“Phonebloks, or a phone developed by its future users”:

User experiences of a forum for a modular phone concept

Master’s thesis

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Tiivistelmä – Abstract

In late 2013, a project caught my attention as being interesting to me and potentially a lot of others, innovative, and environmentally friendly: a modular smartphone project called Phonebloks. This timing fitting perfectly the start of my Master's thesis as well as my personal interests, I observed it to see how it would develop. The official website which was created let users debate in order to decide where this Phonebloks project should go, so I decided to focus my efforts on it.
This thesis describes perceptions of users regarding an online forum about a new kind of modular phone, called Phonebloks. On this forum they can debate about the future of the phone. I based my analysis on research on forums as well as user perception and involvement. I used 869 comments from the forum, and content analysis, with a code book, quantitatively and slightly qualitatively. It was found that communication is widely polite, with very little negative behavior throughout the forum. It was also discovered that visual stimulation, with images instead of text enables more debate since it draws more attention to the topics. This thesis gave a glimpse as to what a part of smartphone users express online what they want to see in the upcoming phones developed in a modular way, and also how they express these wishes.

Asiasanat – Keywords: user involvement; forum; smartphone; qualitative analysis

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1 INTRODUCTION

The aim of this study is to investigate how the project Phonebloks is perceived by online audiences by analyzing comments of its official forum, from its inception at the end of 2013 until June 2015. Audience perceptions via content analysis are worth scrutinizing as they are raw data, thus unbiased way to gather individuals' opinion, as well as to witness the evolution and the different kinds of interactions between them, while reacting to an external source of information.

As the internet has become an integral part of the world's culture with over 42.3 % (over 3 billion individuals) of the world's population using it (Internet World Stats 2014), new ways of communicating involving individuals around the world without travelling have been developed. Web forums are a sizeable part of Internet communication since they are the ancestor of social media websites such as Facebook, Twitter or MySpace, consisting of written messages and pictures posted and archived on a website, certain information being private or public, and having rules on how to behave on them. Similarly, smartphones have shaped our lives since the introduction of the first iPhone in 2007 (Honan 2007), which allowed us to constantly have the power of a desktop computer on a pocket device, such as access to the internet as well as the ability to play games. They challenged the traditions, since anyone with a smartphone could share instantaneously his experiences around the world via videos for example.

Launched by Dave Hakkens in September 2013, Phonebloks is a project which aimed first at developing a concept of a durable phone, and now wants to apply the same concept to every electronic device. This entails that the phone be modular, or made of separate parts combined together. According to Hakkens (Phonebloks 2013a), dividing a phone into parts aims at reducing electronic waste – thereafter mentioned as e-waste – by assuming consumers will only discard the one part of the phone which would become obsolete or damaged. This modular phone project appears to be the first of its kind in the telephone manufacturing business. In order to discuss this project, an official internet forum was created[1], where any user can express their opinion, not only about the phone, but everything related to the project. Hakkens claims these ideas would be taken into account in the making of not only the Phonebloks device, but everything around it. (Phonebloks 2013a)

[1] https://davehakkens.nl/community/forums/forum/phonebloks/

Combining the two concepts, i.e. an internet forum about a new type of smartphone, was bound to interest a great deal of individuals. Those individuals, as well as companies, can use the ideas and wishes of the forum community in order to help develop a more successful product than if they did not cooperate. This can be seen as mutual product development. Because of its environmental commitment, i.e. reducing e-waste streams in the world (Phonebloks 2013a), the concept and thus the forum can also be more attractive to the ones who want to be more environmentally friendly, and who may not be at first interested in smartphones or internet, but who only use one or both of them.

This thesis aims at filling a gap on user perceptions. There have already been cases of user involvement in several situations. One can cite beta versions of video games, where a chosen group of users give feedback on an unfinished project. This is also a way for project designers to correct bugs more than to rethink the project deeply. For example, Dota 2 is a popular internet game. Before releasing it, the developers implemented a closed beta version, where a few players were given the right to play, and then an "early access" version was available to people who were granted a key to download the game, or who paid for it. (Dota 2 Blog 2011)
As another example of user involvement, one can note surveys made to study how users see a service. One example of such a method is Mäenpää's study, based on 300 surveys about users' perception of the Finnish banking system. This system of user recruitment is less restricted and can focus on all the users of the Finnish banking system. (Mäenpää 2008)

Another survey can be cited as a third example of user perception, as for Chiaro and Nocella's (2004) online survey on 286 interpreters' perceptions of the quality of translations through linguistic and non-linguistic criteria. This survey is peer-based, and allows interpreters to better the final quality of their work via suggestions from their own colleagues, and maybe even themselves, making them users and reviewers, even though an analysis from the point of view of actual clients of those interpretations might also be relevant.

The main reason why the Phonebloks forum is worth considering is that an innovative product is actually partly being built according to user perceptions and/or attitudes. The team administrating the website is informing their followers via posts on a regular basis, and challenges are being implemented, in which the best idea is realized, if the

Phonebloks team keep their word. What this study thus analyzes is a more upstream process of review, where virtually anything can be challenged by anyone who wishes to contribute to the project. It is also a very technological plan to manufacture a modular smartphone, as it does not appear to exist on the market and everything has to be done. Due to this fact, it can be argued that the subject of user involvement has not been exhausted and this study finds its place in this concept.

This study will use mainly quantitative analysis, and also qualitative analysis in order to analyze 869 comments posted on the official forum of Phonebloks. It will answer the following research question: "How is the Phonebloks project perceived by online audiences?" In particular, the present study will investigate the ways in which people interested in the Phonebloks project comment on, discuss and debate the project on the official Phonebloks discussion forum. In addition, the study will look at the interrelations between the users, as well as the expectations they have on what the concept will develop into. Besides posts from people interested in the project, the forum includes Hakkens' posts and answers as well as members of the Team Phonebloks, the inner core of active contributors to the project (e.g. the user Nikola, see section 2.3). We can assume that the majority of suggestions and expectations about Phonebloks would be found on this official platform, making it a well-documented one, as it is the only official platform to debate ideas about Phonebloks.

This thesis has six chapters. After the introduction, a background analysis details the Phonebloks project, as well as the main topics needed to understand the whole study, such as user perception and online forums. Then, the design of the present study, containing the aims and research questions, the methods of analysis and the data selection and characterization, help the reader understand the developments of the thesis. The fourth part, the analysis, is the pièce de résistance, and deals with a quantitative and a qualitative analysis of the sample of comments from the forum. Fifthly the discussion section is presented, where the findings in this study are deliberated upon. Lastly, the conclusion gives the reader a good summary of the whole study.

2 BACKGROUND

This section describes the Phonebloks project as well as the forum which is the most important platform of the project. Key concepts are then analyzed via similar studies, such as on user perceptions and involvement, or on online forums.

2.1 The Phonebloks project

This section deals with the Phonebloks project in detail, starting with two YouTube videos published as the original and primary source of information for viewers. YouTube, now part of the company Google, is one of the most used video sharing websites, created in 2005 and whose content mostly comes from individual users uploading their videos. Videos can be commented upon by any user with an account, as well as the Thunderclap platform, which entitled social media users to pledge their "social reach" to the project. Furthermore, it explores the Phonebloks team's partnership with Motorola's own and similar "Project Ara", until the creation of a community platform in order to create the prototype of a Phonebloks device matching the wishes of the community. Motorola is a company which placed the first mobile phone call in history with one of its devices (Shiels 2003), and is a subsidiary of Google. Its modular phone project consists of allowing its users to buy customizable smartphones, in terms of components or software. Describing the beginnings of this venture enabled us to understand how the forum community appears to be at the center of the project, and how the user perception about the Phonebloks forum should be investigated. Unfortunately, this project evolving rapidly because of being linked to new technologies, a few of the links, for example the one detailing the team of the Phonebloks project, are no longer available online.

When talking about mobile phones, according to the United Nation's International Telecommunication Union (or ITU), there are 6.8 billion mobile phones in use for 7.1 billion individuals (ITU 2013, broken link). However, according to Dave Hakkens, "electronic waste [is] one of the fastest growing waste streams in the world" (Phonebloks 2013a: 0'24"). Many phones seem to be discarded after only one of their components becomes broken or does not fit the taste of the user anymore. The inventor of Phonebloks himself experienced this issue. After his compact camera breathed its last, Dave Hakkens realized that only the lens motor of the camera stopped working. However, even after noticing the problem and attempting to fix it, this part was not

available for sale, and the manufacturer suggested him to buy an entire new camera (Phonebloks blog 2014). This might be one of the reasons that led this Dutch designer to craft the project now called Phonebloks. By creating a modular phone, or according to his motto "A phone worth keeping", the goal is set to drastically reduce e-waste in the near future. This means that, in case a part of the phone would fault or become obsolete, it would not only be replaceable, but the rest of the phone, composed of a base on which the different parts are clipped, will still be usable after changing the faulty part.

Before talking more deeply about Phonebloks, a modular phone needs to be defined. According to dictionary.com, something modular is "composed of software or hardware modules that can be altered or replaced without affecting the remainder of the system". However, Phonebloks also fits the criteria of a second definition of modular, which says a modular item is "composed of standardized units or sections for easy construction or flexible arrangement". The Phonebloks phone could then be easy to modify, in a way which would not affect its functioning. (Dictionary 2015)

As of July 13th, 2015, two videos about this project have been published on YouTube. The first video, with a current total of 18,856,040 views on 20.01.2014 and 21,350,472 views on 22.06.2015, features the basis of the project, which starts with this environmental situation, and explains that in order to successfully produce a phone, unity between potential consumers, producers and researchers has to be agreed upon.

In order to propagate Hakkens' idea, the YouTube video is linked to the Phonebloks page of a website called Thunderclap. If one agreed to pledge this project, this website would send a message via the Facebook or Twitter accounts[2] of the user to all of his social reach, which is the amount of social media friends or followers this user has. The Thunderclap website, Italian based, is an offspring of websites such as Kickstarter, created in 2009 (Wauters 2009) (Kickstarter 2014). The concept of those websites is to display a page with all the main information related to a project, such as what it is, why it would be useful and to whom, as well as a supporting plan and a deadline. The way in which a plan is successful differs according to the websites, and if the initial objectives are completed before the deadline, more challenging ones can be set. In the case of Phonebloks, according to the commentaries on the *Updates* tab (Thunderclap 2014), the

[2] Facebook and Twitter are websites allowing online sharing of user-generated content via an indexation of contents on a general page to lists of friends.

first objective was 500 supporters, and it has been raised multiple times, first to 10,000, then to 50,000 and 100,000. Indeed, it surpassed Hakkens' expectations.

One of the reasons of this success could be explained by research on viral content. Indeed, one of the most efficient ways for internet outputs to become viral is that an opinion leader advertises the video (Elliott 2013). If those leaders manage to catch internet users' attention, what they aim at spreading will be more likely to be so. Opinion leaders usually gather many followers, for example on their official social network pages, and what they promote can be seen instantly, and become famous. Finding opinion leaders – or supporters who have a lot of connections – among the supporters of the Phonebloks phone has been made easy on Thunderclap, thanks to the category labelled "Thunderous supporters". One can notice **Café Tacvba** – a Mexican band regrouping about 1,000,000 followers – or Elijah Wood, with almost 500,000 connections (Thunderclap 2014).

However, another reason for the growth in views of Phonebloks could be the concept being leaked on Reddit, a social news and entertainment website, before its start. This apparently changed the designer's plans (Thunderclap 2014). No "blast out" of pre-recorded messages occurred on the day of the release of the Thunderclap project, as expected when reading the website, but rather a continuous feed of messages on social networks saying this: "Show the world we want a phone worth keeping! #phonebloks http://thndr.it/12lPDsQ" (Thunderclap 2014). The sign #, attached to a string of letters without spaces, is a message format typical of Twitter, the current leader of micro-blogging platforms.

Following this first YouTube video, posted on 10 September 2013, a second one was posted, again by Dave Hakkens, on 29 October 2013, the day of the deadline of the Thunderclap project. In it, the voice of Dave Hakkens explains how advanced the project is, that they have met with many partners and that they are starting a partnership with Motorola. This firm is owned by Google, a firm which originally started as a search engine company and which has diversified with many other internet services such as email, cartography, video sharing and also social media. Motorola is said to have "made the first mobile phone", and has considerable experience in mobile phone manufacturing (Phonebloks 2013b). But most of all, they had been developing the same project of a modular phone as Phonebloks over the last year. Hence, their partnership seems like a fruitful idea. The interesting point in that cooperation is that at any point, if

Motorola does not seem to go the way the Phonebloks community wishes, it could stop. This is an indicator of Hakkens' independence and will to provide a phone the community wants.

Individuals could be impacted by this decision in many different ways, since Google is considered a big firm. Indeed, it has been ranked by Alexa.com – a website analyzing the internet traffic on other websites – as the most visited webpage on the internet in December 2013 (Alexa 2013). This company could work towards its own interest and not the community's, or use this partnership opportunity to gather and retain more data, as it was rated in 2007 as "hostile to privacy" (BBC 2007). It could also indicate a positive feedback from the community, since Google Chrome is one of the leaders of web browsers (W3schools.com 2016), and many of the services provided by this firm are free of charge (Google Privacy 2015).

The Phonebloks project, apparently entirely funded and propelled by the internet community, via donations, social reach and idea support, can also tell us about a new way of marketing and financing a product. In about two months, Dave Hakkens, the designer and head of the Phonebloks project, has already found partners, among which Motorola, owned by Google, the company owning the most used internet search engine, and has received constructive ideas on the forum of his website about what his phone could become. Given this development rate, and according to estimations given by the Phonebloks team, a modular phone would be available at about the time this thesis is being finalized, i.e. in summer 2015. Even if it looks like the project would be finalized, the website Phonebloks is still asking for voluntary contribution from supporters, as it wants to retain its independence concerning its original vision of a modular phone. If donations would not be sent anymore, the Phonebloks concept might still not eventually see the light.

After this second video, another challenge was fixed on the Phonebloks website, which was "SET UP AN ONLINE PLATFORM". This third was completed in November 2013, and appears to have been managed by CMNTY. This Dutch company, mentioned at the bottom of the Phonebloks website, seems to provide a fast internet community platform via cloud computing (CMNTY 2014). In other words, any computer can be linked to the files via servers which store the data of the website several times. That way, the data is available anywhere in the world, with backup versions of them (Carroll, Kotzé and Van der Merwe 2012).

However, Hakkens' vision is not about producing a phone himself, but more about developing the concept of modular electronic products, such as washing machines, where parts could even be changed between different devices, as is explained in the third video published on May, 8 2014 entitled "Phonebloks - Hello Industry!" on YouTube. It seems that other phone manufacturers are starting to produce such modular phones, and also a modular smartwatch, and the Phonebloks project is more oriented towards developing a way of consuming that limits e-waste.

It is interesting to note that Phonebloks won by popular vote a competition called "Design of the Year Award", in which this concept was opposed to another groundbreaking phone project, Fairphone. This phone is supposed to develop a more socially acceptable way to produce electronic devices, with a focus on mining precious material such as coltan that does not finance local warlords, a design allowing self-fixing thus being environmentally friendly, as well as a longer lifespan of the materials, just like Phonebloks, and allowing the workers producing the phone to not be exploited (Fairphone 2015).

2.2 Studies on forums

Since the forum is the main platform where individuals can post ideas and communicate about the Phonebloks project, it is then crucial to analyze it in order to understand it.

This section deals partly with the research conducted on online forums. As online forums have been available in this specific format at least since 1998, (Timetoast 2015), researchers have been able used them as their focal point. Among the available studies on forums, one regarding sociolinguistics of globalization, or how several languages are used in forums on Finnish football is worth mentioning (Kytölä 2013).

Studies have been written on how forums shape our lives, for example as sources of consumer information (Bickart & Schindler 2001). This thesis focuses on an interesting part of forums, as users are empowered to the point of making them creators of ideas that will have an impact on every part of an experimental product and its broader concept.

Like many other formats of interactive (i.e. social) media, forums have been a way to facilitate communication between any individual with access to an internet connection,

no matter how much distance separates them. They can freely decide to join and leave any online community at any time (Bagozzi & Dholakia 2002). Those individuals might never meet otherwise (for example in real life), and yet it is possible for them to exchange information, to get help from others with particular sets of skills, debate, suggest ideas and receive feedback on them. (Toral et al. 2009; Granovetter 1973; Brown & Reingen 1987)

After reviewing studies related to online forums, let us see the description of the Phonebloks forum.

2.3 User groups

It was argued be argued that there are at least three categories of members on the forum, ranked according to their contribution to the project. The first category, the broadest, concerns all of the users who posted only one or a few comments. In it, users may be interested in one idea, but do not actively participate in other ones by posting. They may be lurking, but as mentioned before, it is impossible to know who watches the thread, even as the amount of views is displayed on the forum.

Then, we can distinguish the active users. Those members belong to the middle category of the forum, and have been posting several times in different threads, categories and sections. They are the ones who most likely spot the reposts from other users, and give their feedback on ideas of others, while also pitching new ideas of their own. In a hypothetical analysis of all of the regular posters of the forum, one would we able to see all of the active members. Here is a non-exhaustive list of the members of this category: zarulhairee, MPrego31, zachcmu, Whiteguy, nammyxo. It is possible to read their contribution in practically every topic of a section. For example, the user **zachcmu**, who has a picture of presumably himself as avatar – or a picture appearing next to his account name which can be anything – appears in 27 topics, sometimes several times in the same thread. This commitment could be cause by the fact that in one topic, he seeks to start a partnership with the Phonebloks team. His reason, other than being interested in what Phonebloks has to offer, could be to find an employment (cf. comment 20). Even though he ultimately performs flaming out of anger on this occasion, ulterior positive comments of his seem to show that his commitment for the forum did not dwindle.

> Comment 22: **zachcmu**: "It is a great idea. Also it will help people but do you think it right for the time period of the device. I dont think so" (Ideas; Hardware ideas; wide range of use.)

An instance of flaming and moderation seems to be interesting to analyze. According to the number of positive reactions to ideas compared to the negative parts or acts of flaming. For example under the topic *Battery of sugar*, one of the only instances of flaming can be found, with posts containing anger and negative comments. Some of those comments seem to have been deleted, as this is the only topic talking about sugar, and users in those messages quote posts from another user, and the original posts cannot be found. On the majority of posts, though, the users are courteous and positive about other people's ideas, such as with the topic *variable screen shells to allow different sizes to be used on the same mothermoard* and the user zachcmu declaring "Good idea".

The last category of users is part of the Team Phonebloks. They may or may not have started as such, as some of their posts prove it, but were very active at an early period of the existence of the forum and probably proved their knowledge, their usefulness and their respect of the forum rules. They are showing in their signature that they belong in the team, and do not seem to post clearly negative comments. The list of those members is so far: Brendan_Kershaw, TimothyGoltser, Niklas_Hoffmann, DaveHakkens, and Nikola. It is argued later that every community such as this forum has a core of members (cf. 2.3).It is this category that fits this definition the most. However, one can wonder if their response rate is as fast as the inner core should have. There are indeed 39 comments from **Nikola** found throughout the data.

> Comment 23: **Nikola**: "[/quote]filipj wrote: sos for old people / press call for help [quote] Very nice! Loving the sketch too! Team Phonebloks Nikola" (Ideas; Hardware ideas; for old people)

Some development remains to be seen about some of the categories of the forum. For example, in the "Development" section, the topic "Online community platform" is

currently one of the least popular ones, as it is quite small in terms of topics or posts (only 3 topics and 13 posts on May 28th, 2014 and as of June 19th, 2015, 6 topics and 30 posts).

Moreover, in those topics, it is hard to develop a clear understanding of the meaning of the category, as the posts do not clearly concern the improvement of the community platform. For example, one of the topics of this section concerns another hardware idea for the phone, and does not apparently belong in the category. Another topic, entitled "Online Community", does not bring about any clear idea. It may be confusing for some individuals that ideas that took time to be crafted should be shared on a forum publicly and without any financial counterpart, just for the development of a bigger project. In this topic "Online Community", part of "Online community platform", a user offers to present his ideas, but at the condition he becomes "part of the [Phonebloks] team", probably meaning that he wants a job and money. After being told that this community is based on ideas given for free by anyone for everyone, and that he would need to prove his worth before being considered as one of the Team members, he proceeds to flame his interlocutors.

The categories of the forum were updated so that, according to the some members, the distribution of ideas is better organized, and the users are hopefully driven to the right place to read about a certain subject, to post their comment or to create their topic. However, it is possible that users disregard this build of the forum for various reasons and decide to post a comment or create a subject where they feel that it will be positioned best according to them. In order to avoid such liberties being taken about how to behave on this forum, rules have been drafted for the forum.

2.4 Phonebloks forum

2.4.1 Forum description

The forum was formerly composed of eight sections (They were labelled as "Design + Looks", "Hardware development", "Software development", "Sustainability", "Marketing", "Research", "Questions?" and "General ideas), but has been reworked into four general categories, "Ideas", "Design", "Development" and "Other". After this rework, some categories within those four sections could be hard for some users to tell

apart. For example the meaning of the “Ideas” and the “Development suggestions” sections overlap, because they both comprise ideas which aim at developing the website. Thus, some ideas could be posted in either category and still be in the right place, but it would be harder for other users to get a good and quick overview of the ideas posted to develop the website.

First, with “Ideas”, there are five divisions. “Hardware ideas” is related to any thought or idea about the physical components that are produced. “Software ideas” concerns the programs that will run the device. “Ideas for new kinds of Bloks” can be about the design of those parts of the phone, but also about the hardware. “New partners to connect with” allows users to suggest new companies, big or small, which they wish would cooperate with Phonebloks. Even a “For the Phonebloks website” is available for possible ideas about the website or the community.

Secondly, the Design category comprises three sub-categories. “The looks of a modular phone” announces ideas about the design for the material aspect of the phone. As for “Software – OS”, help can be provided about the looks of the abstract main Operating System, or the program such as Google’s “Android”, or Apple’s “iOS” that allow the phone to turn on and to use a given set of other programs for each system. “Phonebloks Branding” then concerns ideas about the design of the Phonebloks website, regarding the logo, the website itself or the looks of the brand more generally.

Thirdly, we can notice the “Development” section. As in the previous sections, similar concepts are presented. “Hardware” deals with how development of the material parts of the phone should be handled. “Software” entitles users to act upon the programs that run the phone. “Online community platform” regroups ideas regarding the Phonebloks community in general.

Fourthly, the last section, labeled “Other”, regroups 5 categories. “General ideas” leads to suggestions that do not seem to be covered by the other categories which concern ideas. “Sustainability” comprises topics about all the ideas regarding sustainability, but also the research on this subject in order to use it for Phonebloks, and even feedback on the work already done on the prototype. “Marketing and Promotion” is a sub-section that deals with how Phonebloks can be presented to individuals who do not know about the project, or how to advertise it the best way. “Research” regroups the information on

research conducted on modular phones. We can wonder what can be considered a modular phone, since this type of phone seems to have become known to the public with Phonebloks. Finally, “Questions?” allows users to seek help about understanding the project, the forum, or anything related to Phonebloks.

After describing the forum categories, I will now go on to analyze the rules which are regulating this forum.

2.4.2 Forum rules

A paramount part of every forum is the rules section. Most of the time, a topic on top of each category is created, with in this case the title “Welcome”. In this thread, the basic guidelines of the forum are displayed, and should be abided by, in order to maintain a decent level of communication throughout the latter. Otherwise, it is likely that a system of ban would be applied, judging from other forum rules, with degrees and lengths of penalties varying from temporary to permanent, or being kept from posting or even reading certain threads.

Here are those rules:

“Welcome to Phonebloks!

We're really grateful that you are taking the time to contribute to our effort to make a phone worth keeping. However, the community is big, and not all questions get answers. Here are a few tips, they will help you as you post content on the forums:

1. DRY - Don't Repeat Yourself. This is of paramount importance, here at Phonebloks. Repeating yourself is not a good way to attract positive attention to your content. Some people will think you're spamming.

2. Search for similar posts. Unique questions get unique answers. Search the forums for similar posts, and make sure that what you are asking has not been discussed previously.

3. Keep posts on-topic. Each forum has a description under its header. Read that, and make sure your post matches that description. Otherwise, your post will be moved, and everyone else will have a hard time finding it after its migration.

4. Write detailed content. Vague content isn't answer-friendly. We don't know what you were thinking at the time. You don't have to overdo it, just add a few details to help everyone understand what is going on.

5. Refrain from posting adverts. Adverts are disruptive to your content. Adding redirects to your personal website, business page, or social media profile isn't necessary, unless you are asked for it.

6. Keep content SFW and pejorative-free. People don't like being assaulted with raunchy images and pejoratives. Posts with such content are violently ripped apart by moderators.

That's all we've got for now! These tips will be updated periodically. We will try our best to notify you when that happens, but we're not making any promises.

Thank you again for reading over these tips, we hope you find them useful!"

Judging from those rules, it is worth investigating if there have been clear breaches of them, or on the contrary, how well they have been respected. Those rules are important to this thesis as the amount of disturbance depicted by them will allow us to compare the quality of posts in this forum with the quality of other online discussion means, such as YouTube pages or other mutual product development forums.

There seems to have been a lot of reports in the data about repost so much so that it has become a category of the code book. A code book is inherent in the content analysis method, and it analyzes via pre-defined categories - or in this study categories which stem from the analysis – features which will be used for example for quantitative analysis.

However, it is not displayed how strictly the rules of the forum are applied. For example, regarding posting adverts in rule "5.", it is not possible to know if the poster of an advert will be penalized or how. It has been discovered that there are moderators on the forum, but no one has any way of knowing what kind of posts have been deleted by them, and what sanctions have been given. Thus, as a non-moderator, I was only able to analyze what is publicly available to the users of the forum with an account.

The main cause of sanctions being given might be negative behavior, hindering communication. It has been researched that online comments in general had a tendency

to be negative rather than positive, or to be influenced by source material such as journal articles, or an original post (Anderson et al. 2013).

After developing an understanding of the rules of the Phonebloks forum, and how it can keep it relatively ordered with hints and sanctions, let us see how user perception and involvement have been regarded in the scientific world.

2.5 Previous studies on user perceptions and involvement

When talking about user perceptions regarding development of a concept or a product that will be commercialized, it is also worth studying user involvement. Indeed, according to Brown and Eisenhardt (1995), there are three ways to develop a product: rational plan, disciplined problem solving and communication web. The first one relies on the rational planning of a superior product with an attractive market. The second is about discipline when solving a problem. The third one relies on constant communication, both internally and externally, to successfully produce something. This is what the Phonebloks Team is trying to do, involving the users in the development of their concept, communicating information about it to everyone, and those users giving feedback to the Team about what they want to see in the product. (Brown and Eisenhardt 1995: 347)

It is argued that companies developing products benefit from knowing more about their customers, since they would be more able to detect their expectations and needs, and thus create products more appraised by customers. Firms can achieve this via user involvement, and also user perception. (Heiskanen and Repo 2007: 182)

One can distinguish three categories of participants in a forum. First, the core members of the forum keep it alive by being very active for a long period of time and providing their expertise on many topics, usually with a high response speed. Then there are active developers who post regularly, but do not have a high enough commitment to be part of the inner circle of members. Lastly, peripheral developers are the least committed part of users within a forum. They only post a few times on it, but there is no regularity as to how often and for how long they post. Lurkers are also part of this category. (Mockus et al. 2002; Xu et al. 2005).

Information specific to this study regarding those three groups of participants can be found in the discussion section.

Let us continue and evoke the case of lurkers, who are also defined as ‘simple readers’ or ‘eavesdroppers’ (Marcoccia 2004). Those are users who do not actually type any message on the forum. They simply observe what is happening, or the conversations that happen and the information they can retrieve from it. The simple act of posting one single message removes the user from this category, and is called ‘delurking’. However, it is not the purpose of this study to investigate further this type of users, since it is virtually impossible to fathom their opinions clearly (Baym 2000: 33). Indeed, the fact that a lurker does not type any idea, thought or any kind of perception will not directly influence the forum directly or my study. It may be however possible to assess that lurkers have been on the forum, as the number of posts is always lower than the amount of views. Furthermore, one can have access to messages without being a member of the website but then cannot post, inducing lurkers might not be members of the forum, thus with a lower will to participate in the debates. It is argued that only about 10 % of the individuals who view content online actually comment on it, of which only 1 % creates new content. This tells us that about 90 % of viewers are lurkers, an important part of it (Arthur 2006).

On the one hand, while analyzing such contents, researchers can choose to either follow the model of a lurker or to be a more active member of the community. If they choose to be lurkers, they will not draw attention at themselves, and will be able to analyze the data as they please, opting for more tranquility. On the other hand, one can choose to be an active part of the forum users, and to post comments which will be analyzed in the study. However, this method of analysis can possibly infer the researcher’s preconceptions about what the answer to his research question will be, and thus make the data harder to use, because of being distorted to fit a special mindset, and not reflecting a naturally occurring interaction. It is then more worth considering as a researcher to steer clear from posting comments that could be used in their own data.

Considering user perception, theses and papers have scrutinized significant amounts of data such as comments in order to develop theories about the phenomenon they give feedback on. This is the case in Elliott’s Master thesis on a non-professional internet video posted on the video-sharing website YouTube. This video became viral – i.e. very popular within a short amount of time – and the researcher developed a model on the

reasons why such a type of video becomes famous after an in-depth analysis of the comments about the video (Elliott 2013). Mäenpää (2008), in her dissertation on internet banking, did also study user perception in detail, but used an interview as her qualitative method, followed by a quantitative questionnaire. Shin et al. (2009) used an online survey in order to define the characteristics of mobile internet that were perceived by users as most influential upon their consumption of internet.

Hsin-His et al. (2004) studied the effect of color and shape combination on the design of mobile phones in order to fit consumer's expectations optimally. For this Neural Networks were analyzed, and 16.8 million colors were available as a base for design.

Schreier, Fuchs and Dahl (2012) analyze the enhancement of the perception of a product by its users if they are involved in the making of it. Four categories are identified which modify it: "the number of consumers, the diversity of their background, the lack of company constraints and the fact that consumer designers actually use the designed product" (Schreier et al. 2012).

Some other studies which were similar and useful to this one are also paying attention to what is said on comments about a creation, for example Elliott and her analysis of comments regarding a non-professional YouTube video parody meant to promote farming. Out of 3,000 comments, a code book with categories was developed to discover why individuals watched this video (the categories were "Emotion", "Entertainment", "Information", "Main Actor in Video", "Other", "Participation", "Relationship to Sender", "Source of Shared Content" and lastly "Video Quality"). The most important factor that was found is that an opinion leader, in that case Senator Pat Roberts, was the reason this video became viral.

However, some of the results contradict previous research, for example in the "Relationship to Sender" category. "Based on previous research, it was expected that either a person close to the user or someone considered a credible authority would be the main source of shared video. While that still may be the case, users rarely mentioned watching this video based on a recommendation from one of these two types of sources" (Elliott, 2013: 39). It seems that comments cannot reflect on the whole state of mind that the YouTube user was in when he posted this specific comment. Due to the short length of most remarks that were posted (not more than two lines in general), they commenter only seems to express his main idea. A second feedback posted later on could depict a very different emotion.

Elliott postulates that a combination of components is necessary for viewers to enjoy it and spread it (Elliott 2013: 74). After reading in the "limitations" the mention of entities such as Monsanto, we can think about the making of a product, or how a video could have gotten more views by changing any factor, and if this would be possible to study. It is possible that a specific positive user perception, e.g. an opinion leader, can lead to an increase in the other user's perception and user involvement in a project or an idea, in this case farming. One can analyze how much the comment of a member of the inner core of members on the Phonebloks forum can influence the views and comments on it.

2.6 Studying user perception via content analysis

It was not before the second half of the 1930s that a significant use of content analysis was noted (Silbermann 1974: 254). This approach might seem elementary at first, but many scientific questions are actually written this way, since it has been defined according to Lasswell's original formula "Who says what in which channel to whom and with what effect" (Lasswell 1948: 37). This involves basic communication with a sender of information, an addressee and a message, and its growth in popularity could be accounted for the spread of mass media, which has occurred around that time, thanks to the modernization of economies (Silbermann 1974: 254).

"Content Analysis involves is a research technique for the objective, systematic and quantitative description of the manifest content of communication" (Berelson 1952: 18), this in order to "identify specified characteristics of messages" (Holsti 1968: 601). What is meant by this statement is that a researcher using content analysis must be aware that, in his reasoning, he should attempt to select his data without any irrelevant data, but meanwhile keeping the context unharmed. If done otherwise, his findings may be erroneous and not reflect the reality of his data.

Another tenet of content analysis is that data should always be analyzed in the same way. This infers a scholar should set standards for his data, e.g. if the whole post in a forum should be analyzed, or additional irrelevant sentences be omitted, or in which category a certain reaction should be fitted into. It is also important to keep a record of the data and of the protocol which have been used, so that results can be double-checked if needed. (Wardlaw 2010: 1)

In practice, the data of a content analysis should be assessed, thanks to a specific code-book and a procedure defined beforehand, and the researcher has to divide which

syntactic or semantic units within the data can help answer the research question in a relevant manner, and within this relevant data, to what category of the code-book they belong the most (Ritsert 1972: 17).

2.7 Code book

In this study, the code book is supposed to help us classify posts in a useful and relevant manner, so that an accurate depiction of the forum can emerge from a sample of data. The explanations of the categories can be found in the result section. A code book is defined by Cope as a way to "evaluate, organize and 'make sense' of our data" (Cope 2010: 281). Its purpose is to reduce the data the researcher is confronted with, to organize it in specific categories to separate different units of data, and to allow him to explore, analyze it and develop theories about it. One can do it by hand or by computer, (in this thesis, a computer was used to perform data collection). It is a way to conduct partly qualitative analysis of data while first performing quantitative data analysis. The *manifest message*, "blatant and obvious" (Cope 2010: 282), which generates 'manifest codes', is to be found first for the categories to appear. A term will generally be analyzed at the first level, for example instances of the word 'prostitute' will be coded according to its definition of 'sex worker'. The categories are also supposed to be reworked during the analysis, in order to reach a quality final code book, and be able to unveil the *latent message* of the data, deeper, which can only be understood after analyzing the meta-text and the context of the data. For example, the term 'sex worker' would also have to do with the category 'status of women' in its latent message. Then, it can answer research questions. (Cope 2010: 281-283)

After exposing several subjects researched on user perception and involvement, we can conclude that the matter is already developed, with even similar topics to this very thesis (mobile phones). More generally, forums are studied as well, with users seeing it source of information for example. We also use content analysis in this study, which has been presented and allows for both qualitative and quantitative data analysis. The Phonebloks project and forum have been described, so as to get a good understanding of it. Now, let us see what kind of data was used for this study and how it was recorded.

3 DESIGN OF THE PRESENT STUDY

This part describes the way this Master thesis was conducted. Starting with the goals to achieve and the questions it aims to answer, it goes on to describing the methods used to analyze the data, and lastly it characterizes the data, in other words shows the reader what data was collected and what criteria were used to select it.

3.1 Aims and research questions

This section comprises the aim of this thesis, what it seeks at understanding or shedding light upon, and how this was formulated with research questions. Since the discussion forum (formerly https://community.phonebloks.com/forum, now available at https://davehakkens.nl/community/forums/forum/phonebloks/) is very active, and arguably comprises the majority of ideas regarding Phonebloks, it has been chosen as the main object of study.

My main research question is: "How is the Phonebloks project perceived by online audiences?"

What is aimed at in this thesis is to get a picture of what is discussed on the Phonebloks forum. What were examined in the next parts were how communication is created and maintained on the forum, what kinds of ideas are proposed, what answers are suggested, the reactions users express and the behavior they present. After analyzing quantitatively the sample and drawing some statistics about it, a sufficient number of topics and comments were scrutinized, so as to draw the main ideas, debates and conclusions about the project. Some examples, being one of a kind, were also talked about in the analysis, so as not to only encompass the main ideas of the forum. However, analyzing the whole forum is not possible Thus, performing quantitative and qualitative analysis on the forum comment helped define more clearly what users, via their perception of the project and the most popular ideas suggested, want about their smartphones, but also about the way electronic products could be in the near future, so they satisfy the kinds of users who commented on the forum.

3.2 Methods of analysis

In this section, I will describe the main methods of analysis used in the empirical study in section 4.

The "content analysis" method was then chosen. Content analysis is the study of recorded human communications, and is focused on actions that individuals achieve, in my case ideas posted on a forum (Babbie, 2012: 330). In practice, I have managed to "classify textual material, reducing it to more relevant, manageable bits of data" (Weber 1990). As a method that allows for both quantitative as well as qualitative analysis, it was the most appropriate in that situation.

First, I selected the sample to be analyzed both quantitatively and qualitatively, which amounts to 869 posts overall on the forum. This required having the posts verbatim, or the same way they are posted on the forum, including mistakes made by the writers such as syntax, vocabulary or grammar. Ultimately, the raw data is in the same form than the original one and has not been altered; it thus reduces the chance for misinterpretation of the comments due to bad recording.

As every bit of text that is entered in a thread is recorded in a forum, information can easily be scrutinized as it happened. However, information on the internet is stored on servers, and this information could disappear without notice overnight, maybe because of the website being hacked, or an error leading to its deletion, or even a choice from the Phonebloks Team to not allow anyone to read those comments anymore. That is why it is crucial for a researcher to ensure that the data can be found for review no matter what happens. In the following paragraph, a summary of the methods used to record this data is available. This data was then saved onto several medium (at least three) to ensure that if one were to be deleted, the other versions would be available and the data would not be lost.

When first acknowledging the possible loss of data and the need to save it, the idea that can come to mind is manual saving. Thanks to Web browsers such as *Google Chrome* or *Mozilla Firefox*, it is possible to save "single webpages as .html files ('entire webpage'), .mht files ('web archive'), or .txt files (text only)", as well as .pdf ones, which however modify the layout of the page (Kytölä 2013: 147). Saving all the webpages to a word processor is also available, and done by McLellan (2005). It would be fit for this study, since it may work best on written-based data. The act of copying

other than written data to a word processor could alter the content, distorting the results of the analysis. Printing webpages is as well a method that can proof worthy, but only for a small portion of content, since the cost and the filing needed for 1,500 comments could not compete with the following method. Regarding all of the three methods, each file would have to be labelled separately. Plus, the act of copying webpages manually, to any kind of format or software, at the era of computers processing millions, if not billions of operations per second, does not seem wise.

It is to find 'web spider' software, which is what has been used for this data analysis. They are also called 'web crawlers'. Their function is to download entire logical websites, i.e. which have subpages with the same URL (Uniform Resource Locator, or global internet address). It is possible to use filters in order to choose what content is downloaded, and to exclude certain types of files or links towards other websites.

It is possible to retrieve the comments on the forum thanks to software called web crawlers. This kind of software allows freezing a certain amount of data in time and storing it on a hard drive or on any storing platform, so that it is always available for review. This would help a lot in case the website the data is on was to be deleted. The way this software works is that it saves every directory (or webpage) of a website, including photos and text, making them available without an internet connection.

The comments were stored via this web crawler method on May, 28th 2015 on two different locations, on my computer as well as on cloud storage methods, to avoid data loss.

Those comments in some way had to fit the scope of this thesis, which asks how the project Phonebloks is perceived by online audiences. It was first thought that these posts should only be written by members of the forum, as this thesis is about user perception. However, posts from the members of the Phonebloks team or moderators are often interesting to note, as they influence greatly the comments in a certain topic, coming from a trusted authority (the posts from the Phonebloks Team members usually display their belonging to the team). Furthermore, they do not constitute a significant number of the total posts. Thus, they were also taken into consideration.

While analyzing specific comments coming from different parts of a forum, a method had to be determined as to how the information retrieved would be classified. The categories used were not the same as the ones the forum displays (cf. "Forum

description" for a summary of the categories of the forum), since those sections were not able to answer the research questions fully, e.g. the categories of the forum do not take into account emotional reaction, which is an element that can help answer the research question via user perceptions. Plus, those sections were decided by the administrators of the forum in order to make them more user-friendly, or maybe to allow a better and more precise classification of ideas, because of the same ideas being posted in several topics. Because of this, the classification of the forum is not fit to answer the research question in an acceptable way. Thus, there is a need for a specific set of categories.

The code book was determined by order of importance on the forum. Indeed, the idea section was the one which had most importance, as it is the reason why the forum exists in the first place. However, answers may be worth looking into, as debate is the best way to develop concrete ideas for the whole community.

After those categories were set and the data analyzed quantitatively, a qualitative content analysis can commence. Out of those comments, some were selected in order to illustrate a specific category for the reader, thus making them typical examples of a specific trend of the forum. Some other comments were also unique to show the range of the comments available for analysis.

3.3 Data selection and characterization

The data was divided into 4 specific tables, which all had a specific theme to them. Those tables are "Ideas", "Answers", "Emotional reaction", and "Others".

The number of posts which were actually reviewed was 869. This number seemed to be sufficient in order to build a solid viewpoint about the forum, since many categories could be developed around it, and many comments could fit into those. The data collection was performed regarding posts which were among the first 5,000 posted, and the data was recorded in May 2014. This task was facilitated by the fact that comments have a time stamp on them. Indeed, a Master thesis, as well-documented and meaningful as one can be, cannot cover much more than this scope, the forum simply comprising too many posts (as of 13.05.14, 10156 posts). Moreover, according to Elliott's study on YouTube comments, who reviewed about 3,000 of them, it is very

likely the selected part of the forum alone will provide enough data for this thesis (Elliott 2013).

The fact that this data is already written on a forum and does not need to be asked from the users makes it more natural, since users do not write those ideas for me, but for the Phonebloks community. The purpose of this study is thus not altered. There is also no other source of information as extensive for an analysis of the ideas for Phonebloks. If we were to analyze for example the comments of YouTube videos or any of the many web pages mentioning Phonebloks, some perceptions could be found about it, but there may not be as many ideas developed in here, as the purpose of the YouTube page is not specifically to create ideas about the project.

Let us now define the characteristics of the forum in focus in this study. On its main page, the four sections can be seen all at once, with the amount of topics and posts they include. Let us compare the popularity of those. On one hand, the two categories which really stand out in terms of posts are “Hardware ideas” with 2,548 posts and 532 topics, and “The looks of a modular phone”, with 2,561 posts and 365 topics at the time of collection of the data (May, 28th 2014). On the other hand, the two least posted upon categories are “Development; Hardware”, with 3 topics and 8 posts, and “Development; Online community platform”, with 3 topics and 13 posts. Since both of the most popular categories seem to be related to physical properties of the phone, with the design and the components of the phone, one assumption can be that users are very interested in how the phone will look like, rather than maybe if the interface of the phone, or the operating system, will be easy to use.

Regarding the own categories of the forum, it seems to be fair to select at least one page for each of them. With the current amount of data, i.e. one page of topic per sub-section (25 topics per page), minus the ones which have less than 25 topics, 400 topics were recorded, but less of them were selected (about 120). For example, the last sections, i.e. “sustainability”, “marketing and promotion”, “research” and “questions”, were roughly analyzed but abandoned because they presented the same characteristics as the other comments, and 869 of them is sufficient data for this thesis.

Thus, the importance of a category is judged by its own number of posts, or its importance in the forum. Additionally, some relevant posts might be excluded, or not analyzed, but they would be so as equally as possible for each category. These posts were selected chronologically from the oldest post, which seems to be the fairest

selection method. However, this might later render many selected posts obsolete or irrelevant, as it is unknown how the project Phonebloks can evolve. Within the course of this thesis, it is likely that milestone such as the unveiling of a prototype may change originally relevant ideas about the way the phone is designed for example. However, as with analysis of an ongoing process within a set amount of time, it is impossible to conduct a complete analysis of it. Thus, the selected data will be the set analyzed and relevant for this thesis as for this specific period of time.

3.4 Ethical consideration

3.4.1 Anonymity

One of the reasons why I chose not to modify the nicknames is that this forum is meant to develop ideas. According to the multiple occurrences of the same ideas throughout the forum (e.g. solar bloks), users can be assumed to want to show that they are the original posters of their idea. In other words, they desire recognition, and may prefer their nickname to be publicly acquainted for rather than modified. Indeed, a user on the internet is able to be acknowledged publicly. This would not be a different opinion than when citing a comment in a traditional print media. It is not necessary to be overprotective for those kinds of publications, since one would risk making a user more marginalized, since no one would know about him, when he might want to (Bassett and O'Riordan 2015). Researchers have themselves managed to find anonymized information due to a detail that could not be modified in recorded data (Ohm 2009).

Anyone can furthermore access a website if no restriction about it is made, and anyone who posts something on it can be read by potentially anyone who goes on the internet. If an individual with a search engine such as Google.com types the keyword "Phonebloks forum", words included in the title of this thesis, the first result will be this forum, where at least the users' nicknames can be seen.

3.4.2 Data sensitivity

If the individual then has registered an account on the forum, he can also see the information users provided when creating the account. This information is asked from the users but not mandatory to create an account, and are as follows: first name, last name, gender, date of birth, current phone, country, specialized in (then the category,

such as hardware or software), and ranking (for example helping, member, among others). This information can also be edited in the profile setting.

Within the forum, there is also a search tool in order to find members, topics or parts of comments. Then, if the complete comment is searched, for example with the keyword "Needs a different letter font", taken from the comment below, only two results are displayed. This means that even if the nicknames were modified, the words constituting the comments are still in the thesis, and cannot be modified, making it easy for anyone to find a user nickname back. Thus, combining those arguments, users who create a profile on this website cannot be protected from the fact that the information they enter can be found by anyone creating a profile on the forum.

4 COMMENT ANALYSIS

Having discussed the methods of data collection and characterized my own data, here is the analysis of 869 Phonebloks forum posts as well as the results that follow first a quantitative then a qualitative analysis of those via user perception and content analysis.

4.1 Frequency of characteristics

It is to be noted that the spaces in many lengthy comments, hereafter mentioned in between quotation marks, have been formatted in order to save space. Before the comment, the number of the example as well as the actual nickname of the user is written as it appears on the website, and after it, the section, category and topic respectively corresponding to the location of the post are displayed. Since there is not more than one page per topic in the data, no page number is needed.

Comments were analyzed in two different ways. Contrary to Elliott's study of YouTube comments, the length of the Phonebloks forum comments, which purpose is to express ideas and talk about them, rather than being able to post anything, such as one word to express one's feelings, seems most of the time to be longer (Elliott 2013). In that case, several characteristics had to be attributed to a majority of the comments, for example when a user reacted to an idea, then suggested its own within the same comment, or used emotions. The following comment, with 129 words, illustrates the length of some

comments on the forum. While this is not the case for all of them, going through the data shows that this comment is not a singularity, and that comments are usually long.

> **Comment 1: Jamespeters1993:** [quote]:Tibor_Brink wrote: Needs a different letter font, there is a thread for logo design. I like the letter 'B' however it doesn't match the corporate brand. Studying Graphic design myself too, the Letterspacing (tracking) is way to small, also the letter font doesn't match the corporate brand in my opinion. The illustration on the left doesn't seem to add anything to the design itself which makes it unnecessary. Perhaps elaborate more about your logo. [quote]
>
> Thank you for the quick feedback. the type is a bold [bloks] font giving a relation to the name and the icon to the left i can now see the resemblance to windows now so that will have to go but the idea behind the icon was a cube that had detectable blocks on it." (Design; Phonebloks branding; Logo for the website, store and phone startup)

In the same comment, the user **Jamespeters1993** displays 3 characteristics. He quotes a previous post, shows politeness and clarifies his point.

One important point to be noted is that the length of some comments exceeds what could be defined as a short expression of an opinion. In such a case, an extra characteristic has been included in the code book, so as to identify posts of over 4 lines in the forum context as "lengthy". Those may often contain more characteristics than the average one, and are thus more helpful to communication and the purpose of this thesis, e.g. finding the perceptions of users on this forum via their comments.

What is displayed here is the number of times the characteristics mentioned hereafter appeared on the data. Those characteristics have been selected as the ones that corresponded to most of the content of the comments, while also regrouping in some way the similar aspects together.

Unfortunately, it was not possible to find a criterion for each of the characteristics found, as they either only occurred once, or were not described as a perception. Also no percentages are counted for the total of each table, because some comments share more than one feature across different tables, for example an elaboration, and thus make the percentages false:

Comment 2: **MPrego31**: "This is a great idea and would come in handy for people who tend to lose things" (Ideas; Hardware ideas; garmin blok)

This comment for example shares two features: "elaborating" idea (cf. table 1), as it talks about the usefulness of an idea for "people who tend to lose things", and "positive" emotional reaction (cf. table 3), with the terms "this is a great idea".

After a characterization of some sample comment, let us analyze the categories which stem from the analysis with the idea section.

4.2 Ideas

In this section, we analyze the features of the idea comments which were presented in the Phonebloks forum, which was the main element to expect from a forum dedicated to the development of a new product.

The model of the following tables has been written following Elliott's model (2013). All the percentages are rounded up to the nearest 0.1.

Table 1 Comments related to ideas posted by users on the Phonebloks forums

Idea		
	Frequency	Percentage from "Ideas"
1. General	113	34.4
2. Specific	68	20.7
3. New idea	32	9.7
4. Elaborating	83	25.3
5. Defending	32	9.7
TOTAL	328 / 869	

4.2.1 General idea

The Phonebloks forum was created in order for people to display ideas. Thus it is not surprising that those ideas and their reactions to it constitute the highest number of occurrences. 328 characteristics belonging to the category of ideas were developed, of which 113 were general. My definition of a general idea can be defined as one which is explained with less than three distinct features. A non-exhaustive list of what a feature can be includes a specification of the idea, what it is useful for, the applications it can have, how it looks (with a picture or with words), who it can affect. This definition finds its purpose since the aim of an idea is to provide other users and the Phonebloks Team with a good depiction of what should be done to implement the idea, and whether what they suggest is manageable. In my opinion, users who employ less than 3 features to explain an idea do not provide enough clues for others to understand it fully. Indeed, thinking about a concrete situation, they can explain for example the reason why an idea could be useful, as well as where it would be used. However, no indication would be given on how to implement it, or about the cost or design of it. In other words, general ideas require additional thought for it to be clear whether it is manageable or not. This is the case for specific ideas (cf. next paragraph). However, this threshold of 3 features draws a line of understandability for the reader to know if a user merely presents an idea or if he could implement it himself.

Comment 1: **hlaa213**: “i think the hardware of the phone should be made of rubber ... becouse of alot of advantages .... flexable and ıf ıt fell u dont have any worrıes .. so on and so forth ....” (Ideas; Hardware ideas; rubber)

4.2.2 Specific idea

On the contrary, 68 ideas were specific. In this thesis, the word “specific” is meant as a comment which expresses at least 3 distinct features of an idea. It appears that after such a display of features, it has been easier to get a more precise idea about what the idea is, with a certain number of elements presented, on which one can think about more clearly.

> **Comment 3: Nishanth288**: “for people who want bigger screen sizes how about building the whole screen seperately with a slot for the main motherboard inside it that way people will not have to change the whole motherboard for a bigger screen instead people can just get a new body

> & bigger screen and just slot in the motherboard like for eg: you if you want to increase your screen size from 5 inch to 10 inches all you'll have to do is just get the 10 inch body & slot in the motherboard from behind all without changing the remaining things like cpu etc" (Ideas; Hardware ideas; variable screen shells to allow different sizes to be used on the same mothermoard)

In this comment, nishanth288 explains three features regarding his idea: "people will not have to change the whole motherboard", "people can just get a new body & bigger screen", and "eg: you if you want to increase your screen size…" Thus, it qualifies as a specific idea.

4.2.3 New idea

Continuing on the same path, within the same group, "new ideas" are worth being taken into account. New ideas can be recognized as comments which included an idea that was different, even slightly, compared to the idea that was introduced at the beginning of a thread, e.g. contesting a previous idea. A user starts developing an own idea, still related to what is talked about, but maybe seen from another angle.

> **Comment 4: Dr Gears**: "I would suggest that if blok monitoring would be needed, a software center for computers would be created. In this software center, a blok monitoring option would need to be created, in which you can access the phone through your laptop, hence knowing which blok is corrupted. Note that this is just an idea, and that an extension would need to be created for both the phone and a computer, if the idea of a custom OS would be a success!" (Development; Software; Blok status/control center app)"

Here, the user **Dr Gears** comments on the main idea of the thread that suggests that a control center should be available for users to know what bloks installed on the phone are working or not. He talks about a different feature of the app, which should be available for computers, not suggested explicitly in the first idea. Hence, its different angle satisfies the definition of a new idea.

4.2.4 Elaborating

Subsequently, the characteristic "elaborating" shows if a user posts more than once in the same thread. In those cases, it is likely that he explains a point more in detail, or finds new features to debate about, which can also be about an idea other than his. Both comments can deal with two different ideas. These often occur after an "answer" comment, because there needs to be a comment to debate about. Plus, if there is no comment posted in between, this means that a user is posting twice. This characteristic is taken into account in Table 2. This category could have fitted in Table 2 as well, as it can also qualify as an answer. However, this organization of the number of categories in each table seemed more appropriate, and since those elaborations often include an idea as the first comment, it pertains to ideas as well. There are 32 elaborating comment characteristics. As an example:

> **Comment 5: Brendan_kershaw**: "there is doubt about phonebloks due to beliefes that the SoC setup will be scrapped, the simple idea is to have the SoC idea imbedded in each blok, making the phone viable, obviously processor and ram would go together in a blok, and same for the mic and camera duo, the speaker doesnt even need a blok with todays flexible speakers, worst case scenario is that the SoC needs to be embedded in the pinboard for the bloks. an active SoC idea (even if only partial SoC in each blok that connect to each other via the mainboard) and once this is decided on how it will be done then it needs to be advertised to try lift some peoples spirits about this project... show them it can be done, and get more supporters and more design input and feedback" (Ideas; Hardware Ideas; this has come to my attention, causing people doubt, simple solution)

Comment 4 is the first comment of the thread, a specific idea (with more than three features). The comment 5 is the one for which clarification is given in comment 6:

> **Comment 6: nishanth288:** "well are you saynig that let 50 or 25% of socs be in the main board which will be a common component of all the other socs??????" (Ideas; Hardware Ideas; this has come to my attention, causing people doubt, simple solution)

Comment 5 is asking a question, to which comment 6, the "elaborating" one, answers:

> **Comment 7: Brendan_kershaw**: "well i am only creating a theory of how to control the sizes and power demand of hardware SoC is the most common way, but by using modules it seems like throwing that idea away, the SoC concept is designed that well currently that it keeps power demand and size demand to a minimum (not exactly minimum, but considderably lower than if everything was seperate) im theorising that by majking every blok have its own computer chip designed to do what its ment to do, then making that a branch to a main SoC system should eliminate a considderable ammount of power nesesary to runn all hardware, the more generalized a blok is to a certain part of the phones abilities ie. speed or wireless interfacing the more the SoC design can be implemented as a branch SoC and having a main chip to run all those systems as a single SoC should have at least most of the benefits of the average SoC..." (Ideas; Hardware Ideas; this has come to my attention, causing people doubt, simple solution)

This second comment is the second occurrence of this user in this thread, and he clearly gives more clarification about his idea, following "answer" comments.

4.2.5 Defending

Then, as a last category in this table, the term "defending" points to a user who posts again in the same thread to defend and debate about his idea. These mostly happen after a "drawback" comment, as they need not only to clarify, but also to give points why his idea is manageable, or useful. Comment 7 is the one that shows "drawback" from another user about an idea (cf. table 2 for a definition of drawback).

> **Comment 8: Niklas_Hoffmann**: "Yeah i have to agree. Most people wont understand that." (Ideas; Hardware Ideas; this has come to my attention, causing people doubt, simple solution)

The user brendan_kershaw tries to focus the point of his idea on features of his idea to be available for developers, and that "Most people" do not need to know about it.

> **Comment 9: Brendan_kershaw**: "the point is to make that to keep the performance and power usage at good levels... the consumers dont need to be told how exactly it works, but spreading word to companies about the effectiveness of the phonebloks design and having evidence is key in getting more companies to help and get interested in phonebloks, thus phonebloks can gain even more popularity among consumers, that equals more supporters and more people believing in phonebloks' potential. this is not only a solution to a hardware problem caused by seperating components, but also a way to gain more support... some companies might even help fund phonebloks once they have the proof that it can work" (Ideas; Hardware Ideas; this has come to my attention, causing people doubt, simple solution)

In here, there might be a risk of overlap between "elaborating" and "defending" comments, as they both happen after "answer" comments, and there can be "drawback" as well as comments that only require elaboration, which would not be negative; the user can also show both elaborating and defending characteristics in his comment, making it unsure what the category the comment analyzed fits in. However, only one of these two characteristics was chosen per comment, so as not to have an increased total number of comments per table, one that would not reflect the actual number of comments analyzed.

Topics have noticeable differences throughout the forum. Some of them were created just a few days before the data collection process, and only had the idea written, without any comment about it. There are many reasons why these threads could be feedback-free. An idea could first be a willing or unwilling repost of a similar suggestion, earlier and in another topic. Thus, most users could eventually disregard an idea that has been already dealt with. It is also possible that a sketch would be uninteresting or unrelated to a section, and viewers could be looking for the idea in another area or think that it has no potential. Lastly, posts could be written a few days after the idea being published, thus making a promising topic seem not as interesting, and putting the data in jeopardy. Unfortunately for the sake of data collection and the development of ideas, this outcome is impossible to predict and to avoid, as long as such a big forum is being active and posted upon. The selected data is thus the one that is mostly worked upon, besides important references to a more current version of the forum, such as the post about a new platform (Phonebloks 2015b).

In a nutshell, we can see that ideas posted are more sketches of ideas than ready-made products presented to the community and the Phonebloks Team. They need refinement and debate to be perfected, which is what the second table is about.

4.3 Answers

One can notice that the second greatest number of posts features answers, 307. This shows that communication, which probably was one of the keys to the success of this forum, has been open since the inception of the forum. It seems also clear that the rebound number, i.e. 42, is high enough to show that users have been debating over ideas on Phonebloks for more than 3 comments, e.g. an idea, an answer, and a defense of the first idea. For some topics, the number of comments debating about an idea is vastly superior to 3, but this characteristic appears only once per topic because it is made in order to notice debate, and not in order to see how extended it is.

Table 2 Answers to ideas of forum comments

Answer		
	Frequency	Percentage from "Answer"
1. Drawback	86	28
2. Addition	103	33.6
3. Link	30	9.7
4. Redundant/Repost	46	14.9
5. Rebound	42	13.6
TOTAL	307 / 869	

4.3.1 Drawback

"Drawback" is defined as an answer to a previous post that only highlights a weakness of this argument. It is to be noted that the characteristic "balance", present in Table 3 "Emotional reaction" is very similar to the "drawback" one, with the difference that the

post also deals with the positive part of a previous comment. Hence, it also refers to an emotional reaction.

> Comment 10: **Lawresia**: I posted an idea on two way radio communications blok on the wrong field (design instead of hardware) anyway I hoping if there would be an additional communication blok other than wifi, bluetooth, NFC, WCDMA, 3G, 4G or LTE for remote areas were there is no GSM or cellphone connectivity or during communication black outs caused by natural disasters with an app that will manage the blok to communicate between two or more users on open channel two way radio or an encrypted frequency band that can cover a distance of say 25km one had suggested a multi-frequency pci e hack that can communicate from fm to wifi on kickstarter" (Ideas; Hardware ideas; Communications bloks)

Comment 10 is the original idea of the thread, and suggests some new mean of communication other than the ones already present in todays' smartphones. Comment 11 is the "drawback" comment:

> Comment 11: **Rana2107**: "Cell phone device are designed to communicate up to 8km max. increasing range up to 25km would need more power full transmitter mean increased SAR as well, a serious issue.." instead just keep the damn motherboard and slot it in a screen as per the consumer's choice" (Ideas; Hardware ideas;

In that comment, the user only notes that this idea would not be manageable, because of a range issue for transmission of the data. However, a "drawback" comment does not only show negative behavior, as it can be a constructive answer, which shows that an idea is not feasible.

4.3.2 Addition

Furthermore, “addition” is a characteristic of a comment that only adds one feature to an idea already suggested earlier in a thread. There are 103 additions, making this the biggest category of answers:

> Comment 12: **edwindrake**: “I think that one of the blocks should have a mini hdmi port because there's a lot of people who likes to take picture and record videos and if they record a video that they want the family to watch they just connect it to the tv.” (Ideas; Hardware ideas; Mini HDMI Port)

Comment 13 (the addition comment) answers comment 12. An example of a situation where an “addition” occurs could be:

> Comment 13: **MPrego31**: “This is a great idea and can be expanded on in many ways which is a good thing.” (Ideas; Hardware ideas; Mini HDMI Port)

The comment adds the fact that there are many applications for the original idea, fitting the definition of “addition”, e.g. a single addition of a feature which does not contradict a feature of the original idea.

However, regarding the legitimacy of this category, one can wonder if this “addition” category can be a unique one or if it is similar to the “new idea” category definition from table 1. The difference can be slim, since a comment in this thesis could be validated as a “new idea” while presenting just one feature of a new idea. However, a comment labeled as an “addition” cannot contradict a feature of the original idea it relates to, while a new idea does.

4.3.3 Link

When looking at comments posted, one can notice another way to answer ideas and debate about them can be to give information already existing outside the forum on other websites, with links.

> Comment 14: **adexmont:** https://duckduckgo.com/?q=wireless_passive_communication&kl=us-en
> A little input on communication opportunity, i saw a video on youtube about this, but i con't grab it back :P (Ideas; Hardware ideas; Communications bloks)

As a matter of fact, this comment answers to Comment 10: The links themselves are quite neutral on the forum page, as one should click on it and see what argument it develops. However, they can be in coordination with a message on the forum and express another kind of answer, such as developing an idea.

4.3.4 Redundant/Repost

There were 46 instances of redundant posts, or double posting on the selected data of comments. This means that a user will post the same idea than another user twice, or that he will post twice a message in a row, without comments in between to debate about. So this shows that the post that is redundant is not one that brings a new idea or a new feature to debate about.

> Comment 15: **JoelSherrard**: "Great idea TheMike :)" […] Comment 15: **JoelSherrard**: "I agree." (Other; General ideas; Closed ideas / Thoughts not to write)

The user JoelSherrard could have just posted the first comment, and no real change to the conversation would have happened.

4.3.5 Rebound

A "rebound" is a specific characteristic of a thread, which shows that there are more than 3 comments on a thread (including the first comment of the thread, no matter if it is an idea or just a question) made by unique users. Since some topics only have one idea expressed and no debate about it, it is needed to know the number of ideas where users

give their opinion, and the number of ideas which are not. This can help us define which ideas are worthwhile to users, even though some ideas could be negatively commented upon three times and still be considered a rebound:

> Comment 16: **SgtCaz**: "I'm worried that the circuitry/programming space and power needed might be a detriment. But to keep your function, my alternative idea is to have a status bar for the bloks, or maybe even a whole status app/drop-menu that can show status of bloks and also configure settings, etc.
>
> I may detail this idea later on the Software thread" (Design; The looks of a modular phone; LED Indicator Lights on each blok)

This comment does not tell us a lot about why it qualifies as a rebound, but it is the fourth comment made by a fourth unique user in a thread, and is a proof that an idea about LED indicators on bloks is being discussed.

However, on the data recorded, pages of topics that had a total of more than 25 comments – and thus stretching on more than one page – have not been recorded, as a result of a compiling error with the software. They can of course in any case be collected manually, if seen as important for the data.

In a nutshell, answers that are posted are the natural extension of the ideas in section 4.2, which enables debate and fortunately emulation to find a suitable aspect to be implemented on a future modular phone. In the next section, the emotional aspect of the entire forum shall be scrutinized.

4.4 Emotional reaction

In this section, I develop a broad aspect covering all sections of the forum, emotions. It may seem general to have only a few general ones displayed in this table. Indeed, the fact that a reaction is positive or negative does not inform one on what the comment precisely like or disliked. However, for the purpose of this study, it is interesting to show the main tendency regarding the emotions displayed on the forum.

Table 3 Emotional reactions of the posts

Emotional reaction		
	Frequency	Percentage from "Emotional reaction"
1. Positive	51	26.5
2. Negative	9	4.6
3. Balanced	58	30.2
4. Sarcasm/Anger/Flaming	5	2.6
5. Politeness	69	35.9
TOTAL	192 / 869	

4.4.1 Positive

The positive comments constitute more than 26 percent of the emotions displayed in the comments. This means that ideas, if commented upon by other users, seem to be rather positively seen.

> Comment 17: **Niklas_Hoffmann**: "Hahah looks quiet interesting." (Other; General ideas; Camera attachments)

This comment shows that positive behavior, determined by the expression "quiet interesting" is frequent on the forum.

4.4.2 Negative

On the contrary, there are less than 5 percent of negative comments, which do not contain any politeness in them, are written in a sharp tone and only focus on expressing a negative point.

> Comment 18: **Nammyxo**: "waste of space, just buy a stylus separately" (Ideas; Ideas for new kind of Bloks; blok with stylus)

This comment right away mentions "waste of space", which is quite blunt of a formulation, with no personal pronoun or verb. This may not be meant as a negative comment, but judging from the way other comments are written, it is among the more negative ones.

Interestingly, this “negative” category could be confused with the category “drawback” from table 2, since both of them gather negative comments. However, the phrasing employed for comments which fit the category “negative” is clearly harsher and those comments do not need to be negative about an idea, but can also be a mean comment directed at a user. Meanwhile, the “drawback” category only focuses on the fact an idea is not feasible, and is usually said in a polite way.

4.4.3 Balanced

We now come to the second most represented category of this table, the “balanced” comments. This characteristic could fit into Table 2, as it comprises comments which could be characterized as drawbacks, since they present a weakness about an idea, but they are also written so that the good parts of this idea is emphasized as well. Thus, it is an expression of balanced emotions, and may be a factor for better communication within any forum, since it does not stigmatize the poor features of an idea, but also shows there are good features to the idea. If the weak features are corrected, then an idea can become feasible and actually matter in the development of Phonebloks:

> Comment 19: **Stopsl**: “Sounds pretty good, but i don't like the fourth step, because it will add way to much thickness to the base plate if you add any ejection mechanism. It should rather be a mechanism, that unlocks all bloks like it's made on the intoducing video with two screws. Now you have your parts unlocked and then you can remove the single bloks with a suction pad or similiar.” (Design; The looks of a modular phone; How i remove the separate parts from the main body

The comment is talking about the weak point of an idea, i.e. the base plate being too thick, but it also mentions that the idea in itself “Sounds pretty good”. This means that only the features Stopsl mentions as weak should be corrected according to him. Then the idea would probably be very good to him.

4.4.4 Sarcasm/Anger/Flaming

These three characteristics of comments are infrequent and similar to a point that they encompass only one category, with five occurrences. They are meant to reduce communication at the expense of others.

After I assumed that flaming or similar non-constructive comment would not be allowed on the forum (cf. 2.1.2 Forum rules), traces of it have been found in a post by **zachcmu**.

> Comment 20: **zachcmu**: "Thanks i appreciate the comment. thats wonderful now maybe you should pu tpeople down in a nice way. i am trying to be nice Ok you *** ****" (Development; Online community platform; online community)

The tone of the thread conversation before the end became more tense, and the second last post ended with "*** ****", which most likely was a cover up for an insult declared at another user, but replaced by stars.

When wondering how this replacement happened, two reasons come to mind. First, the user himself could have typed those stars afterwards instead of the alleged swear words, or edited the original words, out of a feeling of remorse maybe. Secondly, it could be a moderator of the forum who would have applied the "no-flaming rule" and modified the words without the consent of the original poster. A third reason could be that a software automatically censored words deemed inappropriate by user moderators. It seems more likely that the second reason is correct, since the last post of the thread is from a moderator, who announced its closure, in order to avoid further flaming.

It is still interesting to note that the whole conversation is available apart from the swear words for anyone to see. This appears as a proof that the Phonebloks team is concerned with transparency of data, showing that they do not want to hide anything from the users that does not block the continuity of the forum.

4.4.5 Politeness

Lastly, the politeness category is the most important in Table 3, and may show the general inclination of the emotion of the forum.

Comment 21: **sangeetsenan**: "Sorry. But i don't feel it to by much sensible bcoz, all such animations will drain a lot of battery. and another thing is its will be showing much lags just as in android, which is very annoying." (Design; The looks of a modular phone; Homescreen design idea)

It does not matter whether the comment is pointing out drawbacks of an idea or just praises it, as long as a marker of politeness, here "Sorry" is present. This means that respect is valued in the forum, and probably has more chances to help constructive ideas and answers throughout the forum. Ultimately, it helps the progress of Phonebloks and should be displayed as much as possible.

In a nutshell, emotions displayed in the comments seem to be mainly polite and help develop more of them as well as constructive debate over them. However, some more comments show features which have to be put in a separate category, such as lengthy comments.

4.5 Other

As with any real-life data, not everything can be placed into pre-defined categories, even ones created specifically for the data. Here are features which influence the data, but which cannot find its place anywhere else.

Table 4 Other characteristics of comments

Other		
	Frequency	Percentage from 'Other'
1. Lengthy	62	61
2. Image	41	40
TOTAL	103 / 869	

4.5.1 Lengthy

This category did not really fit in other tables, and neither did other characteristics which could have made it into the code book. It is interesting to note that some comments are extra-long compared to others. This happens when they in the forum context surpass 4 lines in length. This characteristic may tell us about comments which give more arguments about an idea and may increase communication.

> Comment 22: **Shirlbw**: "Good idea on the braille screens. My brother in law is legally blind and has no problem using a phone with buttons, but the smooth glass screens are not something he can use, so a variety of options for this is wonderful. I am pushing 60, and while my vision is OK, I would like to put in a mention for phones that are a LITTLE bit bigger or at least have larger buttons for people with fingers larger than a pencil - We don't ALL want itty bitty phones and not all of us give a crap about texting *gasp* Yes, I really don't care to text - I find it time consuming and annoying and have rarely used it. Anyway, I think the bloks is an amazing idea and I hope to be able to get one in the near future!" (Ideas; Hardware ideas; Phonebloks Complete Touchscreen Or With Buttons?)

This comment is six lines long in the context of the forum seen on any computer screen via a common browser such as Google Chrome. It is part of a rebound thread, which means the debate on whether to use touchscreen or buttons on Phonebloks is one that interests users.

After analyzing the different categories of features present in the selected data, we move on to unveil what the data entails.

4.5.2 Image

There are altogether 41 images in the data collected, amounting to 40 percent of the 'Other' category. The point of the images does not seem to be what the image contains, but more the visual stimulus is provokes. Since not all of the members have pictures for their avatars, it seems to make the ones who have them more attractive in terms of involvement from other users.

After analyzing all of those comments via a specific code book, let us draw findings from those and elaborate on what they entail for current and future research and what use actors such as the Phonebloks Team can make of it.

5 DISCUSSION

5.1 Key findings

Those 869 comments entail that a lot can be said about the perceptions of the members of the forum on the Phonebloks project. Firstly, the features used among users may be different according to the user group they are part of. Let us see if this is the case.

Characteristics pertaining to ideas and answers are the most frequent across the data analyzed. This can be seen from the tables, with 328 and 307 comments, respectively, presenting those. This means that the objective of the forum being a platform to develop ideas about the Phonebloks project has been successful.

One subject that advocates for the emulation of many ideas is the existence of duplications. The subjects that were posted about were very different and varied, from various users. In a forum of several thousands of posts, it might be complicated for users to find if an idea corresponding to theirs has already been written about. It might also be that when entering the forum, they only read what they want to read, and probably have the will to contribute to the Phonebloks project with their own idea. In that excitement, they probably do not look at the rules of the forum, nor do they try to look for similar ideas already posted. That is why some reports from both users and what seem to be moderators of the forum – no specific mark besides their signature after the post shows who they are – seem to deplore reposts, or an element posted more than once which is unnecessary, and urge users to look for posts containing the same idea before writing their own, and potentially flood the forum with superfluous pages when their idea could be part of one same thread.

On the other hand, those topics which have duplications show which ideas seem to be most attractive towards users of the forum. It could be that after looking for the same idea and finding it already written on the forum, a user may not wish to comment the idea at all, maybe wishing they had posted it first. This could be explained by jealousy or maybe laziness about finding points to be bettered or mitigated in another similar

idea. Among those popular ideas, we can present the “solar technology” concept, in other words a part of the phone that can use solar light to power or reload the Phonebloks phone, and thus allowing it to use this energy available outdoor during daytime. This idea is mentioned twice in the data, within section “Ideas”, in the category “Hardware ideas”, topic “SOLAR PANEL BACK”, as well as in the category “Ideas for new kind of Bloks”, topic “SOLAR PANEL BLOK”. In both of those topics, it is answered or acknowledged that this idea had already been written on the forum beforehand: “Some one suggested this idea before” and “this idea has come across many times already”.

Then, it has been shown that many ideas presented have been more general than specific. This observation tells us that the users may present an idea on the forum, even though they do not know exactly how to implement it, and maybe look for more expert people than them to develop the idea with. This is positive in terms of user involvement, as communication from as many users as possible is the key to developing the better product, or at least wanted by the biggest number.

The instance of comment 20, where a user asks to be a part of the Phonebloks Team, is the only occurrence of a user wanting retribution for his ideas other than recognition for it. This means that other users are used to the concept of freely giving ideas, or in other words ‘outsourcing’, which might not be imaginable earlier in history or even now in working life for example.

Secondly, as a forum based on free speech, there seems to be a lot of debate happening around the ideas, both positive and negative, with a lot of variations. On 42 occasions, those debates have been developing with a rebound, or more than 4 unique members commenting on it, including 83 cases of elaboration of ideas and 32 cases of idea defending, among 62 lengthy comments.

According to previous online research, comments in general had a tendency to be negative rather than positive, or to be influenced by source material such as journal articles, or an original post (cf. in 2.4.2, Anderson et al. 2013). However, this study found an overwhelming proportion of positive comments in comparison to its negative counterpart. It could be that only the few negative comments are remembered by users, as one negative comment and the answers to it may create a more heated debate, and occupy more space than the positive ones. It could also be that since those comments are rarer, they are more easily identified compared to the mass of other comments, each

occurrence making it more likely to make an individual think that there are more negative comments than there really is.

Surprisingly, this hypothesis does not seem to be supported by the data. Of course, a few instances of flaming and heated debate have been found. However, Even though there have been 46 comments seen as obsolete because of being reposts or double posts, the number of negative reactions is of only 7.2 % of the emotions, and politeness has a very high likelihood, constituting 35.9 % (69) of the emotions., even higher than positive answers, which combined, make up for 62.4 % of the emotional reactions. This 7.2 % table appears to be similar to Elliott's 9 % (2013).

I have also made some more findings that are still very important to the project Phonebloks.

Another of those findings may suggest that the use of a picture by a user, often by a thread opener to better support his idea, would draw more attention towards the thread. Indeed, as many as 34 in 41 instances of pictures are part of threads that are "debated", which means it contains 4 comments including the thread opener. This could mean that users would be more inclined to see images than read texts.

In a similar fashion, it seems that threads where members of the Team Phonebloks have posted would be more likely to be seen. If a member who has recognition as being part of the project shows any interest in an idea, an ordinary individual could think this is worth reading, commenting upon or reacting in any manner on the matter, as this idea may be considered and implemented in the Phonebloks final project. After analysis of the data, it appears that this idea is correct, since for example only one instance of Nikola's comments is not part of a topic qualified as rebound.

It was posted on the forum on June 2nd, 2015 that the forum is going to be replaced by another platform to have more people involved in the process of developing Phonebloks. Here is the full message:

> Post 1: "First of, apologies for not being very active in the community lately. We are working on some new exciting things and forgot to check out with our friends every now and then. SORRY! Although we love this place here we feel this community is bigger then just Phonebloks, your ideas are about making things better in general, not limited to phones. We are working hard on this platform and it should be up and running soon, very soon! We are very excited to see what you guys think of it. Stay tuned stay awesome!"

The comments have already been analyzed quantitatively, and have been giving us part of an answer regarding our research question. For example, it is uncommon to find flaming or negative content in the data we are presented with (8% of the data). It is also very likely that emotions are part of the data, but that the majority of characteristics include ideas and debating.

Among the inner members of the forum, very active, a clear pattern seems to be displayed about how they comment on ideas posted by regular forum members. Those comments show positive attitude, and if so, attenuation of the drawbacks of an idea, as well as politeness, and signature to display their authority and provoke approval among regular members. Hereafter are two posts from the same user, who from a regular active member became a forum moderator:

> **Comment 23: Niklas_Hoffmann**: "ok thanks, didnt realise that" (Ideas; Hardware ideas; this has come to my attention, causing people doubt, simple solution)

Now here is a post after he supposedly became a moderator:

> Comment 24: **Niklas_Hoffmann**: "Thank you so much. You really said some things that are fairly important. Reposting is actually a huge problem because people dont look up if there topic is there yet. They could use the search function which easyily shows every post about a topic you look for. Thank you / Team Phonebloks" (Ideas; Hardware ideas; Bloks Plese read IMPORTANT)

Then again, one can wonder if that person really is affiliated with the Team Phonebloks, as comment 23 was posted 17 days earlier and comment 24 only 3 days before the data collection. In these comments, there is no pattern or indication that he is a member of the Team aside from positive emotion, i.e. no signature and no instances of politeness. One can wonder about the reasons why the features in his messages changed, e.g. if he was banned from the Team Phonebloks in between those two comments.

> Comment 25: **Niklas_Hoffmann**: "Way better for lighting close objects. But also for objects far from the lens?" (Ideas; Hardware ideas; Camera Blok)

After scrutinizing the main features of the comments constituting the data recorded on the Phonebloks forum, in four categories, ideas, answers, emotional reactions and other,

we made discoveries towards answering the research question “How is the Phonebloks project perceived by online audiences?”.

5.2 Shortcomings and limitations

However, the fact that a concept that first came about in 2014 – a few months before this thesis started to be written – and that it is a very new technological concept makes it very difficult to address in its entirety. The website hosting the forum, in other words the data this study used, has already been modified with links becoming obsolete and others moving to other locations. Phonebloks also went from being a modular phone initiative to a project that Google developed in cooperation with Phonebloks. Thus, it is only possible to assess a small part in time of the entire modular phone that Phonebloks wants to see being developed.

This thesis, being based on data available online, relies on the fact that human beings would have honestly and freely written those comments on the forum. It is still possible that some of those comments might have been posted by automated posting software, created by humans, which purpose would solely be to trick others into thinking a comment would be legitimate for personal enjoyment. The likelihood of it would however be extremely low, judging by the fact most comments are based upon other comments posted by other users, and such software would require very advanced programming technique to be developed. Using such software on a rather small website would not seem profitable to anyone.

It is furthermore only possible to test user involvement on one issue related to a modular smartphone, with such a data collection method. It seems that the code book being used for the content analysis in this thesis is specific to the emotions being portrayed in this data. For example, this thesis does not contain emotions labeled “Complimentary” used in other code books (Elliott 2013: 27). It is then complicated to develop a seamless theory, as is common when analyzing human interactions.

5.3 Conclusion

After all the findings in the thesis, we can make a summary of what has been discovered. Based on my findings, I can assume several claims.

Firstly, the major part of comments is related to ideas (328 occurrences and answers). The emulation of ideas is also very likely to happen as most ideas posted on the forum are general. This allows more users to respond to them with additional, drawback or balanced comments to add to the debate.

Thus, the quantitative analysis perceptions of the users of the Phonebloks forum lead us to believe that this forum is competent at introducing user involvement for their product development. Secondly, results imply that topics containing an image are most often debated upon in an extended way.

Since at least June 2015 (the first time this post was noticed), a post was displayed in the FAQ (which stands for "Frequently Asked Questions") of the website, thus not in the forum. In this, the Phonebloks team tells us that "Setting up another phone company doesn't have the most impact to reduce e-waste. We believe steering the excisting [sic] industry does", and that "The original concept will never make it to the stores, it was just a concept". Via this finding, we can assess that Project Ara, developed by a branch of Motorola, owned by Google, is the current main partner of project Phonebloks "What is Project Ara [?] / Googles version of a modular phone. We are good friends with them". Project Ara is indeed mentioned many times throughout videos and the forum by officials of the team Phonebloks, so we can assess that many of the ideas crafted on the forum are meant to help Google develop its own version of Phonebloks, while Phonebloks still remains "100 % independent" and free to end this partnership if need be. (Phonebloks 2015a)

According to that discovery, we can wonder how the Ara project, similar to Phonebloks, has been developing, as it is having a limited market pilot for its modular phone this year 2015.

This thesis was aimed at developing understanding about rather new ways of communication mixed with the introduction of new technology and new ways of participating in this technology. With the findings this study presents, one could compare and try to develop a theory as to what parameters bring more friendly behavior between online users with no prior social interaction. This study could also be used in order to develop consensus over what pushes lurkers to comment, for example the wish to make their voices heard, or to share an interesting idea and help get the debate further. Phonebloks, using this thesis, could sum up what users need in their new phones, and see if those changes can be implemented. The perceptions that come with it

have already been studied elsewhere, but the findings that come with them are nowhere near exhaustive. One could delve into content analysis regarding the state of user involvement in other technological projects, such as forums regarding virtual reality, or even the state of modular phones in five years. This thesis can be compared in the future to similar forums and try to draw similarities in online discussion, especially regarding the friendly or unfriendly behavior of the participants.

6 REFERENCES

Anderson A., Brossard D., Scheufele, D., Xenos, M. and Ladwig, P. (2013). The "Nasty Effect:" Online Incivility and Risk Perceptions of Emerging Technologies. *Journal of Computer-Mediated Communication*, Volume 19, Issue 3, pages 373–387, April 2014: http://onlinelibrary.wiley.com/doi/10.1111/jcc4.12009/full (accessed 22.06.2015).

Arthur, C. (2006). What is the 1% rule? http://www.theguardian.com/technology/2006/jul/20/guardianweeklytechnologysection2 (accessed 18.06.2015).

Alexa (2013). The popularity of Google.com: http://www.alexa.com/siteinfo/google.com (accessed 23.01.2014).

Babbie, E. (2012). *The Practice of Social Research* Belmont, CA: Wadsworth.

Bagozzi, R., Dholakia, U. (2002). Intentional social action in virtual communities. *Journal of Interactive Marketing*, 16(2), 2 – 21.

Basset, E., O'Riordan, K. (2015). Ethics of Internet Research: Contesting the Human Subjects Research Model: http://www.nyu.edu/projects/nissenbaum/ethics_bas_full.html (accessed 22.06.2015).

Baym, Nancy K. (2000). *Tune in, log on: soaps, fandom and online community.* Thousand Oaks, CA: Sage.

BBC (2007). Google ranked 'worst' on privacy. http://news.bbc.co.uk/2/hi/technology/6740075.stm (accessed 18.06.2015).

Berelson, B. (1952). *Content Analysis in Communications Research*. New York: Free Press.

Bickart, B. and Schindler, R. M. (2001), Internet forums as influential sources of consumer information. *Journal of Interactive Marketing 15 (3)*, pp. 31–40: http://onlinelibrary.wiley.com/doi/10.1002/dir.1014/abstract (accessed 30.07.2015).

Brown, J., & Reingen, P. (1987). Social ties and word-of-mouth referral behavior. *Journal of Consumer Research*, 4 (3), 350-362.

Brown, S., & Eisenhardt, K. (1995). Product Development: Past Research, Present Findings, and Future Directions. *The Academy of Management Review*, 20(2), 343-378.

Burgess, J. (2008). 'All Your Chocolate Rain Are Belong to Us?' Viral Video, YouTube and The Dynamics of Participatory Culture. In: Lovink, G. and Niederer, S., (ed.) *Video Vortex Reader: Responses to YouTube*, pp. 101-109. Amsterdam: Institute of Network Cultures.

Carroll M., Kotzé P., Van der Merwe A. (2012). "Securing Virtual and Cloud Environments". In I. Ivanov et al. *Cloud Computing and Services Science, Service Science: Research and Innovations in the Service Economy*, pp. 73-90. Springer Science + Business Media. doi:10.1007/978-1-4614-2326-3.

Chee W. (2006). An Online Forum As a Qualitative Research Method: Practical Issues. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2491331/ (accessed 17.06.2015).

Chiaro, D. and Nocella, G. (2004). Interpreters' Perception of Linguistic and Non-Linguistic Factors Affecting Quality: A Survey through the World Wide Web. *META: Translators' Journal*, Volume 49, number 2, p. 278-293.

CMNTY Cloud (2014). http://www.cmnty.nl/ (accessed 23.01.2014).

Cope, M. (2010). Coding Qualitative Data (3rd edition). *Qualitative research*

methods in human geography. http://www.academia.edu/914668/Coding_qualitative_data_3rd_Edition_ (accessed 26.08.2016).

Delphi Forums (2013). Delphi Forums Celebrates 30 Years: http://forums.delphiforums.com/delphihistory/messages?msg=261.1 (accessed 17.06.2015).

Dictionary.com (2015). Definition of "modular": http://dictionary.reference.com/browse/modular (accessed 21.06.2015).

Dota 2 Blog (2011). I Said Good Day Sir!: http://blog.dota2.com/2011/09/i-said-good-day-sir/ (accessed 26.8.2016).

Elliott, L. (2013). What makes a non-professional video go viral: a case study of "I'm farming and I grow it": http://jmc.k-state.edu/graduate/LindseyElliott2013.pdf Kansas State University (accessed 17.06.2015).

E-waste research group (2015). Facts and figures: http://www.griffith.edu.au/engineering-information-technology/e-waste-research-group/facts-figures Griffith University. (accessed 18.06.2015).

Fairphone website (2015). http://www.fairphone.com/ (accessed 09.06.2015)

Google Privacy (2015). Personal data: https://privacy.google.com/ (accessed 13.07.2015).

Granovetter, M. 1973. The strength of weak ties. *American Journal of Sociology* 78 (6), 1360-1380.

Heiskanen, E. & Repo, P. (2007). User Involvement and Entrepreneurial Action. *Human Technology*, Volume 3 (2), pp. 167-187.

Holsti, O. (1968). Content Analysis. In G.Lindzey & E.Aronson (Eds.), *The*

Handbook of Social Psychology (2nd ed.) (pp.596-692), Vol.II, India, New Delhi: Amerind Publishing Co..

Honan, M. (2007). Apple unveils iPhone. http://www.macworld.com/article/1054769/iphone.html (accessed 18.06.2015).

Hsin-His L., Yang-Cheng L., Chung-Hsing Y., Chien-Hung W. (2004). User-oriented design for the optimal combination on product design. *International Journal of Production Economics,* Volume 100, Issue 2, April 2006, pp. 253–267.

iFixit Community Survey. http://ifixit.org/blog/4631/ (accessed 08.05.2014)

iFixit, E-waste ist he Toxic Legacy of our Digital Age. http://ifixit.org/ewaste (accessed 08.05.2014).

iFixit, We have the Right to Repair Everything We Own. http://ifixit.org/right (accessed 08.05.2014).

Internet World Stats (2014). Internet Usage and 2014 Population in North America: http://www.internetworldstats.com/stats14.htm (accessed 17.06.2015).

ITU (2013). Number of phones in the world: http://www.itu.int/en/ITU-D/Statistics/Documents/facts/ICTFactsFigures2013.pdf (accessed 03.12.2013).

Kickstarter (2014). Kickstarter main page: http://www.kickstarter.com/ (accessed 20.01.2014).

Kickstarter About: https://www.kickstarter.com/about (accessed 31.08.2016).

Kyle (2014). Smartphone repairs you can do on Earth Day. http://ifixit.org/blog/6448/smartphone-repairs/ (accessed 08.05.2014).

Kytölä, S. (2013). *Multilingual language use and metapragmatic reflexivity in*

Finnish internet football forums: a study in the sociolinguistics of globalization. Jyväskylä: University of Jyväskylä.

Lasswell, H. (1948). In Bryson, L., ed. The Structure and Function of Communication in Society. *The Communication of Ideas*. New York: Institute for Religious and Social Studies. p. 37.

Marcoccia, M. (2004). L'analyse conversationnelle des forums de discussion. Questionnements méthodologiques. *Les Carnets du Cediscor*, vol. 8, pp. 23-37.

McLellan, J. (2005). Malay-English Language Alternation in Two Brunei Darus-salam On-line Discussion Forums. PhD dissertation, Curtin University of Technology.

Mockus, A., Fielding, R.T. and Herbsleb, J.D. (2002). Two case studies of open source software development: Apache and Mozilla. *ACM Transactions on Software Engineering and Methodology*. Vol. 11 No. 3, pp. 309-46.

Mäenpää, K. (2008). *Consumer perceptions of Internet banking in Finland: The moderating role of familiarity*. http://epublications.bond.edu.au/cgi/viewcontent.cgi?article=1090&context=business_pubs (accessed 26.8.2015).

Ohm, P. (2009). Broken Promises of Privacy: Responding to the Surprising Failure of Anonymization. *UCLA Law Review*, 57: 1701.

Owen, J. (2013). Grim forecast for e-waste as technology trash to top 65m tons by 2017. http://www.independent.co.uk/news/uk/home-news/grim-forecast-for-ewaste-as-technology-trash-to-top-65m-tons-by-2017-9005446.html (accessed 13.05.2014).

Phonebloks (2013a). Phonebloks: https://www.youtube.com/watch?v=oDAw7vW7H0c (accessed 18.06.2015).

Phonebloks (2013b). Phonebloks – The next step:

http://www.youtube.com/watch?v=BaPf4ZIbDVM (accessed 22.01.2014).

Phonebloks (2013c). Phonebloks – Hello Industry!

https://www.youtube.com/watch?v=AFTwthNrL_w (accessed 06.05.2014).

Phonebloks (2015a). Frequently Asked Questions: https://phonebloks.com/en/faq

(accessed 02.06.2015).

Phonebloks (2015b). News:

https://community.phonebloks.com/news/overview/31/New-

platform-coming (accessed 07.06.2015).

Phonebloks (2015). Team: https://phonebloks.com/en/about (accessed 18.06.2015)

Phonebloks blog (2014). What is planned obsolescence:

http://blog.phonebloks.com/post/70397678723/what-is-planned-obsolescence-here-at (accessed 26.08.2016).

Reuters (2009). Who are the world's biggest polluters?

http://www.reuters.com/news/pictures/slideshow?articleId=USRTXRKSI#a=1 (accessed 08.05.2014).

Ritsert, J. (1972). *Inhaltsanalyse und Ideologiekritik. Ein Versuch über kritische*

Sozialforschung. Frankfurt: Athenäum.

Schreier, M., Fuchs C., & Dahl, D. (2012). The Innovation Effect of User

Design: Exploring Consumers' Innovation Perceptions of Firms Selling Products Designed by Users. *Journal of Marketing.* Sep. 2012, Vol. 76 Issue 5, p18-32.

Shiels, M. (2003). A chat with the man behind mobiles:

http://news.bbc.co.uk/2/hi/uk_news/2963619.stm (accessed 26.08.2016)

Shin, S., Cunningham, J., Ryoo, J., & Tucci, J. E. (2009). Authentication and

protection for e-finance consumers: The dichotomy of cost versus ease of use. *International Journal Electronic Finance*, 3(1), 31-45.

Silbermann, A. (1974). In König, R. (Hg): *Handbuch der empirischen Sozialforschung*. Bd. 4. Stuttgart: Enke 1974, pp. 253-339.

Thompsen, P.A. (1994). An Episode of Flaming: a Creative Narrative. *ETC: A Review of General Semantics 51: 51-72.*

Thunderclap (2014). Phonebloks project: https://www.thunderclap.it/projects/2931-phonebloks (accessed 20.01.2014).

Timetoast (2015). History of Internet Forums: http://www.timetoast.com/timelines/history-of-internet-forums (accessed 15.07.2015).

Toral, S., Martínez-Torres, M., Barrero, F. & Cortés, F. (2009). An empirical study of the driving forces behind online communities. *Internet Research* 19 (4), 378-392.

Wardlaw, J.M. (2010). Advice on how to write a systematic review. http://www.bric.ed.ac.uk/documents/advice%20on%20how%20to%20write%20a%20systematic%20review.pdf (accessed 19.5.2014).

Wauters, R. (2009). Kickstarter Launches Another Social Fundraising Platform: http://techcrunch.com/2009/04/29/kickstarter-launches-another-social-fundraising-platform/ (accessed 20.01.2014)

Weber, R.P. (1990). Basic Content Analysis. *Quantitative Applications in the Social Sciences*, Issue 49. USA: Sage Publications.

WEEE CRT and Monitor Recycling. http://www.executiveblueprints.com/aboutweee/WEEECRTandMonitor.htm. (accessed 13.05.2014).

W3schools.com (2016). Browser Statistics and Trends: http://www.w3schools.com/browsers/browsers_stats.asp (accessed 27.08.2016).

Xu, J., Gao, Y., Christley, S. and Madey, G. (2005). A topological analysis of the open source software development community. *Proceedings of the 38th Hawaii International Conference on System Sciences*. Hawaii, IEEE Computer Society Press, Los Alamitos, CA.