

The Importance of Microinteractions

How can Design of Microinteractions Contribute to Increase Trust in Mobile Payments?

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ABSTRACT

Microinteractions play an important role in user experience, increasing the ease of use of mobile sites and alleviating the stress experienced by the user when making imperative decisions online. Dan Saffer's framework of microinteractions has increased focus on detailing, with several opportunities for designers to develop upon it. Microinteractions are a bottom-up approach that focuses on making the minute details more effective, enjoyable and fun, however developing or designing these interactions comes with a number of different challenges.

This article examines the effects microinteraction has on mobile payments and to what extent they contribute to increase trust. Trust plays a pivotal role in forming a long-lasting relationship with the consumer, and it is their experience with the product that increases or decreases adoption and brand loyalty. The goal of the article is to establish some microinteractions that are contributing to increasing user trust in mobile payments and to make guidelines of them.

KEYWORDS: Microinteractions, trust, mobile payment, TPD4505

1. INTRODUCTION

Advancements in technology are happening at an exponential rate - for many people keeping up with current tech can be overwhelming, and as an increasing number of systems and processes transfer to the online world the general public is urged to follow suit. However, people often do not trust what they do not understand. When things become too complex or hard to understand some people will choose not to use it or daring not to touch it, alternatively they simply memorize one function and setting and try to ignore the rest [1]. "Products should meet human needs while being understandable and usable" [1, p.4].

Dan Saffer's framework of microinteractions focuses on the emotional state of the user [2]. He provides guidance for designing interactive technology that evokes users mental and emotional states such as pleasure, joy and fun [3,2]. Microinteractions details have the potential to improve user experience by making user interactions more human and personal [3]. Paying attention to these details can help the user to know what to do, how to do it and what to expect when they are interacting with a product [3,4]. Therefore, microinteraction details can be where the trust is built or lost within a product.

Mobile payment has had an enormous growth over the past year [5, 6, 7]. It is helping companies to move online, and in doing so it is increasing their reach and potential

customer base [8]. For the consumer it makes what previously was seen as a tedious task more streamlined, removing the need to travel to the bank or store. Mobile payment allows consumers to adopt mobile terminals such as mobile phones, to pay for bills, goods, or services with help of wireless technologies [7, 8]. However, it is hard for people to see all the benefits of Mobile Payments when they are familiar with the physical act of handing over cash or swiping a card, the click of a mouse or button seems more safe and still simple for such a valuable transaction. Changing users mental model of doing things, transfer trust from online banking to mobile payments, as well as develop a successful payment system that encourages the consumer's trust and facilitates their usage intentions are crucial for mobile payment providers [8]. The more information or effort an application asks for, the more trust and loyalty the user needs. The users do not have access to technical security, and therefore make decisions about trust based on the quality of use. They need to trust the product to protect them from being misused or hacked; otherwise they would not adopt and use it [9, 10].

This article will explore the importance of microinteractions and how it affects the quality of use towards trust in mobile payment. The aim is to provide guidelines for design of microinteractions in mobile payments that increases the user's trust. In order to do so, a literature review of several articles and books related to the terms microinteractions, trust and mobile payments, and a case study has been conducted. The book "Microinteraction: designing with detail" by Dan Saffer has been an essential basis for this research. The first part of this article reviews theory about the terms and how they are connected. The second part briefly reviews the case, relevant findings and ends up with guidelines. Finally, the article will discuss the findings and make conclusions.

2. THEORY

2.1 Defining microinteractions

Microinteractions is another way to work with design; they challenge designers to focus on small details. It is a bottom-up approach where you focus on details that delight, increase ease of use, reduce complexity and streamlines features [3]. Saffer contends that well-designed microinteractions are "the difference between a product you love and one you tolerate" [3, p.3]. Poor microinteractions will make the main features surrounded by frustrations, even if they are nicely done; "The design of your product is only as good as its smallest part " [3, p.6]. When people are working with large systems, small details are often saved to the end, forgotten or overlooked, often due to limitations of time and budget [11]. These small details are the humane moment in the system that understands user needs and goals. A bigger focus on microinteractions during a design process can make people understand the use of the product, how to accomplish a task and which steps they need to take. Overall this can increase adoption and consumer loyalty [3,11].

Microinteractions are simply interactions that can be part of a product or even the entire product itself [3]. Small apps such as the weather service Yr, contains of one microinteraction and does one small thing very well. Microinteractions involve a single use case, such as turning on a device, logging in, changing a setting, syncing a device, picking a password, favourites or like something [3].

Microinteractions are good for [3, p.5]:

- Achieving a single task, such as liking a post on Facebook
- Communicating feedback
- Changing a setting
- Preventing human error
- Turning a feature on and off, like muting a phone
- Controlling an ongoing process
- Showing changes or system status, such as loading bars or status icon

- Viewing or producing content

Microinteractions provide benefit when they are intuitive to the user, and this is when they behave the way the user expects [4]. A design is intuitive for the user when current knowledge is close to target knowledge [4]. Current knowledge is what the user knows about the design before they start using it. This can be affected by earlier experience with similar products. Target knowledge is what the user needs to know to achieve their goal [4]. Well-designed microinteractions can bring the gap between current and target knowledge closer together.

2.2 Mobile payment

Mobile payment, also labelled as mobile money, mobile money transfer, and mobile wallet, generally refers to payment services operated via a mobile device [12]. Mobile Payment is an evolution of web payment and it is increasing globally. It allows consumers to adopt mobile terminals as mobile phones to pay bills, goods, or service with the help of wireless technologies [8]. Mobile payment combines two very personal objects: our mobile devices and our money, items that we never leave home without [6]. People are more likely to leave their wallet than their phone at home [6], which is an advantage for mobile payments providers.

Today there are four types of payments [6]:

1. Consumer payments, which involves paying the merchant for goods or services. Example: ApplePay, mCash, MobilePay,
2. Merchant payments, which involves receiving money in exchange for goods or service from a consumer. Example: PayPal, mCash, Mobilepay,
3. Person-to-person payments (P2P), sending money to another person, as a gift or a payback. Example: Vipps, mCash, MobilePay
4. Institutional payments, paying an institution for monthly utility bill or debt. Example: Vipps

Further in this paper will person-to-person payments be discussed and tested.

2.2.1. Microinteractions in mobile payments

A microinteraction is made up of four parts: triggers that starts the microinteraction, rules that determine how it works, feedback that generates the rules, and the loops and modes that make up its meta-rules [3]. Each component is critical to building a successful microinteraction.

Triggers can be both manual and automatic. Manual triggers includes buttons, nobs and swipes, and consist of three components; the control itself, states of it, and text or iconographic label [3]. Manual triggers releases when someone intentionally interacts with the product. Systems triggers are automatic and perform when set of conditions are met [3]. A system trigger can be a sound when you receive money from a friend.

Rules are how the microinteractions responds when they get triggered [3], it determines what can and cannot be done. Some rules in mobile payments are that you cannot send money without registering your credit card number or start using the application without registering your phone number. Rules also determines what feedback the user gets and when. Feedback conveys message to the user that their actions are recognized and process has started or is on-going [3]. Feedback can be sound, visual cue, vibration and notifications. The feedback you get from the system is the only way to understand the rules since the rules are invisible [3]. The feedback or the lack of it lets us know what we can and cannot do with microinteractions.

Loops determine the length of a microinteraction, and whether the interaction repeats or if it changes over time [3]. A loop can be a reminder, and it determines how many times you will get reminded and how long. Loops can be both open and closed. Open loops do not respond to feedback; they perform and end, and closed loops are self-adjusting and have integrated feedback mechanism [3]. A loop in mobile payment can

be checking if there is enough money on the credit card for the transfer to be successful or adding an unread counter for each unread message.

2.3. Defining trust

Trust is unique, differing from individual to individual. Trust is based on whom you are, your background and current situation, when related to online interactions; trust is affected by earlier experience with similar products or system [8, 13]. Trust is influenced by your own experience and of other people [13]. Establishing trust with a person or a website gradually increases as “the relationship progresses, scepticism is overcome, the comfort level increases and new demands can be made” [14]. Trust is important to commit an on-going relationship with consumers and make them feel connected to the brand. Chaudhuri and Holbrook [15, p.82] define brand trust as the “willingness of the average consumer to rely on the ability of the brand to perform its stated function”.

Usability has a great impact on user trust [16]. Usability increases the ability to fulfil a series of tasks that a user must do to complete an objective, therefore potentially gain the level of trust towards the device and the company associated with it [16]. ISO 9241-11 definition of usability is “the extent to which a product can be used with effectiveness, efficiency, and satisfaction in a specified context of use” [17]. Maslow’s pyramid of trust (figure 1) shows the 5 levels of commitment for site–user relationships progress [14]. At each level people have different needs and once these are met they are more likely to trust the site.

The pyramid of needs works from bottom-up. However, when a consumer approaches a mobile payment application for the first time, they have reached level 3 of trust. A mobile payment requires sensitive and personal information before the user can start using it. The more information or effort an application asks for, the more trust and comfort the user must have [14].

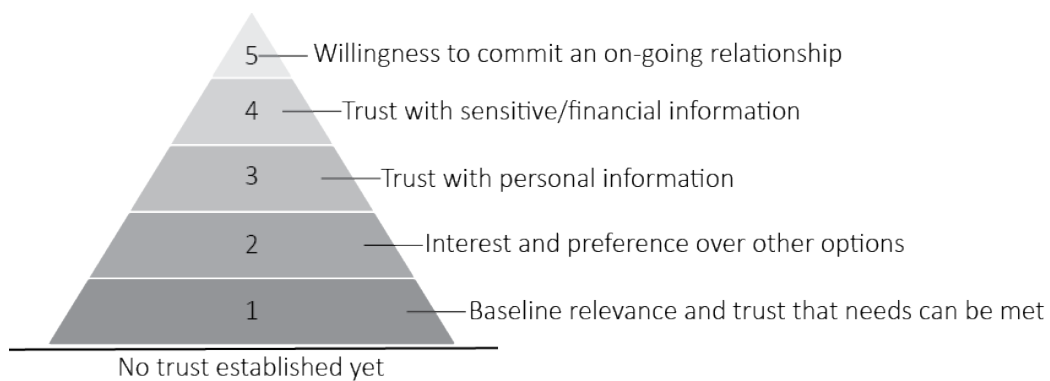


Figure 1: Maslow’s pyramid of trust

2.3.1. Trust in mobile payment

Mobile payments interface are an entirely unique and complex adoption challenge because the mobile payment apps intend to revolutionize a common task that we all do several times a day: purchasing something or paying someone [6]. By nature, people are sceptical towards new technology. Scepticism can shrink with help from external factors like word-of-mouth recommendations or reviews [14]. At the same time, we get used to new technology and new ways of doing things over time [6]. As we alter our mental model of doing things, we start to trust them, which indicates that they work the way we expect them to and do not cause any pain or confusion [6].

In commercial transactions, especially in the online or mobile context, trust plays an important role due to the high degree of risk and uncertainties the user has [9, 18]. A consumer must be able to trust a mobile payment provider that his or her credit or debit card information will not be misused. Consumers prefer therefore to conduct mobile payment transactions with vendors who are well-known [18]. An earlier study conducted by Gong, Zhang, Zhao and Lee [8] indicated that “emotional trust in mobile payment has a much stronger effect on the consumers’ intention to use, while cognitive trust in mobile payment has both direct and indirect effects on intention to use” [8, p.2]. Emotional trust refers to customers’ feelings of security and comfort with web payment services [8]. Cognitive trust is defined as consumers’ rational expectations of web payment capability to provide exact, dependable and safe financial services [8].

Due to the lack of trust in mobile payment, many still hesitate to use the application for reasons such as security and privacy concerns [6,7]. The main concerns consumers has with using mobile payments are [6, p.100]:

- The security of their bank account information (on boarding and registration)
- Use of their personal information (sensitive data)

- The control of their payments
- Contingencies for loss or theft of their device

Design that addresses these concerns is likely to increase trust in mobile payments [6].

3. CASE STUDY

Three different mobile payment applications: Vipps, Mobilepay and mCash, were analytically evaluated and tested. It was important to understand the goal of each microinteraction and determine the level of quality of use for the most typical user tasks before testing the applications. Particular test situations were constructed to cause the user to notice the microinteractions and to reveal problems and errors. Microinteractions are rarely noticeable before something goes wrong, therefore comparing alternate versions (A/B testing) of the same microinteraction will clarify the need to change. Saffer recommends a minimum of 20, up to several hundreds of participants for a test of microinteraction to be relevant [3], which are contrary to standard usability methods. By stating that he justifies that microinteractions are small and therefore most changes will be small. Furthermore he describes qualitative methods, including conversation, interviews and observation as the most effective methods for testing [3,2], and if statistical relevance is not important, few test participants can be clarifying enough.

The three different applications were evaluated and tested by seven participants. After conducting 5 tests I started to receive repetitive feedback, which refers to Jakob Nielsen’s theory of “the point of diminishing returns” after 5 people [19]. Each user testing session lasted 45 to 60 minutes and consisted of an interview, four test situations for each application and a summary. These four test situations consisted of registration, Person-to-person payments; sending and receiving money, and attempting to log in with an incorrect password. After each case the user had to rate various characteristics on a nominal scale.

3.1 Results and Guidelines

Most of the test participants were familiar with the Vipps application, and only one of the participants had never used mobile payment before. Those participants who used Vipps had few security concerns since the brand was well-known and had received recommendations from friends. This refers to earlier observation [20], "User's perception of security determines how much they trust the brand, even if there is a minimum of 'visual security'". However, they only use it for sending small amounts of money and utilise a small aspect of what the application has to offer. They feel it is safer and more formal to send larger amounts through online banking.

All three applications had microinteractions where trust was built or lost. The results of the tests were collected together into a set of guidelines over various microinteractions that can contribute to increase trust in mobile payment application.

3.1.1 A comprehensible registration

Create a comprehensible registration by including clear microcopy enabling the user to understand the purpose and need for their personal and sensitive information. Make the user feel secure with their personal information such as their identity number by allowing them to choose bankID for completion of registration.

3.1.2 Provide the user a feeling of control

Implement a system triggers to confirm the users that they have written correct phone number by automatic giving them the owner's name, even if they do not have them on their contact list. Leading to feeling of control over whom they are sending to and that the recipients have the application. Implement a summary step (as a rule) before the transactions is complete and make the user be able to cancel their requests while it is still waiting for approval. If the user has requested too much money and notice it before being approved, the user will be able to cancel and request a new one.

In addition to keep the user a feeling of control supply fast response time on user interactions.

3.1.3 Retain the user informed

Provide the user with feedback about when the money is transferred and received. Give the user feedback on how much money they can send and if there will be any fees. Keep the user informed by showing system status with loading bars and status icon, and provide them with good human microcopy.

Make the user informed if there are any changes. A collection-Controlled Loop runs through everything in a set and then stops [3]. For each unread message, add one to the unread counter on the application icon. A message appears on the locked screen when something has happened inside the application, but after unlocking the phone the notifications should be visible on the application icon.

3.1.4 Give the user feedback why it did not work

While a payment is running, a closed loop can check if the user has enough money on their account. The user will get feedback in regards to whether the payment is successful or not, and receive an explanation.

3.1.5 Remember user's behaviour

Make the application remember the user's receivers as 'recently used' to streamline their payments. System triggers can learn user's behaviour and loops can recognize it [3].

3.1.6 Log the user off after a few minutes

Automatically logs the user off after a few minutes of inactivity and after closing the app. Loops can be used to make sure an action does not go on for too long and end a process [3].

3.1.7 An incorrect password

Provide the user with feedback at an incorrect password and a microcopy with number of attempts they have left before they get locked out. Show how the user can re-activate and make it safe by using bankID in case of loss or theft of their device.

4. DISCUSSIONS

The findings represent basic needs from the product to behave as the user expects it to. The basic needs are often taken for granted, so users rarely notice them before something is missing or goes wrong [21]. When basic needs are done well, the user is neutrally satisfied as it meets their expectations, but when they are done poorly, the user is very displeased. The kano model (figure 2) defines user's basic needs, along with performance and excitement needs [21].

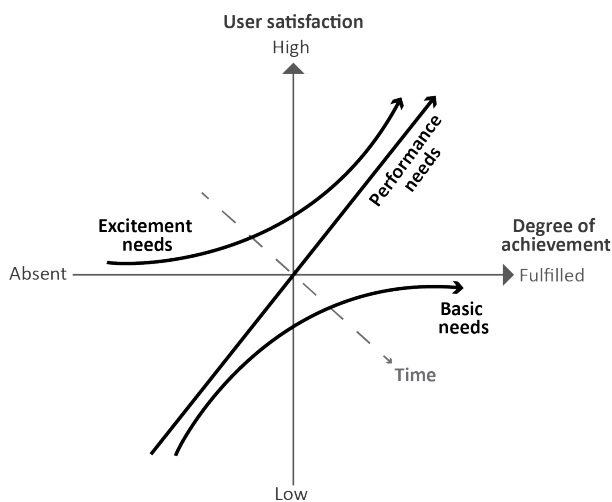


Figure 2: kano model

Performance need is when there is a direct relationship between the degree of achievement and user satisfaction, and excitement needs bring unexpected enjoyment to the user [21]. Basic needs must be met before other needs and feelings can occur. However, time affects the needs, people become used to new ways of doing things over time and raise their expectations accordingly [21]. Mobile payment providers met their users with excitement as need of

easily transactions of money between friends, which has become a basic need over time. Users have gained greater needs for increased quality of the payment to become more efficient and enjoyable. Consequently this requires mobile payment providers to improve or invent new ways to meet users needs.

Well-designed microinteractions understand the users needs and are able to increase user satisfaction, resulting in fewer concerns about their security and privacy. Satisfied users are associated with increased level of trust, and therefore more likely to continue using an application and commit to an ongoing relationship [16]. However, there are other factors like social norms that influence users commitment.

Microinteraction seems to be small, nevertheless meaning a great deal and make an enormous difference. Lack of an important feedback can result in human errors and unable to complete a task. Microinteraction can provide the user a feeling of control and keep them informed through immediate feedback.

5. CONCLUSION

Design of microinteractions can contribute to increase emotional trust in mobile payments by making the user interactions more usable and enjoyable. Emotional trust refers to users' feelings of security and comfort, which could cause the users to send larger amounts of money, adopt more functions and frequent use of mobile payments.

However, it is important to notice that the guidelines is a result of a case study, and it is only a small aspect of what an mobile payment application has to offers. Hence, there could be important details left out and several guidelines for increasing trust in mobile payments.

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