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Chapter

Persuasion in Mobile Financial Service: A Case Study with a Bank Savings Mobile Application

Prom Tep Sandrine, Ruer Perrine and Nemery Alexandra

Abstract

Financial institutions are undergoing a technology transformation. The digitization now drives the addition of new services and expectations. In this context, mobile has become a strategic channel to encourage users to adopt specific behaviors and change habits effortlessly. The research question underlying this study focuses on mobile banking applications and how they could support the adoption of savings behaviors. A qualitative study was conducted, in order to evaluate the persuasiveness embedded in a mobile bank saving app. Three experts in human-computer interaction (HCI) assessed the mobile app interfaces through a scientific grid of persuasive criteria to guide their heuristic inspection. Results confirm both a satisfactory level of persuasiveness of the mobile app and the dynamic application of persuasive criteria. The study shows that a mobile app involving certain specific features supports a positive banking customer's experience related to savings. This study contributes to the user experience field, showing that mobile apps can support behavioral change when persuasiveness is embedded in the design process. Using a valid and reliable assessment method to establish the level of persuasiveness of a bank savings mobile app, this study confirms that the persuasion grid is applicable to mobile interfaces.

Keywords: bank savings, mobile app, persuasive technology, user experience, mobile interface, expert heuristic evaluation

1. Introduction

The complexities created by the constant evolution in technology are transforming many sectors, and the banking sector is no exception. Digital progress is changing the way banks and customers interact, with an impact on banking experiences over the last two decades [1]. The banking service has evolved from real face-to-face conversation to virtual discussion (i.e., email, websites, mobile messaging, or chatbot used to accomplish digital transactions).

From another perspective, financial technology (FinTech) is revolutionizing traditional financial practices, such as PayPal, Personal Capital, Kabbage, Apple/Samsung/Google Pay, and Wealthsimple, among others. However, we are witnessing a decline in the financial literacy needed to make informed banking decisions. As developed countries face an increasing level of consumer debt [2], the issue of supporting saving behavior, especially among young consumers, becomes critical.

Banks have a strong desire to retain their customers by offering a wide range of mobile services [1]. This variety of services is being developed with the intent to influence user behavior, for example, by encouraging bank savings or mobile payment solutions. In the area of information technology (IT), we are witnessing the ascendency of persuasion. Persuasion technologies aim to influence a user through a process which changes his or her attitude or behavior [3].

From a managerial point of view, the mobile app serves specific purposes (specific features) such as maintaining a relationship with already acquired customers and building their long-term loyalty through personalization or targeted promotions. A mobile website, on the other hand, is intended as a general tool to serve customers and is therefore more suitable for new customer acquisition. From this perspective, a mobile app lends itself better as a channel to induce behavioral change than as a mobile website.

The main research question is formulated thus: Since payments are increasingly being made through mobiles, what about bank savings? Is a banking mobile app for savings persuasive for customers?

To answer this question, our hypothesis is formulated as follows: to assess a bank mobile app, we can understand the customer intent when we assess the persuasive aspects of a bank saving's mobile app. Our objective is to assess persuasive dimensions of a bank savings mobile application (app) evaluated by experts in the HCI area. The method used is a pilot study in the form of user tests made by three experts in persuasive research. This exploratory work contributes to helping design experts better assess the persuasive aspects of a bank savings mobile app and, in this regard, contribute to achieving designs which could induce the customer to save more money.

The paper's structure is organized as follows: Firstly, we focus on related works dealing with banking technology, bank savings, and persuasion. Secondly, we present the results of applying persuasive heuristic criteria to a dynamic mobile app, identifying the strengths and weaknesses of criteria in assessing a mobile app specialized in bank savings in Canada. Finally, we discuss our results before concluding on further research and the contributions of our study.

2. Literature review

Even though technology is developing so rapidly, human-computer interaction (HCI) does not always follow suit: systems or products do not always consider the end-users in their design. In [4], authors highlight the importance of measuring the usability of a branded app through a "consumer-centric approach" which seeks to include end-users from the beginning and to understand their needs and expectations.

Companies do not take into consideration the importance of HCI when designing their platform and particularly in the context of online savings platforms. Nowadays, banks are investing in digital options such as ATMs, websites, mobile apps, or online chats. Their rivals, FinTech's, on the other hand, are developing digital options which are all online and dematerialize into a smartphone. Some authors wonder how long financial institutions will be able to maintain their lead given the growth of FinTech. These competitors are quicker than banks in offering convenient, reliable, fast, and cost-efficient alternatives to traditional bank payments [5–6].

These bank competitors are influencing their customers and their way of interacting with bank digital solutions. Banks must consider how to encourage their customers by offering bank operations online, what goes through the key factors, strategies, and drawbacks. This can be considered when designing the online solution.

Concerning saving habits in Quebec (Canada), savings have not been a great success over the last decade. In 1990, the average household savings rate was 7.9% compared to 4% in 2015. A Montreal Bank (BMO) survey conducted in 2014 indicated that Quebecers were the least likely to save compared to other Canadian residents [7, 8]. However, all provinces have a low savings rate compared to previous years. In 2017, in Quebec, the most recent statistics present a significant recovery in the household savings rate with an average of 6.3% [9], i.e., Quebecers are still interested in saving money.

From another perspective, technological innovation has been conducive to the creation of persuasive technologies; nevertheless, this does not remove the need to change behavior toward the user's technology [10]. Persuasive technologies aim to change the attitude or behavior of users. The importance of guidelines remains to be shown in order to evaluate persuasion in HCI. The assessment of a persuasive interface is considered to be time-consuming and often less useful. The benefits are the measurement and establishment of problems at the interface level, which help to assess the usability and the persuasiveness of app. To our knowledge, persuasive aspects in banking technology have not yet been validated in the literature.

Criteria involve both static and dynamic aspects to assess the user interface. Static criteria are necessary to promote the acceptance and influence of technology; they are credibility, privacy, personalization, and attractiveness.

	Criteria	Description
Static criteria	Credibility	Ability of the interface to inspire confidence and to make the user trust the veracity of its information
	Privacy	Protection of personal data, preservation of personal integrity and security of interaction
	Personalization	Concept of customization aiming to adapt the interface to the user
	Attractiveness	Use of aesthetics (graphic, …) to capture the attention of the user, to support the interaction and to create a positive emotion
Dynamic criteria	Solicitation	First stage to attract and challenge the user to initiate the relationship
	Initiation	Elements of the media that trigger the persuasive influence
	Commitment	Means that the system continues to involve the user through a process
	Ascendancy	Submission and obedience appear with the completion of the engaging scenario. The ascendency is the deepest form of technological persuasion.

Table 1.
Eight interactive persuasive criteria.

And dynamic criteria encourage users to change their behavior in an organized manner; they are solicitation, initiation, commitment, and ascendancy. The particularity of the dynamic criteria is their temporal aspect. For authors, time is significant because it is a structural element during which the social influence can take place in order to change the user's behavior. In addition, each sub-criterion corresponds to a facet of the multidimensional construct. For instance, the credibility criteria include trustworthiness, expertise, trustfulness, and legitimacy as sub-criteria, following the traditional conceptualization of source credibility in the marketing research literature. The eight main criteria are listed in **Table 1** as defined by the authors in [3].

The particularity of these criteria is they were assessed on mobile responsive website, not for a mobile app. Furthermore, we noticed that interfaces were evaluated with non-dynamic interfaces. We define dynamic as a gradual development, which does not mean a longitudinal study repeated over time. We believe it is relevant to look for the validation of the persuasive criteria for mobile app, particularly with an interactive mobile app.

3. Methodology

Our design research is qualitative and exploratory. We wish to discover whether a mobile app can influence behavior in a savings context and to provide new knowledge in this area. To do so, we aim to examine the persuasive ability by means of a heuristic evaluation in a financial context. We assess the effectiveness of persuasive criteria [3] applied to a Canadian bank savings mobile app interface. With this approach, we aim to determine whether perceived utility (usefulness) and ease of use (usability) are closely related to the level of persuasiveness of the application through practicity. We present our experimental material in Section 3.1, and we describe participants and procedure in Section 3.2.

3.1 Apparatus

Henceforth, we describe the mobile app being assessed in Section 3.1.1 and describe the persuasive criteria used in Section 3.1.2.

3.1.1 The mobile application

In this research, we chose to assess the mobile app Hop 'n S@ve from Desjardins group[1], a financial cooperative in Canada. To access this mobile app, it is necessary to have a bank account available online with the Desjardins group.

This mobile app is qualified as an instant savings tool dedicated to bank savings. The purpose of the tool is to allow anyone to save personal funds instantly, no matter when or where the customer is, for instance, at midnight from home, at 6 pm from a public place, or at 8 am from a car or bus. **Figure 1** shows two interfaces of the Hop 'n S@ve mobile app.

Our interest in this mobile application is its mobile aspect. Even if Hop 'n S@ve is offered for several types of mobile devices (smartphone, digital tablet, smart watch), we focus only on the mobile app for smartphones here.

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[1] From Desjardins' website: https://www.desjardins.com/ca/personal/accounts-services/hop-and-save-instant-savings-tool/index.jsp
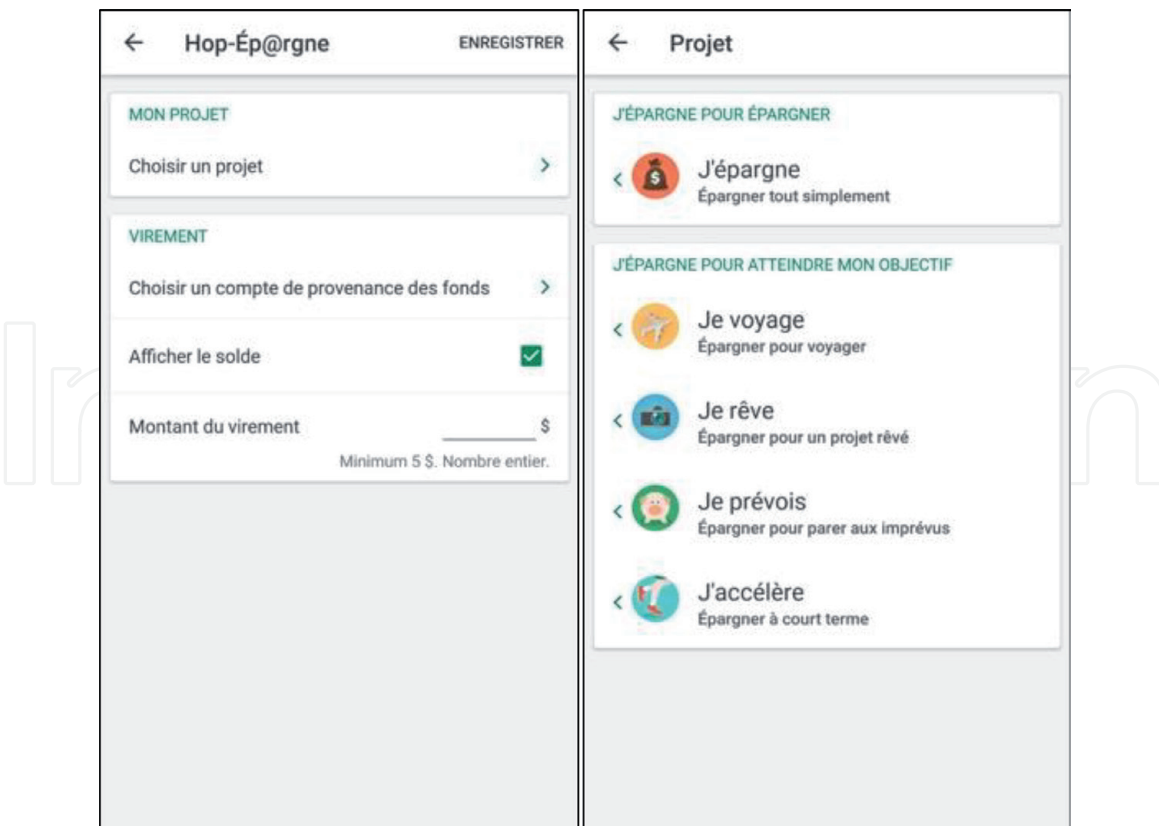
Figure 1.
Interfaces of the Hop 'n S@ve mobile app (screen captures in French as presented during the data collection).

3.1.2 Interactive persuasive criteria

We use the eight interactive persuasive criteria from [3].

These criteria are designed to assess the content of interaction. To do so, they are divided into two dimensions: the static criteria (credibility, privacy, personalization, attractiveness) and the dynamic criteria (solicitation, initiation, commitment, and ascendancy). **Table 1** presents each of these criteria in detail.

This grid was based on a bibliographic analysis (164 documents) and designed for experts in human-computer interaction [11]. The different dimensions of evaluation have been organized according to these two categories in order to facilitate their understanding and reading for the expert's assessors.

3.2 Participants

Given the purpose and context of our research, we defined usability specialists between 18 and 35 years old in the Montreal area. The inclusion criteria required having a bank account in the Desjardins group, living in the Quebec province, and 2 years' experience or more in the HCI area. A total of three specialists in HCI, composed of two women and one man, took part voluntarily for this study. Their experience in HCI was between 5 and 9 years (mean: 7 years).

3.3 Procedure

Instructions given to the experts were to categorize persuasive criteria into the Hop 'n S@ve mobile app. To do so, the protocol followed was to introduce first the persuasive criteria. These ones were proposed in a document with a definition, a description, and illustrated examples (picture, screenshot from app, etc.). Once

criteria have been understood, the second phase was to assess the Hop 'n S@ve mobile app. Each participant had to make a fund transfer from the bank account to the savings account to assess persuasive criteria. The experiment with the mobile app is carried out as follows: login to the mobile app, create a saving project, choose a tool amount to save, choose a one-time amount, contribute, and close the session. During this phase, a new document was provided including definition and description of persuasive criteria without example. Each participant was allowing to keep and read the criteria description suggested by the second document.

We collected the following data: the global score of correct identification and the correct identification for each criterion. The correct identification is based on experts' identification during the pretest. Identification was considered as correct if the answer matched with the expected criteria. Quality of the criteria definition was evaluated through the task, that is, if a criterion was defined as correct or false.

4. Result analysis

Participants' aim was to assess and comment persuasive aspects into the mobile app during the use of the persuasive criteria. The global score of correct identification is 59.5%. **Table 2** presents more details on each criterion and the correct identification score.

	Criterion	Criterion compliance instances identified in the interface	Correct
Static Criteria (69%)	Credibility	-Icon of Desjardins group -Color legitimacy -Desjardins contact information	83%
	Privacy	-Ensured the tool with the FAQ -High level of security with identification and password	67%
	Personalization	-Project creation according to the customer (name, amount) -Different choice (holidays, dream project, home planification, etc.) -First person terms used (i.e. "I", "My")	75%
	Attractiveness	-Visual pictograms used -Simple and clear graphic style corresponding to the banking world - Call to action with the red button "Savings"	51%
Dynamic criteria (50%)	Solicitation	-Pictures, images and vocabulary to reinforce users to interact	67%
	Initiation	-Pre-filled field -Choice of the fixed amount	58%
	Commitment	-Users are congratulated at the end of the process -Progress status information	33%
	Ascendancy	-Notifications -Creation of multiple projects	42%

Table 2.
Correct identification table.

Results show that using the grid makes it possible to determine problems linked to the persuasiveness of interfaces in a bank savings context. Results suggest improving the dynamic criteria, especially the ones called commitment and ascendency.

Results confirm both a satisfactory level of persuasiveness of the mobile app and the dynamic application of persuasive criteria. The study shows that a mobile app involving certain specific features (e.g., features to inform the customer about the various benefits of savings behaviors) supports a positive banking customer's experience regarding savings.

5. Discussion and conclusion

This study was a qualitative evaluation of the persuasiveness of the Hop 'n S@ve mobile app to promote savings behavior among Canadian consumers. The latter is still interested in saving money while not very successful at it in the last decade. Mobile apps have changed consumer behavior even though their purpose is to better manage money. As there are new digital options for banks and new ways of interacting with bank digital solutions, we were interested in understanding the customer's intent as we assess the persuasiveness of a bank saving's mobile app. The growing of persuasion in IT is a good opportunity to examine it in the FinTech context.

To accomplish this, we validate the persuasiveness of the app with experts in the HCI area according to persuasive criteria. Results indicate the Hop 'n S@ve mobile app reaches a high degree of persuasiveness at the interface level. Only commitment criteria may be lacking some persuasiveness in a process leading to the adoption of the targeted specific behavior. It means a mobile app dedicated to bank savings can influence saving behavior.

As far as we know from our literature review, these persuasive criteria were not assessed with a mobile app. The present study confirms the hypothesis that the persuasive criteria grid shall apply to a mobile app in a dynamic context. Hence, this study contributes to the user experience field, showing that mobile apps can support behavioral change when persuasiveness is embedded as part of the design process. Using a valid and reliable assessment method to establish the level of persuasiveness of a bank savings mobile app, this study confirms the persuasion grid applies to mobile interfaces for the banking sector.

Like any research, this study has also encountered some limitations. The first one is the number of expert participants evaluating the app (N = 3). Being an exploratory project, it can only show the tendency trend at best. Our next research will include more participants to confirm this tendency. Also, this evaluation confirms the interest of furthering our research by evaluating with a panel of users of several ages the interest of saving through a mobile app.

The second limit is the fact that the mobile app test was carried out at once. It does not allow for results or answers that could be obtained over a longer period. We could take as examples the commitment or the ascendency criteria. Since they are criteria that are mostly long-term, it was difficult to measure the two dimensions adequately. We have considered them for future research though.

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Conflict of interest

The authors declare no conflict of interest.

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