A Qualitative Evaluation of a Taxonomy and Archetypes on Mobile Finance Applications

Masterarbeit

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1. Introduction

Whether paying in the supermarket, adjusting personal finances, or investing in the stock market - mobile personal finance applications are used in our daily lives and represent a substantial contribution to financial literacy, freedom, and empowerment. Since mobile financial apps are used regardless of location and time, many users choose the mobile option to manage financial matters as well as to get in touch with financial institutions, e.g. banks, insurers, investment companies, and other financial service providers. In addition to these traditional and often historically grown financial institutions, FinTechs, such as neoBanks and neoBrokers are storming the market in recent years. In addition to these, InsureTechs, comparison platforms, and crypto app providers are also offering their services on the mobile finance market. Thus, the market is increasingly growing, the number of providers is rising, and competition is intensifying, especially for traditional financial institutions.

However, an increasingly internet-based economy, the predominant use of digital and in particular mobile devices, as well as the increased use of online channels, e.g. for financial and information matters, are leading to ongoing, rudimentary and structural changes in the financial industry (Gomber, Koch and Siering, 2017, p. 538). Users expect intelligent but easy-to-use financial services, independent of place and time and at low cost. With new business models and innovative technical solutions, FinTechs challenge existing financial service providers, such as established banks and insurers, and offer a suitable solution in the financial services sector, especially for younger, tech-savvy customers. At the same time, established financial institutions are also taking advantage of the new opportunities offered by technology to make their offerings more digital and innovative in order to remain competitive and retain existing customers (Gomber, Koch and Siering, 2017, p. 538). Consequently, users as well as financial service providers and app developers need an overview of the various features of mobile finance applications to classify their own app(s) or those of their competitors.

While much research focuses on the adoption of different finance apps, there is little research on how mobile personal finance apps differ in terms of technical elements or financial services offered through apps. To provide guidance to potential users, classify the field, and enable to draw comparison, Torno et al. (2021) developed such a taxonomy for mobile personal finance apps by classifying 170 mobile finance applications from the German Apple AppStore and Google PlayStore. This approach followed the taxonomy development method of Nickerson et al. (2013) in several iterations and thereby represents a scientifically based process with the goal of fulfilling the objective ending conditions. In addition, they provide ten archetypical clusters of mobile personal finance applications by using the k-means clustering technique. However, according to the design science research approach, IT artifacts, such as taxonomies need to be evaluated by potential target user groups to assess the artifacts usefulness (Nickerson, Muntermann and Varshney, 2013, p. 346; Szopinski, Schoormann and Kundisch, 2019, pp. 2–3). In addition, also Torno et al. (2021) call for future research evaluating their taxonomy “e.g. by conducting interviews with financial services providers or other app developers.” (p.12).

Consequently, the following research question arises:

> *How can a taxonomy and clusters concerning mobile personal finance applications be evaluated and what conclusions can be drawn, particularly with regard to the use of the taxonomy by practitioners?*

To answer this question, a comprehensive evaluation process is conducted based on the taxonomy and the clusters by proposed by Torno et al. (2021).

While chapter 1 already explained the motivation and relevance of the topic and presented the research gap and research question, chapter 2 provides an insight into the theoretical foundations. Chapter 2.1 explains the basics of mobile finance applications, while chapter 2.2 introduces the design science research framework (DSR) by explaining design science in information systems research, comparing the two approaches behavioral science and design science, and presenting the DSR approaches according to Hevner (2004) and Peffers (2007). In chapter 2.3, taxonomies are defined as DSR artifacts, while chapter 2.4 gives a status quo on taxonomy development and evaluation. Here, taxonomy development in the sense of the DSR is explained and the taxonomy development method according to Nickerson, Muntermann and Varshney (2013) is described (chapter 2.4.1). Subsequently, the taxonomy and the clusters of personal mobile finance applications according to Torno et al. (2021) are presented (chapter 2.4.2) and an insight into different approaches of DS artifact and taxonomy evaluation is given. Thereby, different criteria, methods and processes are examined (chapter 2.4.3). Chapter 3 explains the underlying methodology of the thesis. Chapter 3.1 describes the research design and the data collection process. This includes the choice of research method and selected criteria for evaluating the taxonomy and clusters (chapter 3.1.1). Subsequently, the choice of interview partners is outlined (chapter 3.1.2) and the design of the interview guide is explained (chapter 3.1.3). Chapter 3.2 describes the qualitative content analysis of the expert interviews including the chosen method, the coding in MAXQDA. The results of the analysis of the interviews are illustrated in chapter 4. Chapter 5 contains the discussion of the interview results with regard to the taxonomy and the clusters. In the first part of the discussion, chapter 5.1, the evaluation and suggestions for improving the taxonomy are presented. The experts' evaluation of the taxonomy is discussed and aggregated in terms of the taxonomy evaluation criteria (chapter 5.1.1) and further, indications for an improved taxonomy are given for practical adaptation. Changes are highlighted and an adapted taxonomy is presented at the end of the chapter which includes the experts' suggested changes and additions (chapter 5.1.2). Furthermore, indications for an improved visualization and presentation of the taxonomy are given by presenting three options (chapter 5.1.3). Moreover, the necessity of an adaptable and target user group oriented taxonomy is discussed (chapter 5.1.4). The second part of the discussion, chapter 5.2, contains the evaluation of the clusters (chapter 5.2.1) and the derivation of indications for an improved visualization of the clusters, thereby four options are proposed (chapter 5.2.2). Finally, chapter 5.3 provides a recap on the fulfillment of the extended taxonomy design process (ETDP) and the six guidelines of taxonomy evaluation. In chapter 6, limitations of the thesis and further research directions are proposed. Finally, chapter 7 concludes this thesis with a summary of the main findings and gives a brief outlook.

7. Conclusion

Based on the taxonomy and clusters of mobile personal finance applications by Torno et al. (2021), semi-structured expert interviews were conducted. Eleven experts in the field of mobile finance apps from three different companies in the banking environment, including an IT service provider, an app development company, and a banking association, were interviewed. The aim of the evaluation was to evaluate the taxonomy and the clusters using different criteria selected based on the current literature in the field of taxonomy evaluation in IS, and thus to gain insights into their usefulness and practicality. By processing a qualitative content analysis according to Mayring (2010), different codes, i.e. topics were defined or identified.

The evaluation of the taxonomy was processed based on different criteria in four categories: Scope and completeness, usefulness and practicability, comprehensibility and simplicity, as well as extensibility and robustness. While opinions were divided on many criteria, the experts agreed on the insufficient completeness, the lack of detail, the poor comprehensibility of many characteristics, and the low consistency and uniformity. Only the expandability and customizability criteria were rated as sufficient. In addition, implications for an adapted taxonomy were made, aiming to improve usability and practicability. This includes many suggestions for new dimensions and characteristics and even new perspectives. For example, the new taxonomy includes four dimensions instead of two, which are technical artifacts, financial products, financial services, and user experience while the number of dimensions and characteristics significantly increased. The overall evaluation of the clusters was significantly smaller due to a lack of time and the poor understandability and missing visualization. However, also the evaluation of the clusters was based on criteria in four categories: scope and comprehensiveness, usefulness and added value, clarity and comprehensibility, as well as realistic. While the opinions on the first two criteria are divided among the experts, they agree that clarity and comprehensibility as well as realistic are not met. This is especially due to the absence of a visualization and the fact that an app cannot be assigned to more than one cluster. Based on these results, important insights can be derived with respect to the taxonomy and the clusters. Thus, the research question *“How can a taxonomy and clusters concerning mobile personal finance applications be evaluated and what conclusions can be drawn, particularly with regard to the use of the taxonomy by practitioners?”* can be answered.

From the evaluation of the taxonomy and the experts' criticisms, comments, and suggestions for improvement, two use cases become apparent: the use of the taxonomy by operational staff in their daily work, for which a high level of detail is required, and the use of the taxonomy in management presentations to provide a rough overview. Thus, regarding the taxonomy it can be concluded that some need more details, while others prefer more of an overview. Moreover, some experts need different levels of detail for different use cases. Thus, an important finding is the need for adaptability of the taxonomy with respect to the level of detail depending on the use case. The taxonomy should therefore be designed in such a way that potential users can adapt its level of detail depending on the desired use case. To avoid redundant efforts, the taxonomy should be extensive and contain many details, but be reducible to a clear scheme and configurable if required. Consequently, a digital form of presentation is recommended, especially an extensive Excel spreadsheet (possibly also a pivot chart), which can be opened and closed and thus is variable in the

degree of detail. Additionally, in case of management presentations, a clean presentation slides containing only relevant details is recommended. However, it is important that both formats are kept up to date. The insight gained from the expert interviews about the need to align the level of detail and visualization with target user groups and use case is also reflected in the literature, e.g. Hevner et al. (2004, p. 90) and Kundisch et al. (2021, p. 11). Since design principles in the context of taxonomies are based on the user and its needs, it can be derived that taxonomy development should be more customer centric. Moreover, this calls for a preliminary step in the taxonomy development process which takes into account the use of the taxonomy. In terms of the clusters, the interviews have shown that a visualization of the clusters is mandatory and would increase the comprehensibility significantly. Therefore, four options of visualization are proposed: bubbles and circles, percentage representation of fulfillment or Harvey balls, tabular representation, and building blocks. Moreover, usefulness and reflection of real world could be increased if an app could be assigned to more than one cluster and that is also required for some of the proposed visualization options.

With regard to the DSR framework, it was also possible to expand the knowledge base and to introduce an artifact for application in practice, which must be evaluated again in a further iteration as it alternates in the sense of the design cycle between taxonomy building and taxonomy evaluation in an iterative process. According to that, limitations of the work were pointed out, from which again approaches and recommendations for further research can be derived. For example, although a new adapted and improved taxonomy for practical use has been designed, this is only a draft, which again has to be evaluated by practitioners for its usefulness and applicability. The same also applies to the visualization proposals of the clusters. Furthermore, several limitations and needs for future research are stated that provide insight in the further relevance need for research of the topic.

In summary, this work provides a contribution to IS research as well as to practice. First, the taxonomy according to Torno et al. (2021) is evaluated on the basis of selected criteria, methods and processes, and suggestions are made for the visualization of the clusters. Second, a first draft of a practical taxonomy for mobile personal finance apps is presented, providing a valuable tool for decision support.

As mobile finance is a thriving business, traditional financial institutions are increasingly expanding their digital and especially mobile portfolio and leveraging their market power, while more and more FinTechs and InsureTechs are storming the market with powerful, technologically innovative and cost-effective offerings. This will result in a further intensification of the mobile finance app market and increase the intensity of competition. Consequently, it is important for IT service provider, app developer, and other player in the mobile finance app market to know the characteristics, strengths and weaknesses of the own app well, to have a strategy for further development and also to be well aware of the competitors' portfolio. In this context, the taxonomy and the clusters can be suitable and adjustable tools that help not to lose the overview and to make well-founded decisions.