improvements of the banking app, the most frequent suggestions are addition of functions and adjustments for making the app easier to use.

The mean grade of all banking apps is 4,39. *Table 1* presents the grade of the banking app for each of the respondents' banks. Nordea has the lowest grade, 4,12, and Länsförsäkringar has the highest, 4,83. This means that the grades of the different banks' apps are within a range of 0,71, and that the biggest variance from the mean grade is 0,44.

BANK	MEAN GRADE
Swedbank	4,38
Sparbankerna	4,53
Nordea	4,12
SEB	4,43
Länsförsäkringar	4,83
Danske Bank	4,33
Handelsbanken	4,63
Other banks	4,17

Table 1. Mean grade of each bank's app

AU1	1	2	3	4	5	Mean
Banking apps	5	13	51	49	82	**3,95**
Healthc. & Fitness	27	71	50	30	22	**2,75**
News	0	0	11	47	142	**4,66**
Navigation	5	25	35	61	74	**3,87**

Table 2. Results from item AU1

AU2	1	2	3	4	5	Mean
Banking apps	0	0	3	58	139	**4,68**
Healthc. & Fitness	0	2	57	143	28	**4,44**
News	49	88	49	12	2	**2,15**
Navigation	0	0	20	71	109	**4,45**

Table 3. Results from item AU2

AQ1	1	2	3	4	5	Mean
Banking apps	10	27	42	68	53	**3,64**
Healthc. & Fitness	20	52	52	67	9	**2,97**
News	0	3	28	66	103	**4,35**
Navigation	0	1	8	69	122	**4,56**

Table 4. Results from item AQ1

AQ2	1	2	3	4	5	Mean
Banking apps	1	6	13	39	141	**4,57**
Healthc. & Fitness	31	61	59	47	12	**2,89**
News	5	10	18	78	89	**4,18**
Navigation	21	57	63	31	28	**2,94**

Table 5. Results from item AQ2

AA1	1	2	3	4	5	Mean
Banking apps	21	54	101	20	4	**2,66**
Healthc. & Fitness	0	1	60	60	79	**4,09**
News	6	43	81	60	10	**3,13**
Navigation	2	48	89	52	9	**3,09**

Table 6. Results from item AA1

	Banking apps	Healthcare & Fitness	News	Navigation
Total Mean	*3,9*	*3,43*	*3,69*	*3,78*

Table 7. Total mean of items in each category

Table 2-6 shows the result from each item in the different categories. The tables show how the respondents' answers are allocated on the Likert-scale. To the right in the tables, the mean value of the item for each category is presented. *Table 7* presents the total mean of all items in each category. Banking apps have the highest mean value, 3,9, while Healthcare & Fitness apps have the lowest, 3,43.

5. Analysis
5.1 Sample profile
The sample profile consists of 69 % women and 31 % men. Consequently, the sample does not represent the population perfectly and the over-representation of women can be seen as a bias in the study. The study is also a bit skewed towards younger people since half of the respondents are aged less than 25 years. The uneven proportion between the ages could be a consequence of the chosen approach for distribution. This can be considered a bias for the study to some extent, but on the other hand, one of the reasons for choosing online distribution was to only reach out to people who uses online services. The most important aspect of the sample in this study is that it represents banks in Sweden appropriately. The sample's distribution among the banks matches the overall bank engagements in Sweden (Swedish Bankers' Association, 2015). The study is thereby not biased towards any bank in particular.

5.2 Banking apps
The banking apps evaluated in this study originate from at least eight different banks. Therefore, an interesting aspect is whether the quality of the app differs between the banks or not. As shown above, the difference between the highest and the lowest overall mean grade of the app is 0,71. Thereby, a small difference is found between some of the banks, but generally the mean grades are pretty even. This aspect is important since it suggest that the subsequent items do not depend considerably on which bank the user is engaged in.

Furthermore, the empirical study shows that none of the respondents use the banking app to apply for loans, and very few to contact customer service. The three matters that are performed on the banking apps most frequently are checking balance of accounts, transferring money between accounts and paying bills. These matters can be considered quite basic compared to less frequent matters, such as applying for loans, managing savings and investments and managing credit cards.

5.3 Banking apps compared to other apps
When looking at the total of all items among the four categories, the mean values do not differ distinctly. Banking apps have the highest total mean which suggests that they hold a high quality compared to the other three categories.

Although, the mean value of each item differs considerably among the categories. When looking at the first item, ease-of-use, the category with best results are news apps with a mean of 4,66. Banking apps are the second best with a mean of 3,95. This result is not very surprising since there are usually more functions involved in a banking app than in a news app. Banking apps are considered about as easy to use as navigation apps and much easier to use than healthcare & fitness apps, according to the study.

The second item concerns to what extent the app helps the user be more efficient. In this aspect, banking apps are rated highest with a mean of 4,68. Healthcare and fitness apps and navigation apps also have a rate above 4 in this aspect, while news are rated much lower at 2,15. Out of the five items this is the one where banking apps has the highest rating, which suggests that this item is the most contributory to the quality of banking apps.

The third item regards whether the app has enough features to fulfill the user's needs. Banking apps have a mean of 3,64 which suggests that features could be added to increase the quality of the apps. This is something that is further confirmed by the respondents' suggestions for improvements where addition of functions was a frequent suggestion. Both news apps and navigation apps are rated much higher than banking apps regarding this item.

The fourth item investigated the reliability of the app's performance. Banking apps have the highest rate, 4, 57, on this item while both healthcare and fitness apps and navigation apps have a rate below 3.

Lastly, the fifth item was the only item concerning app aesthetics. The aesthetical appealingness of the banking apps was considered the weakest in the study. Healthcare and fitness apps were considered as the apps that were most aesthetically appealing.

6. Conclusions
The major conclusion of this study is that banking apps have a good overall quality when being compared to other apps. Out of the four app categories chosen in this study, banking apps shows the highest quality when

summarizing the five items. Although, when studying the items severally, one can distinguish both strengths and weaknesses with the different apps.

The study shows that banking apps hold a high standard in helping the user to be more efficient and in being reliable in its performance. The study also suggests that improvements can be made to make the banking apps easier to use and that additional features can mean that the app meets user needs better. Lastly, the study identifies the greatest potential for improvement in app aesthetics. The results of the study can be used by banks when improving their apps since it identifies aspects of banking apps which are inadequate. Furthermore,

6.1 Limitations and implications for further studies
Previous studies have mostly identified quality dimensions of one app category solely, for example banking apps. It is more difficult to find studies which identify specific quality dimensions for mobile apps in general. Therefore, it has been challenging to find appropriate dimensions and items which are comparable among different app categories. A limitation in this study is therefore that the dimensions included in the comparison are somewhat limited. Consequently, a suggestion for further studies is to identify more specific quality dimensions which can be used to compare the quality among a variety of apps and app categories.

As stated above, banks can use the results of this study to improve their apps. Apart from identifying inadequate aspects of banking apps, the study also shows apps which are considered better regarding these aspects. A proposal for further studies is therefore to identify why these other apps are considered better. Banks can use this information as concrete suggestions how to improve their apps.

References
Bharti, M. (2016). Impact of dimensions of mobile banking on user satisfaction. *Journal of Internet Banking and Commerce, 21*(1), 1.

Evans, J., & Mathur, A. (2005). The value of online surveys. *Internet Research, 15*(2), 195-219. doi:10.1108/10662204510590360

Harris, M., & Harrington, H. J. (2000). Service quality in the knowledge age: Huge opportunities for the TWENTY-FIRST century. *Measuring Business Excellence, 4*(4), 31-36. doi:10.1108/13683040010362562

Hsiao, C., Chang, J., & Tang, K. (2016). Exploring the influential factors in continuance usage of mobile social apps: Satisfaction, habit, and customer value perspectives. *Telematics and Informatics, 33*(2), 342-355. doi:10.1016/j.tele.2015.08.014

Jun, M., & Palacios, S. (2016). Examining the key dimensions of mobile banking service quality: An exploratory study. *International Journal of Bank Marketing, 34*(3), 307-326. doi:10.1108/IJBM-01-2015-0015

Kim, J., Park, Y., Kim, C., & Lee, H. (2014). Mobile application service networks: Apple's App Store. *Service Business, 1*(1), 1-27, doi:10.1007/s11628-013-0184-z

Laukkanen, T. (2007). Internet vs mobile banking: comparing customer value perceptions. *Business Process Management Journal, 13*(6), 788-797.

Parasuraman, A., Zeithaml, V.A., & Malhotra, A. (2005). ES-QUAL a multiple-item scale for assessing electronic service quality. *Journal of Service Research, 7*(3), 213-233.

Ribbink, D., van Riel, A. C. R., Liljander, V., & Streukens, S. (2004). Comfort your online customer: Quality, trust and loyalty on the internet. *Managing Service Quality: An International Journal, 14*(6), 446-456. doi:10.1108/09604520410569784

Sohn, C., & Tadisina, S. K. (2008). Development of e-service quality measure for internet-based financial institutions. *Total Quality Management & Business Excellence, 19*(9), 903-918. doi:10.1080/14783360802224412

Swedish Bankers' Association. (2015). *Bankerna i Sverige*. Stockholm: Swedish Bankers' Association. Available at: http://www.swedishbankers.se/Documents/1503_Bankerna%20i%20sverige.pdf

Vitello, F., Sciacca, E., Becciani, U., Costa, A., Massimino, P., Takacs, E., & Szakal, B. (2015). Mobile application development exploiting science gateway technologies. *Concurrency and Computation-Practice & Experience, 27*(16), 4361-4376. doi:10.1002/cpe.3538

Xu, C., Peak, D., & Prybutok, V. (2015). A customer value, satisfaction, and loyalty perspective of mobile application recommendations. *Decision Support Systems, 79*, 171-183. doi:10.1016/j.dss.2015.08.008

Yaya, L. H. P., Marimon, F., & Casadesus, M. (2011). Customer's loyalty and perception of ISO 9001 in online banking. *Industrial Management & Data Systems, 111*(8), 1194-1213. doi:10.1108/02635571111170767

Zeithaml, V. A., Berry, L. L., & Parasuraman, A. (1988). Communication and control processes in the delivery of service quality. *Journal of Marketing, 52*(2), 35-48.

Appendix. Items included in questionnaire

App utility (AU)

AU1	The app is easy to use
AU2	The app helps me be more efficient

App quality (AQ)

AQ1	The app has enough features to fulfill my needs
AQ2	The performance of the app is reliable

App aesthetics (AA)

AA1	The design of the app is aesthetically appealing