# EMPERICAL STUDY ON USE OF E-WALLETS IN UG STUDENTS

**Lt. Prabhanshu Awasthi**

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***Abstract:***

The purpose of this paper is to contribute to the design of e-wallets. e-wallets are intended to replace the existing physical wallet, with its notes, coins, photos, plastic cards, loyalty cards etc. Four different user groups, including teenagers, young adults, mothers and businessmen, has been involved in process of identifying, developing and evaluating functional and design properties of e-wallets. Interviews and formative usability evaluations have provided data for the construction of first a conceptual model in the form of sketches, and later a functional model in the form of low-fidelity mockups. During the design phases, knowledge was gained on what properties the test users would like the mobile wallet to hold and the properties implemented in four prototypes. The identified properties have been clustered as 'Functionality properties' and 'Design properties', which are theoretical contributions to the ongoing research in mobile wallets.

***Keywords***: e-wallet; design properties; deign properties, cashless society; digitalization.

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## INTRODUCTION:

The digital revolution continues to transform most aspects of our daily life. In particular, the digital revolution has resulted in the vertical convergence of business channel capacities [1]. The digital revolution also continues to transform the public sector organizations and services. For instance, the Danish public citizen portal called borger.dk which forms an online entrance to the public sector with access to public information and digital self-services concerning topics such as family and children, taxation, residence and buildings, and disabilities. Other examples are digital bus tickets bought via mobile phones, online purchases, and social interactions made via SMS, emails and social networks. A next step in the digital revolution is the transformation of the time honored traditional physical wallet into the e-wallet.

There are many mobile payment solutions, but most of them have failed or their adoption rate has been lower than expected. It is suggested that technological development of such solutions should be directed towards a closer cooperation with users and that future mobile payment research should focus on usability, as this is an unexplored area of mobile payments. Set within this context, the purpose of this paper is to propose functional and design properties of e-wallets.

## BACKGROUND:

In the beginning of the 2000's, early mobile content and services such as ring tones and logos succeeded in the marketplace and made mobile payment services a critical issue of concern. At that time, mobile payments were commonly perceived as a "killer application" for mobile commerce. Later, mobile payments were suggested as an alternative for micro-payments at point-of-sales systems, where the use of cash had been declining for many years. Many mobile and electronic payment solutions have been introduced ever since, but most of them have failed or have had a low penetration rate Moreover, payment is an institutional act, which cannot be easily changed. Payment is transacted in almost the same way

worldwide, and it would become problematic if each country had its own electronic payment system. Further issues arise when companies additionally develop their own electronic payment systems, such as those for public transportation and retail chains. So, there is a need for standardization of mobile payments

Mobile payments around the world

One of the more successful new standardized electronic payment systems is PayPal. Initially PayPal enabled people to perform transactions of small payments by means of e-mails. Since then, PayPal's system has been re-designed and extended several times. Today PayPal has more than 220 million accounts and is experimenting in the area of mobile payments through a partnership with a start-up that provides stickers for mobile phones that can link the phone to payment terminals in the stores. Two other electronic payment systems that are successful are the Oyster Card in London and the Octopus Card in Hong Kong Their success is due to the fact that they initially were introduced to collect fares for mass transit systems, instead of trying to substitute all payments. The Octopus Card has later been extended to include payments at convenience stores, fast-food restaurants, supermarkets, parking meters, car parks, vending machines and service stations. Other new ideas are Visa PayWave and MasterCard PayPass contactless payment technologies both of which use RFID-technology, which means that you do not have to swipe your card or insert it into another device to pay. They were primarily introduced as smart card technology, but have since been extended to include key fobs and Near Field Communication (NFC) enabled technology.

In 2004, Sony, NTT DoCoMo, and local banks in Japan formed a joint venture and launched a mobile payment system. The system is based on Sony's chip FeliCa and allows customers to use their mobile phones as credit cards, access cards, fare tokens on all kinds of public mass transit, and several other utilities. In Africa, a new kind of mobile payment was introduced in the beginning of 2007. The payment system is called M-PESA ('M' is for mobile and 'PESA' is the Swahili word for cash) and was developed by Kenya's largest mobile network operator Safaricom, which is a part of the Vodafone Group. Within the first week more than

20,000 M-PESA accounts had been registered and two years later in 2009 the number of accounts had reached six million. It is, however, not only commercial companies that are working on the diffusion of electronic payments.

The GSM Association (www.gsmworld.com) and the European Payments Council

(www.europeanpaymentscouncil.eu) are working together to accelerate the deployment of services that makes it possible for costumers to transact payments using their mobile phones. In October 2010 they published the document 'Mobile Contactless Payments Service Management Roles – Requirements and Specifications', with the aim to help the various providers when starting the actual implementation of mobile contactless payment services (http://www.europeanpaymentscouncil.eu).

So, while the most popular payment instruments still are cash, cheques, and debit and credit cards with smart cards being the most serious challenger to traditional cash [2], the ways to make contactless payments and especially mobile payments are increasing. When looking into the future, companies and experts agree that the mobile phone is that technical device that they will try to turn into the new wallet, mainly because of the diffusion of mobile phones, which no other technical device can match, but also due to the fact that most of us carry our mobile phones with us most of the time. If this e-wallet diffuses it is very likely that some traditional payment instruments will decrease. But it is also a possibility that the mobile wallet will just become a new way of entering the current card and account-based payment services. It is impossible to predict whether mobile payments will or will not may not substitute the traditional physical wallet or become complement to existing payment solutions. But, this might be the beginning of a gradual substitution and might take several years to be complete. No matter what will happen, exploring what design and functional properties the users find useful and important in an ewallet, is a step on the way towards a cashless society.

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## DESIGN PROPERTIES IN LITERATURE:

The literature does not contain much information about the specific properties needed in an e-wallet. That said, some guidelines for the design of an e-wallet were found when examining the literature. It is argued that electronic payments have several advantages such as accessibility, convenience, speed, privacy and control, and that electronic payments are preferred in simple routine service transactions. They furthermore state that mobile payments should not imply advanced multi-step procedures; PIN codes are preferred for identification and authentication; and consumers consider mobile payment useful, if it is able to constitute several plastic cards. The reasons for using traditional human assistants are security concerns and the opportunity to get help when skills required to use new technologies are lacked or the system malfunctions. A mobile payment channel should therefore furthermore communicate a high level of security and contain a helpful design that guides the user by means of careful communication, in order to make the user feel as comfortable using the new payment channel, as when using the traditional

payment channels. This research was done in the context of consumers' adoptions of mobile payments taking consumers' opinions into account. With regard to design properties the results show that mobile payments should be deducted from an already existing account, that payments should be made through another technology other than text messages, and that transactions need to be recorded locally on the mobile phone for documentation matters as well as on the distributed databases. An additional design property identified in the literature is the display of current balance that can be seen before making a transaction.

## METHODOLOGY:

The choice of method was driven by the research problem, which is the identification of e-wallet properties with focus on the interaction between the user and the artifact. The focus on human-computer interaction leads to issues that are complex and grounded in multiple disciplines. Consequently, questions frequently

arise that have a thin or no theoretical background, and exploring these, is where Design Science Research – exploring by building – proves useful.

The design process There are several guidelines and approaches on how to conduct design science projects. In this project we draw upon Takeda et al.'s model. The choice is motivated by that it was one of the earliest to structure and formalize the process of using Design Science. The model is also found in recent literature. The process starts with an Awareness of the Problem phase, which typically comes from wonder or a problem in current practice that the researcher aims to solve. The output of this phase is a description of the problem and a proposal for researching this problem. The following phase is Suggestions for a Problem Solution phase and drawn from existing knowledge (literature and existing artifacts), followed by an attempt to implement an artifact based on the suggested solution (called the Development phase).

Knowledge in the Suggestions phase may refer both to solutions from other areas, theories, or idea from potential users. In the Development phase, an attempt to develop and implementing an artifact according to the suggested solution is performed. It is in this Development phase that most of the design takes place. The techniques for implementation vary, depending on the artifact to be constructed. The implementation itself can be very ordinary and does not need to involve innovation beyond the state-ofpractice for the given artifact; the innovation is in the design, not the construction of the artifact. The output of this phase is findings about the artifact's application and functionality. Afterwards an Evaluation phase starts where the implementations is assessed, and finally, a Conclusion phase indicates that the design project is finished by deciding that the results are "good enough", and by summarizing what the contributions of the artifact are. The phases Development, Evaluation, and further Suggestions are iterative until the results are "good enough" or saturation has been reached.

**User involvement and data collection:**

The users involved in this project were mainly found at Facebook among peripheral acquaintances and friends of friends, in order to keep prior knowledge of the interviewees to a minimum and minimize biases. A further selection

criterion for the interviewees was the degree of use of technology in their everyday lives, as this was estimated to be necessary in order for the interviewees to be able to understand the mobile wallet concept. The number of users was 26 for the Suggestion phase.

## THE IDENTIFICATION OF E-WALLET PROPERTIES:

The Awareness and Suggestion phase The starting point of the design process was the identified lack of an e-wallet and its design properties. The problem was grounded both in the literature and in the practice (experts interviews). The Suggestion phase is where the work with the proposal from the previous phase (Awareness) is initiated. The work with the Suggestion phase took its starting point in the users, 26 people were interviewed during this phase. We recruited participants from the four user groups based on the assumption that the groups would differ from each other, regarding their needs and expectations to the wallet. Munck emphasis the understanding of end-users' behaviors and needs is a success criterion for contactless and mobile payments. This phase involved four steps:

1) Usability goals and user experience goals

If the primary objective of developing a product for a group of users is made clear, it is easier to understand these users. Classifying the objectives in terms of usability goals and user experience goals can do this. Usability goals are concerned with meeting specific criteria of usability, whereas user experience goals are concerned with developing user experiences [12]. However, as this project only focused on design properties and not on the user experience, the usability was the focal point while user experience goals were not written. Yet, it is important to note, that the two kinds of goals are not clearly separable, since each of the goals is fundamental to the other. But, since this project is an exploratory study that forms the basis for future research, it is acceptable that not all perspectives of the wallet are covered. The following overarching goals were identified during the first round of interviews:

• Efficiency: Carrying out a common task such as paying with the e-wallet, should imply no more than six steps, which is the number of steps it takes to pay with a

payment card today (take the card out of the wallet – place it in the payment terminal – type the PIN – click OK – remove the card from the terminal – put it back in the wallet), see also

• Safety: It should not be possible to make a payment by mistake. This goal was chosen since;

security is perceived important according to the interviewees and stressed by.

• Utility: The e-wallet should provide an appropriate set of functions that will enable users to carry out their conventional tasks from the physical wallet, in the way they want to do them. This was chosen as a criterion for usability because of the fact that the interviewees had so many different ways of using their wallets.

• Learnability: It should be possible for the user to work out how to use the e-wallet by exploring the interface. This is important, as people do not like spending a long time learning how to use a new system, and two of the interviewees told that they do not read instruction manuals. Learnability is especially important for interactive products intended for everyday use [12].

2) **Personas**

After having defined the usability goals, four personas were created representing the four user groups. A persona is a thorough description of a typical user of the system that is developed. Hence, the designers can focus on designing the system to this user, rather than to a whole group of users. A persona is not a description of a specific person who exists in reality, but a mixture of an amount of user data. Generally, these descriptions are called fictitious user descriptions. We followed the proposed structure in the second phase of The Persona Lifecycle, which focuses on persona conception and gestation.

3) **Sketching**

Following the personas, the next step of sketching process was started when the interviewees from the previously mentioned interviews were asked to draw a sketch of an e- wallet. As Linus Pauling once said: ”The best way to get a good idea, is to get lots of ideas”. Thus, the interviewees’ ideas ended as sketches for four different wallets; one for each of the user groups. The sketches from each group were then mixed into one composite sketch, i.e. controlled convergence. This approach is widely used, among others see for instance. Besides controlled

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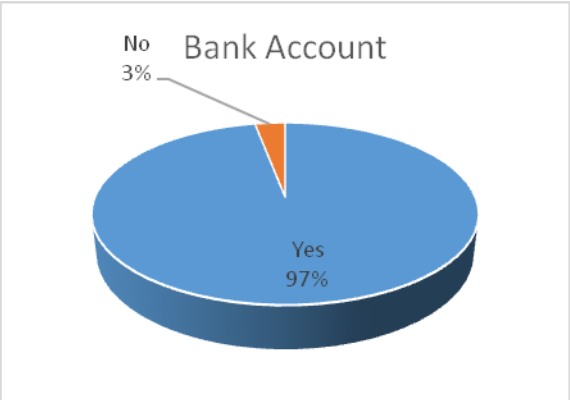
convergence, which is about discarding ideas or part of ideas, Pugh used another notion, called concept generation. Concept generation is about expanding the scope by adding new ideas.

**Interpretation:**

In my research I have selected 100 ncc cadets(50 boys& 50girls) sample size. In first question Most of the respondents i.e. 97% have bank account while only 3% have not bank account. In question two regarding usage of smart phone 96% respondents have smart phones while only 4% have normal phones.
Question three was regarding cashless trascation in that 75% respondents have used cashless trascation and while only 25% have not used. In last question major students or respondent are using freecharge and paytm application for Digital wallet. I observed this thing with the help of following diagram.

Q.1 Regaeding bank account

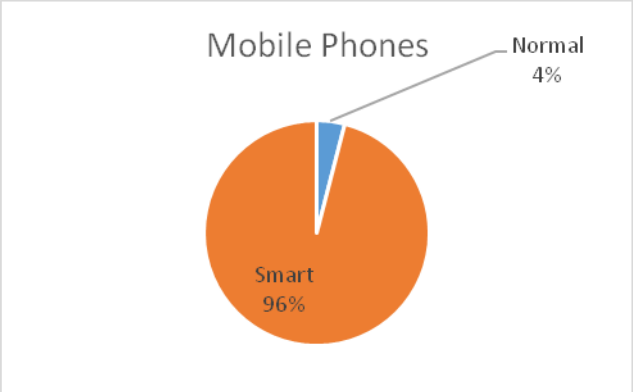
| Particulars | Respondents |
|---|---|
| Yes | 97 |
| No | 3 |
| | 100 |




**Interpretation:**
Most of the respondents i.e. 97% have bank account while only 3% have not bank account

Q.2 Regarding types of phones

| Particulars | Respondents |
|---|---|
| Normal | 4 |
| Smart | 96 |
| | 100 |

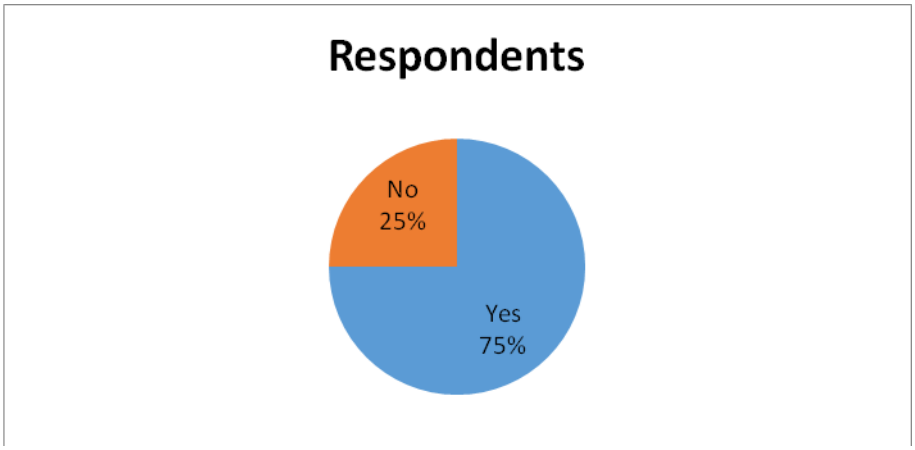


**Interpretation:**

96% respondents have smart phones while only 4% have normal phones

Q.3 Regarding cashless trascation

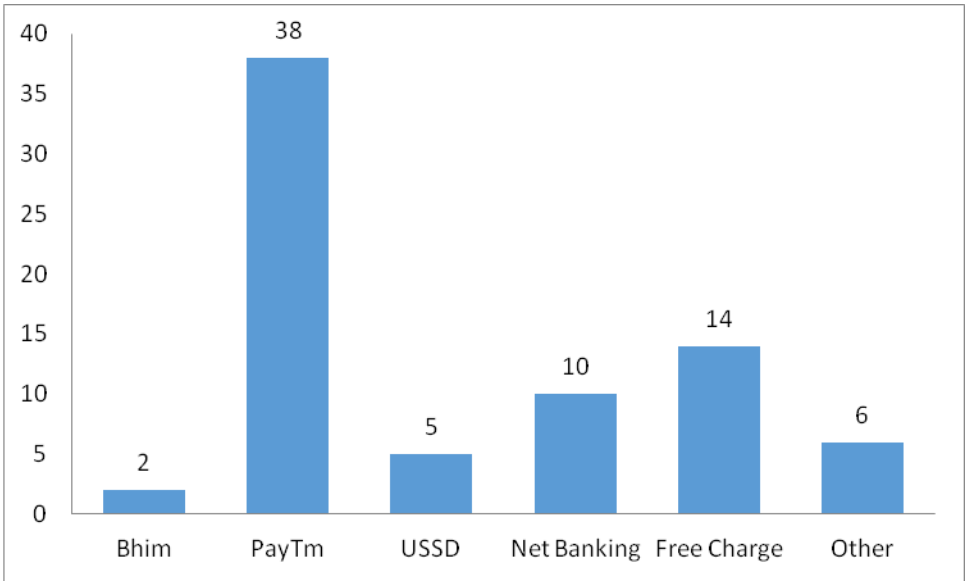
| Particulars | Respondents | Percentage |
|---|---|---|
| Yes | 75 | 75 |
| No | 25 | 25 |
| | 100 | 100 |




Q.4 Regarding used of apps

| Particulars | Respondents |
|---|---|
| Bhim | 2 |
| PayTm | 38 |
| USSD | 5 |
| Net Banking | 10 |
| Free Charge | 14 |

| | |
|---|---|
| Other | 6 |
| Total | 75 |




## *DISCUSSION AND CONCLUSION:*

An observation that emerged from our design science project is that the design and functional properties of a mobile e-wallet are somewhat different to those of mobile payments. The way the user tests of the mock-ups were conducted proved to be very useful for this project, as the interview approach to the tests, allowed for explanations when needed. And they were indeed needed. Some of users, had difficulties grasping the idea of an e-wallet. Those who understood it had, on the other hand, many questions, especially concerning security and other aspects of mobile payments that are still uncertain. Security issues are one aspect that needs to be further explored, not only in the case of e-wallet but for on-line shopping in general, since it might be in conflict of other usability goals, such as efficiency and learnability. The user tests additionally revealed that it is of great importance, when testing an innovative product, to ask the test users to ignore the questions of whether they would use it, as this showed to affect a couple of the tests. Another observation showing that some users did not quite grasp the idea, was made when some of the users suggested that the mobile wallet should hold the possibility of reading text messages and checking Facebook, because they would not want to be without it. Along the way, it was

therefore decided to explain to the test users, that they still had all their other functions in the mobile phone, and that the mobile wallet was just another function.

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