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## HCI issues in mobile wallet design

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# HCI issues in mobile wallet design

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## ABSTRACT

This paper presents the processes and products of a design science research project on mobile wallets (m-wallets). M-wallets are virtual versions of the physical wallet that enable cashless payments.

The digital revolution continues to transform our daily life. Examples are the envisioned cashless society and purchases made on the go with m-payments transacted through mobile phones. With this comes the need for a personal information system to manage such transactions. Therefore, a potential next step in the digital revolution is the transformation of the traditional physical wallet into the m-wallet. There are many mobile payment solutions, but most have failed or their adoption rate has been low. Reasons for this are that payment is a not easily changed act, and the companies' development of their own e-payment systems. So, there is a need for standardization of mobile payments. Therefore, it is suggested that development of such solutions should be directed towards a closer cooperation with users, and that future m-payment research should focus on usability, as this is an unexplored area of mobile payments.

The purpose of this project was therefore to identify properties for an m-wallet and to propose m-wallet prototypes.

The choice of method was driven by the research problem, which involves focus on human computer interaction. Design Science Research enabled exploring the research

problem by building artifacts and testing them with users. Design Science Research is composed by five phases that are iterative (Awareness of problem, Suggestion, Development, Evaluation, Conclusion). 26 users were involved in the Suggestion phase and 16 in the Evaluation phase. They represented four user groups (Young Teenagers, Young Adults, Mothers, and Business Men), which loosely cover the phases of Wells and Gubar's widely used consumer life cycle.

In the Awareness of problem phase design properties were found in the literature and in existing systems. In the Suggestion and Development phases, interviews and formative usability evaluations provided data for the construction of the initial conceptual model in the form of sketches, and the subsequent functional model in the form of low-fidelity mock-ups. Knowledge was gained about what properties the users would like the mobile wallet to embody: These properties were implemented in four low-fidelity prototypes. These empirically derived design properties of m-wallets are compared with those of current commercial mobile payment services.

The identified properties have been clustered into 'Functionality properties' and 'Design properties', and are offered as theoretical contributions to ongoing research on m-wallets.

**Keywords:** mobile wallet; design properties; design properties; cashless society; digitalization