Increasing User Engagement in Online Services

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– Thomas

Abstract

Recent technological innovations in open source software and cloud computing have driven the cost of launching a software startup down to a fraction of what it was only few years ago. But as software products increasingly live in the cloud and rely on ongoing customer relationships to be profitable, understanding what drives long-term user engagement is paramount. The objective of this thesis is to shed light on this topic by answering the research question "How can user engagement be increased in SaaS and Social products?"

Through a multidisciplinary literature review and an exploratory thematic analysis of seven software startups with SaaS and Social products (e.g. social media, communities, social games), an integrated model for increasing user engagement in such products is developed. Although there are differences observed between SaaS and Social products, they are limited to a few areas such as network effects and the importance of a reliable service, rendering any effort to develop two separate models unavailing.

It is demonstrated that various measures aimed at increasing ability, motivation, and triggers are central in increasing engagement, but also that they vary throughout a user's relationship with a product. Some recurring and important measures identified include an effective onboarding process, timing of triggers, storing value, integrating with key industry players to reduce lock-in, and using data in unique ways. From these findings a three stage model, consisting of activation, manual retention, and automatic retention is proposed.

More research and experimentation is needed to empirically verifying the proposed model – and yet it is not unlikely that the findings are relevant to other online and digital services requiring ongoing usage. Finally, practitioners attempting to implement the findings should do so in a responsible manner, without exploiting their users.

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1 Introduction

1.1 Motivation

In the current economic climate, a career as a tech entrepreneur is becoming increasingly attractive. While more and more graduates choose to start a company instead of seeking employment (in part because of the current economic downturn) (Allen, 2014), it is becoming increasingly cheap to start a tech startup. Especially software based companies have become a lot cheaper and easier to start today compared with only ten to fifteen years ago.

First, open source software helped to reduce computing costs about tenfold (Suster, 2011). Next, the advent of cloud computing, in particular the launch of Amazon Web Services (AWS) in 2006 ("About AWS," n.d.), further drove down *pre launch* and *operating* costs for software startups. This has in turn enabled almost anyone with sufficient technical skills to create and launch a tech startup with an online product for close to no capital (Gentolia, 2011; Suster, 2011). Compare this with *pre launch* costs of up to hundreds of million dollars for some e-commerce sites in the dot com era (Butler & Tischler, 2015), or at the very least costs upwards of a million dollars (Gentolia, 2011).

And with the increasing ease and attractiveness of launching a software startup, it is no wonder more (especially young) people flock to the industry today. But with growing numbers of new products entering the market daily, it is not necessarily becoming easier to succeed. It is one thing to build and launch an online product or service, but something entirely different to build a successful business around it. Aside from good management and operations, there are three things that are paramount for creating a successful startup: acquiring users, making sure the users are engaged so they can be retained, and obviously figuring out a way to earn money from those users ("Top 3 Priorities for Startups," 2013).

Engagement and retention are also important for other online services, e.g. social networks, online communities, and social games. In this paper, the term *social products* is used to refer to all such products where the main purpose is to facilitate various forms of social interactions over time. Even though users often do not pay for access to a social product directly, their usage typically generates ad revenue for the company. The more a user interact with the product, the more ad revenue can be generated. If a user stop using the product, this revenue disappears.

And SaaS and Social are becoming increasingly important markets. For example, Forrester estimates that yearly SaaS revenues will be reach $106 billion by 2016 (Columbus, 2015). And social networking is becoming increasingly mainstream as well, with more than 80% of people aged 16 - 74 using social networks in some European countries, with the EU average now reaching 46% (Eurostat, 2014). The importance of these markets are also demonstrated by the appearance

of many SaaS and Social media companies on the list of *startup unicorns*, i.e. private, venture funded companies with a valuation of more than $1 billion. Current examples include the SaaS startups Evernote and Slack with valuations of $1.2 and $1.1 billion respectively, as well as Social media startups Snapchat and Pinterest with respective valuations of $10 and $5.1 billion ("The Unicorn List," 2015).

With the long-term success of both SaaS and Social products being highly dependent on user engagement levels, it is beneficial for software entrepreneurs to understand how long-term user engagement can be increased. Thus, the aim of this thesis is to answer the following research question:

1.2 Research Question

"How can long-term user engagement be increased in SaaS and Social products?"

1.3 Comparing SaaS and Social Products

Although *SaaS* and *Social products* (defined in this paper as online services facilitating social interactions over time, e.g. social networks, online communities, and social games) share a lot of important characteristics in terms of user engagement and its importance, there are certain differences that should be made clear at this point.

Products of the SaaS variety typically solve a specific problem, often related to a business function, e.g. CRM or email marketing. It is common practice to charge monthly or yearly subscription fees for access to SaaS products, but it is not always the case. A *freemium* model (i.e. offering a limited version of the software free of charge, and charging for more advanced versions of the product) has been adopted by many SaaS providers.

Social products are normally not designed to solve tangible business functions, but rather provide some sort of entertainment, provide inspiration, facilitate social interactions and the like. And while there are exceptions, most social products to not charge for access to the service. Instead they often rely on advertising to provide them with revenue over time. The more detailed data on users they manage to collect, the more effective and targeted advertising opportunities they can offer advertisers – in turn enabling them to command higher prices for the ads they deliver.

Although the business models for SaaS and Social products are quite different, they both benefit from frequent and meaningful use and users that continue using the product over time. Of that reason this paper is not analyzing and discussing SaaS and Social products separately, but rather highlighting any notable differences between the two whenever relevant.

1.4 Delimitations

The purpose of this section is to briefly outline the scope of the thesis in order to manage any expectations the reader may have. These issues are discussed in more detail in the methodology chapter.

Firstly, while briefly discussed in the motivation section, it is important to note that this thesis is not exploring issues relating to *growth* and *monetization*. Rather it is focusing on how startups can increase *user engagement* in their SaaS or Social products.

Secondly, this paper is not attempting to empirically and quantifiably verify any findings. And it is also outside the scope to measure user engagement of any products or services. Instead it relies on the experiences shared by founders of SaaS and Social startups.

Thirdly, while some SaaS startups might target large enterprises with complex acquisition processes and requirements, potentially resulting in custom developments and long-term contracts, this paper is only focusing on startups targeting consumer as well as small to mid-sized businesses with less complex requirements and purchase processes.

It is also worth noting that the geographic scope of the thesis is limited to startup companies based in what is normally considered developed regions and countries, including North America, Europe and Israel. Their products may be marketed globally, however.

1.5 Definitions

In order to ensure accurate and consistent understanding of some recurring terms, those are explained briefly here.

In this thesis, the term *startups* is really referring to *technology* or *software startups*. This definition excludes consultancies or any other companies not building and marketing a technology based product. When discussing the case companies, the the terms *startups* and *companies* are used interchangeably.

Also the terms *product* and *service* are used interchangeably throughout the paper. The terms *online product* or *online service* both refer to products or services such as mobile applications and software accessed through a browser or any other digital device. As long as it connects to a server to store or sync data, or to communicate with other users, it qualifies as an online service.

1.6 Thesis Outline

This introduction chapter is wrapped up by briefly outlining what to expect from each of the following chapters. First, the purpose of the methodology chapter is to review the various choices

that were made in terms of high level research philosophy, approach and design, and their implications for specific techniques and methods adopted to collect and analyze data.

The literature review presents three distinctly different research areas' perspectives relevant to increasing user engagement in online services. Next, in the analysis chapter, the major findings from the interview and analysis process are presented.

Subsequently, the findings and theories are further discussed in the context of increasing user engagement in SaaS and Social products. The chapter ends with the presentation of an integrated model developed on the basis of the analysis. Finally, the paper ends with a few concluding remarks regarding further research and the implications of the paper and the proposed model.

2 Methodology

It is important that researchers make their assumptions explicit (Braun & Clarke, 2006), which is the raison d'être of this chapter. It outlines and discusses the various choices made in terms of methodology. It is structured in a logical, outside-in way, meaning that it starts by describing the most basic research philosophy and works its way through approaches, design, and finally the specific techniques used when analyzing the data and developing the paper.

2.1 Research Philosophy

The choice of research philosophy brings with it a set of assumptions about *ontology* (nature of being and reality), *epistemology* (views on what knowledge is) and *axiology* (the role of values in research) . The research philosophy adopted in this paper is that of a *critical realist*. Realism essentially argue that reality exists independently of the human mind. *Critical realists* (as opposed to *direct realists*) also argue that what we perceive are mere sensations and images of something, not how it exists directly in the real world (Saunders, Thornhill, & Lewis, 2009). In other words, our mind is often deceived by illusions – yet those illusions are rooted in actual reality.

By adopting the critical realist mindset, the distinction between what is observed and the generative forces that lie behind it is recognized. That is valuable in showing that knowledge is a product of social context, and by acknowledging that the way that both interview subjects and researchers attach meaning to their experiences is influenced by such factors – but nevertheless rooted in objective reality (Braun & Clarke, 2006).

2.2 Research Approach and Design

Researchers have primarily two research approaches available to them, the *deductive* and the *inductive* approach. The choice of approach helps informing the decisions relating to research design (Saunders et al., 2009). This does not mean that it is impossible to combine deductive and inductive approaches, though.

And in developing this paper that is exactly what was done. The selected *research design* is *thematic analysis*, which "is a method for identifying, analysing and reporting patterns (themes) within data" (Braun & Clarke, 2006, p. 79). Still, thematic analysis can be predominantly *inductive* or *theoretical*. The inductive form for thematic analysis implies that the developed themes are mostly grounded in the data itself, and less so in the researcher's theoretical interests. The theoretical form, on the other hand, is driven more by the researcher's particular analytical interests – usually resulting in a more focused analysis on a particular aspect of the collected data. (Braun & Clarke, 2006)

Of inductive and theoretical thematic analysis, the research strategy for this paper leans more towards the latter. This has implications for the selection of interview questions and the way the data is analyzed, e.g. coding data with the specific research question in mind. By being a flexible strategy able to generate unanticipated, yet generally accessible insights, and highlight commonalities and differences across the data (Braun & Clarke, 2006), it was seen as a suitable research design when trying to gain an understanding for how software startups can increase the levels of user engagement for their products.

As a predominantly exploratory study, this paper primarily relies on qualitative data gathered through *semi-structured interviews*. As the collection and analysis of descriptive and explanatory data falls outside the scope of this paper, adopting additional methods (e.g. surveys) is of lesser importance. Also, due to the natural time restrictions for a master's thesis the conducted research is cross-sectional. Still, the interviews involved the participants being asked to recall and describe real life events that had impacted how user engagement had developed over time – providing something akin to a critical incident perspective (Saunders et al., 2009).

For any research it is important to consider how various choices impact the validity and reliability of the study. What to expect in terms of validity depends on the type of study being conducted. When it comes to exploratory research (as opposed to confirmatory research), the most important measures to ensure good validity include using different methods to study the cases or groups and looking for recurring evidence where one attempts at generalize. It is important to note that in such research, accurately describing the study subject or groups is the primary objective, not to accurately describe the phenomenon. (Stebbins, 2001)

2.3 Techniques and Procedures

Based on the adopted research philosophy, approach, and design, *semi-structured* interviews emerged as the best suited primary data collection technique to answer the posed research question. In an effort to minimize cultural bias and improve the *external validity* of the findings, it was a goal to interview companies from multiple geographical areas. That decision in turn resulted in a sample of case companies located from Vancouver in the west to Tel Aviv in the east, making it infeasible to conduct the interviews in person. Instead, video conferencing was utilized. Given the need for a reliable and high performing internet connection both for the interviewer and the interviewee to prevent technical problems (potentially making it challenging to communicate effectively, losing essential information in the course of the interviews and consequently from the transcripts), it followed logically to avoid interview subjects in less developed areas of the world.

Purposive sampling was used for a range of reasons. First, establishing trust between interviewer and interviewee is important, so the interviewee feels comfortable sharing potentially sensitive information with the interviewer (Saunders et al., 2009). To ensure a sufficient level of trust, all

the selected interviewees knew the interviewer to some extent before the interviews took place. Four out of seven interviewees had met the interviewer *in real life* previously, while the remaining three had interacted with the interviewer online through email and social media.

Other reasons for using purposive sampling included ensuring a sensible number of both SaaS and Social products in the study, in different stages of their development, and with different levels of funding – in addition to the geographical considerations outlined above. A final consideration was that the interview subject should have the needed overview and experience within the company to accurately and in a meaningful way respond to questions regarding strategies and experiences for increasing user engagement in their respective products over time. This was ensured by interviewing one of the original founders in every company, which was often (but not always) the CEO.

Product (Company)	Interviewee	Time & length	Founded, launch & funding	Location & team	User base
Fun Run & Fun Run 2 (Dirtybit) Social Game	**Nicolaj Broby Petersen**, co-founder & board member	Feb 4 28 min	F: Aug 2011 L FR: Sep 2012 L FR2: Dec 2014 Bootstrapped	**Bergen**, Norway 10 people	62M total downloads, total MAU in the lower tens of millions, DAU about 10-20% of MAU
Goodbits (Brewhouse) SaaS	**Kalvir Sandhu**, CEO & founder	Feb 5 52 min	F: 2013 L: June 2014 Bootstrapped	**Vancouver**, Canada 7 people	2000 registered users, 223 activated users, 208 MAU
Tictail SaaS	**Carl Waldekranz**, CEO & co-founder	Feb 6 39 min	F: May 2011 L: May 2012 >$10M funding	**Stockholm**, **New York City** 42 people	More than 70K online stores running on Tictail
Fitbay Social	**Christian Wylonis**, CEO & founder	Feb 6 34 min	F: 2013 L: June 2014 $2.4M funding	**New York City**, **Copenhagen** 16 people	Between 100K and 1M users, relatively high engagement for a social network
MaterialUp Social	**Matthieu Aussaguel**, founder	Feb 8 32 min	F: Dec 2014 L: Dec 2014 Bootstrapped	**Berlin**, Germany 2 people	110K unique monthly visitors, 6900K email subscribers with 65% open rate
ReadingPack Social	**Yuval Shoshan**, founder	Feb 10 37 min	F: June 2013 L: Sep 2013 Bootstrapped	**Tel Aviv**, Israel 1 person + volunteers	Thousands registered, hundreds weekly active
Timely SaaS	**Mathias Mikkelsen**, CEO & founder	Feb 13 33 min	F: Summer 2012 L: Dec 2013 Bootstrapped + $150K grant	**San Francisco**, distributed team across the world 9 people	>100K signups, about 10% active users

Table 1: Interview subjects and their companies, in the order of the interviews being conducted.

Due to the importance of methodological transparency, and in order to enable other researchers to make up their mind about the *reliability* of this paper, the two following subsections are detailing the exact process used to conduct this study.

2.3.1 Conducting the Interviews

The scheduling of all the interviews took place via email, and the interviews were said to last *up to an hour*. At least one day in advance of the interview, all subjects were sent a list of topics and potential questions. This enabled the subject to come to the interview mentally prepared, ideally resulting in a better discussion about the topics.

At the beginning of each interview the subjects were given assurances that no information that surfaced in the interview would be published without their approval, and promised an opportunity to read through the transcribed interviews afterwards to correct any mistakes or misunderstandings (in order to reduce the impact of *observer error*), and to give a final approval for the information to be published. They were also informed that the interview was being recorded.

In order to prevent loss of interview data in the case of technical or human errors, all interviews were recorded (including video), both *server-side* and on the interviewers computer. Doing the interviews via video conference allowed interviewees to be in their office – an atmosphere where they would feel safe and were unlikely to be disturbed. One interviewee was on a train between New York and Boston due to scheduling concerns, however, but it did not significantly impair the flow and ease of communication. The interviews included both open ended and probing questions, in order to let new knowledge and themes surface, as well as to dig deeper when required. Many questions were also rooted in the theoretical concepts surfaced in the literature review, in accordance with the principles of theoretical thematic analysis.

2.3.2 Performing the Analysis

After the first interview was conducted, the transcription process was initiated. For the most part the interviews were transcribed before the next interview was conducted. Unless multiple interviews were scheduled for the same day, that is. This allowed for some initial familiarization with the data and a few ideas to emerge, which subsequently could be explored in the remainder of the interviews.

When all interviews had been conducted, transcribed, and reviewed by the interviewees, the coding process commenced. Using the computer software ATLAS.ti, initial codes were developed and subsequently refined through multiple passes of coding the transcribed interviews. After the first pass through the transcriptions, initial groups of codes were created and color coding was used to aid visual identification of the various themes. The initial naming of codes were based on a combination of the literature review and *in vivo* coding. Next, a network of codes was created, representing both the theoretical background as well as new information surfaced through the analysis, linking codes together based on the researcher's understanding of the various elements (see appendix 8.3). This network was helpful for understanding how all the codes, themes, and

theories actually fit together, and formed the initial basis for developing the written analysis. A table with some of the most significant themes coming out of the coding process is also available (see Appendix 8.5).

Together with the insights from the coding process, the analysis and discussion chapters were written based on own experience and familiarization with the respective products (paying special attention to the elements the interview subjects had highlighted). Also online searches for certain concepts that had surfaced in the interviews, leading to relevant industry blogs, were helpful in completing the analysis – providing additional perspectives for the different themes.

The development of the integrated model proposed the discussion chapter (see Section 5.2) was a gradual process taking place throughout the analysis. The work started in the late stages of developing the previously mentioned network, and continued throughout the writing process. Elements were added, removed, and rearranged based on how the analysis progressed and which themes emerged as the most influential – until finally reaching its current form at the very end of the analytical process.

3 Literature Review

This chapter is an attempt at presenting relevant literature for understanding what affects long-term user engagement and retention in digital services, particularly in the case of SaaS and Social. First, a definition of engagement is chosen. Next, an overview over current trends is presented, in turn leading to the presentation of a set relevant theoretical views that are being used as a backdrop for the analytical process.

3.1 Definition of Engagement

User engagement has been defined in a wide range of ways in the academic literature. According to (Lehmann, Lalmas, Yom-Tov, & Dupret, 2012) there are three main ways of categorizing approaches to measuring user engagement in the context of an online service:

1. Self-reported engagement
2. Cognitive engagement
3. Online behavior metrics

One big drawback of the first group is reliance on user subjectivity, among other things. The second group includes tracking activities such as measuring eye movement, heart rate and so on while users are completing specific tasks. While reliant on objective measures, it is only suitable for studying a limited number of interactions up close.

The third approach with online behavior metrics, however, can be used to study the depth of engagement for millions of users. Examples of such metrics include session lengths, frequency of use, click through rates for certain functions, and so on.

These metrics can not explicitly explain why users are interacting with a service, but they function as a proxy for user engagement. More frequent and longer, more meaningful use means a user is more engaged. If more than half of your registered users are logging in daily to interact with a product, it is a clear signal that users are engaged. Although the data does not directly reveal user motivations, methodical experimentation by varying certain elements of the product (such as navigation elements, functionality) and looking at the change in the metrics can reveal implicit insights into why users interact with the product. (Lehmann et al., 2012)

In the software industry the definition of user engagement is usually similar to the third approach above. From the a technology startup's perspective, having high levels of user engagement typically means how often and long users are interacting with the software. Metrics such as Daily Active Users (DAUs), Weekly Active Users (WAUs), Monthly Active Users (MAUs), and average session length are common. This definition of user engagement is the one adopted in this thesis. In the

academic literature this form for engagement has sometimes been called *retention* or *loyalty* (Lehmann et al., 2012).

3.2 Current Trends

While adopting online behavior metrics (OBM) as the main measure of user engagement, this section reviews what current academic research has shown to be impacting this form for user engagement. Vassileva (2012) has a comprehensive review of how various research areas and models can relate to motivation of participation in social applications, which is a good starting point.

Creating social products using incentives based on classical economic theories assuming that all users are utility-maximizing is usually too simplistic to work in the real world (Vassileva, 2012).

A behavioral economics view of motivation, on the other hand, view people as irrational. The ideas from behavioral economics has in later years helped new theories for how to increase user engagement in social applications emerge, such as *Gamification* and related approaches. (Vassileva, 2012)

One reward approach based on this behavioral economics view, which is meant to encourage user participation, is the use of *reputation* and *status* within an app or community. Status can be achieved by your own actions in isolation, while reputation is a function of what other users think about you and your contributions. For example, the number of followers you have on Twitter is an example of reputation. Identifying what kind of reward mechanism to use in a specific community is not straightforward, however. (Vassileva, 2012)

According to Vassileva (2012), gamification is increasingly being criticized by industry pundits and bloggers for giving meaningless points for trivial actions, leading only to short term motivation. The introduction of extrinsic rewards may very well remove intrinsic joy of use or participation. Nevertheless, it is not well understood why certain game mechanics work, and others do not, in various contexts.

The field of *Persuasion* or *Captology*, introduced by B. J. Fogg (2002), is the study of how computing devices and software can be used to influence and change people's behaviors and attitudes. According to Vassileva (2012) most researchers in this field are focusing on changing people's behaviors for their own benefit, but with the proliferation of social networks and more personal computing devices (smartphones, wearables) the possibilities for alternative applications seem greater than ever. In particular Vassileva (2012) highlights the convergence between design of *persuasion systems* and *incentive mechanism design* as a future trend.

The next section and its subsections are identifying and looking more closely at relevant theories for sustained user engagement.

3.3 Theoretical Views

Although all the theories presented in this section relates to the research question in some way, none of them provide sufficient insights to by itself propose a satisfactory answer. Therefore, as previously stated, the uncovered literature is *not* serving as models to be deductively verified. Rather, the different views provide a starting point of complementary perspectives when analyzing data collected for the paper through theoretical thematic analysis.

3.3.1 Persuasive Technology View

3.3.1.1 Fogg Behavior Model

The first of these groups of theories is related to persuasive technology and behavioral economics. The core model being utilized in this section is the Fogg Behavior Model (FBM) (Fogg, 2009). In brief, the FBM dictates that for any behavior to take place, three elements need to be present: A *trigger*, sufficient *motivation* and the *ability* to do the desired behavior. If any one element is not present, the desired behavior will not take place.

Although it is outside the scope of this paper to explicitly measure actual user behavior, the graphical representation of FBM is included here for clarity. It illustrates that both ability and motivation of the user need to be sufficiently high in order to reach the right side of the *action line*. If those elements are in place, a trigger will result in the person taking action. If either or both ability and motivation are not sufficiently high enough (staying on the left side of the action line), a trigger will not result in the person taking action.
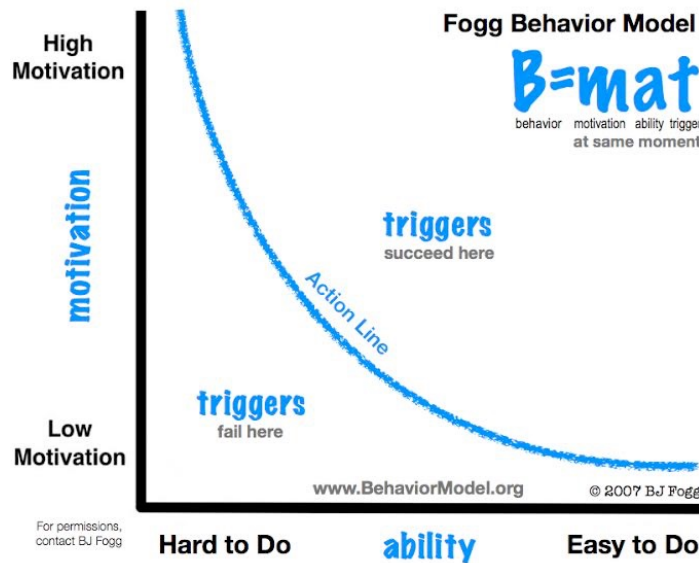
Figure 1: Graphic illustration of the Fogg Behavior Model (Fogg, 2007)
Reproduced with permission.

To help illustrate this, consider the following example. Think back to the last time you missed a phone call. Maybe you knew it was a telemarketer calling you which you did not want to talk to, so you decided not to pick up. That is *lack of motivation*. Or maybe you were in an important client meeting where picking up the phone would be inappropriate. That is *lack of ability*. Or maybe the phone simply was put on silent, so you did not notice that someone was calling. You might even have wanted to speak to the person in the other end, and been in a situation where you could easily have picked up the phone. But thanks to the *lack of a trigger* you missed the call.

Because this paper is looking at increasing user engagement *over time*, it is not focusing on single time use of a product, but rather how to make users start using a product in the first place and subsequently bring them back over time. In the *Behavior Wizard (Fogg & Hreha, 2010)* the authors extend the FBM outlined above and present a framework for influencing users to do a specific behavior in a range of situations.

They outline 15 types of behavior change, that are summarized in Figure 2. There are two dimensions in this model: The five kinds or *flavors* of behavior change (such as doing a new behavior, or increasing, maintaining or decreasing or stopping a current one) and the three durations of behavior: Dot (one time behavior), Span (doing a behavior for a certain time) and Path (doing a behavior indefinitely from now on).

	Green behavior	Blue behavior	Purple behavior	Gray behavior	Black behavior
	Do new behavior, one that is unfamiliar	Do familiar behavior	Increase behavior intensity or duration	Decrease behavior intensity or duration	Stop doing a behavior
Dot behavior is done one-time	**GreenDot** Do new behavior one time *Install solar panels on house*	**BlueDot** Do familiar behavior one time *Tell a friend about eco-friendly soap*	**PurpleDot** Increase behavior one time *Plant more trees & local plants today*	**GrayDot** Decrease behavior one time *Buy fewer bottles of water now*	**BlackDot** Stop doing a behavior one time *Turn off space heater for tonight*
Span behavior has specific duration, such as 40 days	**GreenSpan** Do new behavior for a period of time *Carpool to work for three weeks*	**BlueSpan** Do familiar behavior for a period of time *Bike to work for two months*	**PurpleSpan** Increase behavior for a period of time *Take public bus for one month*	**GraySpan** Decrease behavior for a period of time *Take shorter showers this week*	**BlackSpan** Stop a behavior for a period of time *Don't water lawn during summer*
Path behavior is done from now on, a permanent change	**GreenPath** Do new behavior from now on *Start growing own vegetables*	**BluePath** Do familiar behavior from now on *Turn off lights when leaving room*	**PurplePath** Increase behavior from now on *Purchase more local produce*	**GrayPath** Decrease behavior from now on *Eat less meat from now on*	**BlackPath** Stop a behavior from now on *Never litter again*

Figure 2: Fogg's Behavior Grid (Fogg & Hreha, 2010, p. 119)

This paper is focusing on how to create and maintain user engagement that will last over time. That means the focus is on Path behaviors, specifically *Green*, *Blue* and *Purple Path* behaviors.

Green Path relates to new users. The main steps are to (1) boost *motivation* (if needed), (2) enhance the user's *ability* by making it easy to commit, and (3) to issue a *trigger* when (1) and (2) are optimal. (Stanford Behavior Wizard Team, 2010b)

Blue Path relates to users that have started using the software, and that we want to continue using it over time. All three things (motivation, ability, and trigger) still needs to be present together as a habit is being created and strengthened. At this point step-by-step instructions (ability) and increasing motivation is not longer the main focus (it should already be established as the user got to know the software). Rather the challenge lies in timing triggers so that they happen when both ability and motivation with the user is high, (Stanford Behavior Wizard Team, 2010a) e.g. no phone calls while the user is in a meeting.

Purple Path relates to users that are using the software less than they should be, e.g. a user might be using a product occasionally, or only certain functions. In this case at least one of the 3 factors of the FBM needs to be altered to increase behavior. Strategies might include more and better timed triggers leading to the desired behavior, increasing ability by making the behavior easier to do, and increasing motivation by using intrinsic and extrinsic motivators. (Stanford Behavior Wizard Team, 2010c)

Since technology (especially mobile technology) can be very habit forming (Oulasvirta, Rattenbury, Ma, & Raita, 2011), there is reason to believe that technology devised with repetitive use in mind has the potential to enable habit formation if designed correctly. Note that it is not the goal of this paper to measure habit formation directly, but rather to explore whether products designed according to the principles uncovered through the analysis are likely to create long-term engagement.

A study performed on 2004-2005 usage data of Nokia 6600 Symbian first generation smart phones clearly showed that turning on *awareness cues* or triggers halfway through the test period significantly increased use of the devices. Particularly brief sessions to check for new activity and information skyrocketed. (Oulasvirta et al., 2011)

3.3.1.2 The Hook Model

While the FBM mainly was designed with the perspective of an end user trying to establish healthy habits, recently there have been attempts to look at the issue of habit formation from a product designer's perspective instead. One attempt that has got a lot of attention in the tech industry is Nir Eyal's Hook Model.

In short, the Hook Model dictates that product makers should take users through a loop consisting of four basic steps (*trigger*, *action*, *variable reward*, *investment*) and do it with enough frequency to create a habit. It builds on the FBM in the sense that the FBM is the primary part of the two first steps, *trigger* and *action*. (Eyal, 2014)

By assuming that habitual use corresponds to user engagement, it is clear that a model explaining how to build habit-forming products is of relevance when attempting to answer the research question.

In Eyal's model triggers are separated into *internal* and *external* triggers. External triggers are explicit triggers for a person to take a certain action. For example a ringing phone is an external trigger urging a person to pick it up. Internal triggers are different. They do not explicitly tell a person what to do, but can be a certain situation (e.g. walking into a grocery store) or mental state (e.g. boredom) that through a mental association in the person's mind reminds her to take a certain action. Examples of common internal triggers can be boredom triggering a person to turn to Youtube, or a person feeling an urge to take out a shopping list when entering a grocery store. Forming such associations in a user's mind is the holy grail for product designers, according to Eyal, and has the potential to create a strong, long-term habit. (Eyal, 2014)

The *action* step describes the same as the FBM, that in order for a user to take a specific action, motivation, ability and a trigger must be in place. In the *variable rewards* step, the user should get what she came for (if she was bored, she better be entertained), but in a way where it does not

become predictable – a bit of mystery keeps things interesting over time. That is why the rewards need to be *variable*. (Eyal, 2014)

Lastly, in the *investment* step a user should somehow *store value* in the product – for example data, social followers and so on. The investments can also be used to *load the next trigger*, so that the loop can start over. For example if a user posts a funny kitten picture on a social network (i.e. an investment), the act of someone commenting on the picture can prompt a great external trigger e.g. through sending the user an email saying a friend commented on their cat photo. It is not unlikely that is enough to bring the user back to the product in order see what her friend wrote. (Eyal, 2014)

See Appendix 8.2 for a slightly more detailed explanation and a graphical representation of the Hook Model.

3.3.1.3 Humanizing Computers

Another relevant find from the persuasive technology literature is that common psychological principles between humans (e.g. reciprocity to flattery) tend to hold in the relationship between humans and computers as well (Fogg, 2002; Fogg & Nass, 1997).

The more human a computer seems (i.e. how many social cues are in use), the more powerful the effect. But according to Fogg (2002) these cues should be used with caution, as too many cues may lead to annoyed or angry users. Simply put: the more social cues, the larger your bet.

It is also not clear if the potential positive effects would be as pronounced today (in a time where most people have gained more experience using computers and perhaps become a bit desensitized to such tactics) compared to when the study was first conducted.

3.3.2 Network Economics View

While the persuasive technology view is very helpful when attempting to understand a person's relationship with a single product, it is also important to recognize that a product does not operate in a vacuum. Consequently, this section is devoted to the network economics view, in an attempt to shed light on how product makers can deal with external forces when trying to increase their long-term user engagement.

Information Rules (Shapiro & Varian, 1999) is an important piece of work for understanding some of the prominent economic effects that are present in the age of information technology. Especially network externalities, the effects of lock-in, and resulting switching costs are important for this paper. In the remainder of this subsection, these topics are being brought up in that same order.

First, unlike in more traditional industries, the information economy often see temporary monopolies rather than oligopolies. There is often what we refer to as a *winner takes all market* or

close to that. The main difference is that while the industrial economy was largely driven by *economies of scale*, the information economy is to a much larger degree driven by the *economics of networks*. (Shapiro & Varian, 1999)

These network effects or *demand side economies of scale*, as some people call them, work very differently from traditional *supply side economies of scale*. Instead of giving large producers of goods cost advantages, deterring new entrants into the market, these kinds of markets are heavily affected by network externalities and *positive* feedback. (Shapiro & Varian, 1999)

Network effects mean that the value of a product or service increase with the number of people that are in the relevant network. For example, consider the phone. If you are the only person in the world with a phone, it has no value. If your best friend also has a phone, each of those phones suddenly has quite a lot of value. And if nearly all people have phones, every single phone will be even more valuable as it can be used to reach almost anyone. In essence, network externalities mean that for every new user of a product, the value of the product increases for all other users. (Shapiro & Varian, 1999)

In a market with demand side economies of scale there is *positive feedback* rather than *negative feedback*, which is the norm in other markets. Simply put, positive feedback means that the strong gets stronger and the weak gets weaker (Shapiro & Varian, 1999). This effect leads to winner takes all or *tippy* markets, as shown in Figure 3.
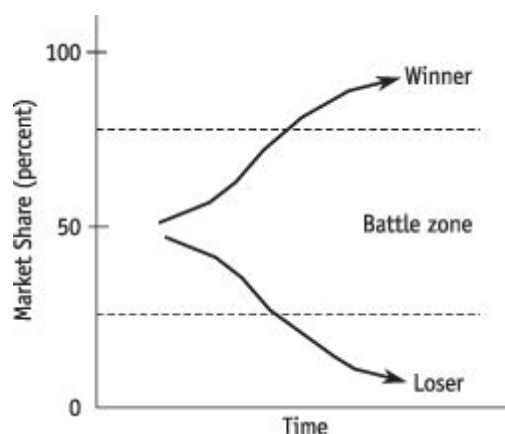
Figure 3: Positive Feedback (Shapiro & Varian, 1999, p. 177)
Reproduced with permission from the authors.

One fairly recent example of such a market is Facebook vs MySpace. Once Facebook's eventual dominance was clear, users had no reason stick around with MySpace. If a product maker finds itself challenging a market leader, it has a few options for how to proceed. The first choice is whether to make the product backwards compatible with the current leader and offering an easy migration path (usually with compromises in performance - known as the *evolution strategy*), or

to offer a completely new, superior technology that does not work with the product you are challenging (*revolution strategy*). (Shapiro & Varian, 1999)

On the surface this might look like solely an issue for customer acquisition, which is outside the scope of this paper. However, since the different strategies necessarily will lead to different kinds of users of a product, as well as impacting how easy it will be for those users to adopt the product, the choice of strategy also has implications for user engagement.

By using the revolution strategy, the norm is to be attacking the high end of the market first (like the CD appealed to audiophiles first, before gradually taking over the mainstream market) (Shapiro & Varian, 1999). This is very similar to the *lead user* strategy for product development, where instead of developing a product with the needs of the masses in mind, you develop it with the needs of cutting edge (lead) users in mind (implicitly assuming those users have the same preferences and needs *now* that the rest of the market will have *in a few years*) (Lilien, Morrison, Searls, Sonnack, & Von Hippel, 2002). This implies that the needs of the mass market is normally being served fairly well already, and they have less motivation to switch products. Hence, if a product is designed with the masses in mind, and it is not made backwards compatible, some might check out the product, yet probably not find it worthwhile to manually migrate their data, convince their friends to switch, and so on.

Next, *switching costs* (i.e. how much it will cost a customer to switch to a competing product, in effort, dollars and so on) is the result of some form of lock-in. According to Shapiro & Varian (1999) switching costs are the norm in the information technology industry, but the severity and type of switching costs varies widely. They identified seven types of lock-in which are presented in Table 2 together with the summary of associated switching costs.

Types of Lock-In and Associated Switching Costs	
Type of Lock-In	*Switching Costs*
Contractual commitments	Compensatory or liquidated damages
Durable purchases	Replacement of equipment; tends to decline as the durable ages
Brand-specific training	Learning a new system, both direct costs and lost productivity; tends to rise over time
Information and databases	Converting data to new format; tends to rise over time as collection grows
Specialized suppliers	Funding of new supplier; may rise over time if capabilities are hard to find/maintain
Search costs	Combined buyer and seller search costs; includes learning about quality of alternatives
Loyalty programs	Any lost benefits from incumbent supplier, plus possible need to rebuild cumulative use

Table 2: Lock-Ins and Switching Costs (Shapiro & Varian, 1999, p. 177)

Reproduced with permission from the authors.

It can be a big and possibly detrimental mistake to ignore the switching costs that are facing your potential customers when you are trying to enter a market. As the creator of a product, you should also consider creating some form of lock-in for the customers you do acquire. At the same time you need to be careful so potential customers are not turned off by the lock-in. (Shapiro & Varian, 1999)

For example, contracts for SaaS products are virtually unheard of (other than potentially for some large scale enterprises). A discount of 10-50% for paying for a year in advance rather than paying monthly is more common however.

3.3.3 Reliability View

In addition to the persuasive technology view and the network economics view, there is research showing that reliability and resulting customer satisfaction levels can significantly impact retention for *continuous service providers (Bolton, 1998).* This particular study involved telecommunication subscribers, and while not exactly the same today's online services it does share certain similarities. For instance, one important similarity to both SaaS and Social products is the need to keep users over time. Compared to for example a social network *the dynamics* are a

bit different. But compared to most SaaS providers there are even more similarities, e.g. both solving a specific need where the user is also the customer.

The results from Bolton's study showed that perceived negative experiences with the service (e.g. service outages) have a much larger impact on satisfaction levels than perceived positive experiences. At the same time, long-term subscribers tend to weigh prior cumulative experiences more heavily than recent experiences, meaning a long-term, happy customer is much less likely to change her opinion about the service provider (and also to terminate the service) in the face of a perceived negative experience than what a newer customer is. One implication of this is that an organization should give a lot of attention to new customers, as they are much more likely to jump ship due to poor experiences. (Bolton, 1998)

As the lifetime value of a customer necessarily depends on the duration of her relationship with the company, improving service reliability and resulting customer satisfaction can have important financial implications. Still, customers are heterogeneous in relation to how they react to outages. Some customers might be very sensitive to service disruptions and will weigh such occurrences more heavily. And the impact of customer satisfaction on retention will also vary based on factors discussed in previous sections, such as network effects and switching costs. (Bolton, 1998)

4 Analysis

The analysis chapter is divided into two main sections. As mentioned in chapter 2, the interview questions were designed with the existing literature in mind. However, it is the intention of this paper to allow new topics to surface through the analysis of the case interviews. The new topics are discussed in more detail in chapter 5.

4.1 The Cases

This section is designed to give the reader an overview of the companies that have been interviewed and analyzed for this paper. The descriptions are not meant to present any findings from the interviews, but rather briefly describe what the products are and how they work. Each subsection includes a description of the product, a screenshot showing the main interface of the product and a short introduction of the interviewee, describing their role in the company.

4.1.1 Fun Run (Dirtybit)

Dirtybit is the company behind, among other games, *Fun Run* and *Fun Run 2*. Both games have topped the app store charts in a number of countries, including the United States. Fun Run was the first successful mobile game enabling friends and strangers to play together in real time ("About Dirtybit," 2015).

The games are fairly simple, where players race each other to the finish line through colorful 2D levels. Along the way players collect *power ups* that will give them an advantage in the game, such as moving along faster or temporarily disabling the other players by killing them.

Illustration 1: Screenshot of Fun Run 2

The interviewee, Nicolaj Broby Petersen, is a co-founder and currently a board member of Dirtybit. Until recently (December 2014) he was the COO for the company.

4.1.2 Goodbits (Brewhouse)

Brewhouse is a Vancouver, BC based development company. While they also help develop products for clients, *Goodbits* is built for themselves. In short, Goodbits is a tool to help collect and curate content for email newsletters. It provides browser extensions to collect articles while browsing the web, as well as automatic integration with RSS feeds, email, and more.

Goodbits is currently free, but will offer a paid plan soon. Instead of focusing on growth and monetization from the beginning, Brewhouse has so far focused on engagement and making sure they build *the right thing*. (Sandhu, 2015)

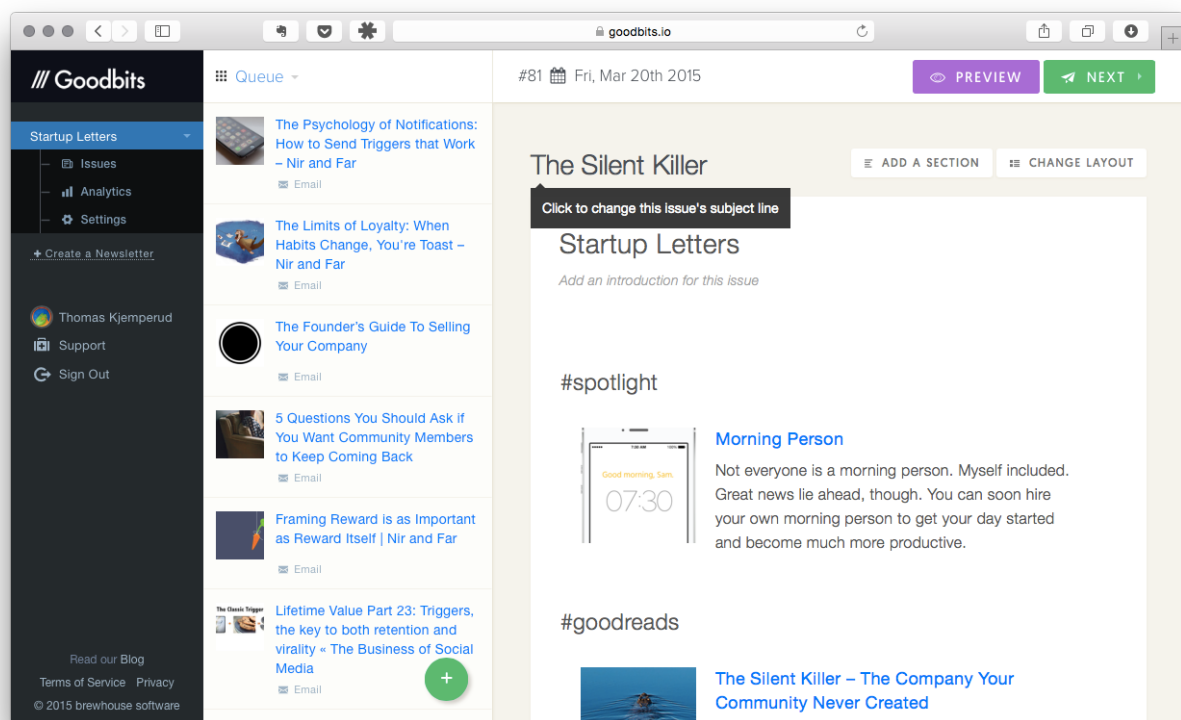Illustration 2: Screenshot of the newsletter builder in Goodbits

The interviewee, Kalvir Sandhu, is the CEO of Brewhouse, which he founded in 2013.

4.1.3 Tictail

Tictail is an online store builder aimed at ecommerce entrepreneurs that do not want to deal with the technical hassle of running a traditional online store. A user can set up a store in mere minutes,

and Tictail's innovative *feed* makes it easy to stay on top of anything from new orders to promoting your store on social media.

The basic functionality is free, and includes one-click integrations with payment processors such as Paypal and Stripe. Free templates allow shop owners to apply great design to their store without any programming knowledge, while a directory of plugins (called *apps*), both free and with a subscription fee, allow owners to extend Tictail's functionality beyond the basic package. Examples of apps include discounts, invoicing and down payment services, analytics and product reviews.
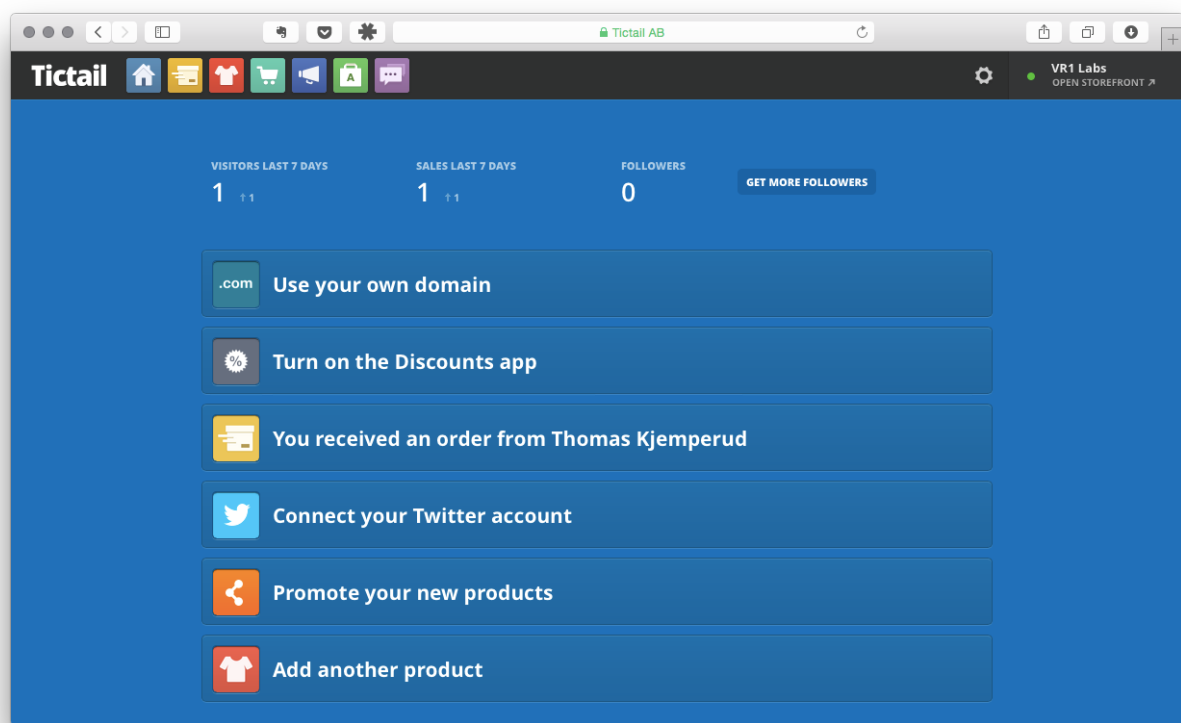
Illustration 3: Screenshot of the Tictail feed

The company was founded in Stockholm, Sweden in 2011, by Carl Waldekranz (the interviewee) and three others. Waldekranz is Tictail's CEO.

4.1.4 Fitbay

Fitbay is a social network designed to let people find inspiration for *clothes that actually fit*, addressing one of the big challenges with online clothes shopping. They do this by letting you follow *body doubles*, i.e. other users with a similar body shape to your own.

The front page when logged in to Fitbay is a feed with products that the body doubles you are following have added to the service. There is also a function to discover clothes that are likely to fit from brands that you like.
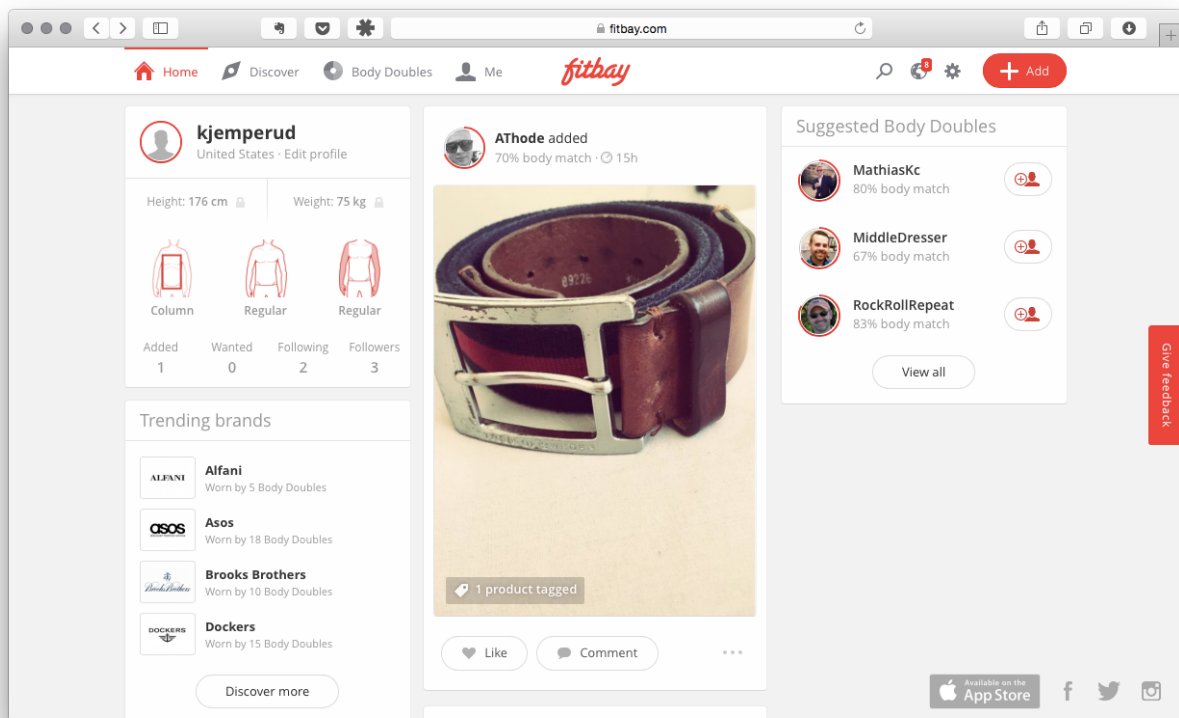
Illustration 4: Screenshot of the Fitbay feed

The interviewee, Christian Wylonis, is the founder and CEO of Fitbay. They are headquartered in New York.

4.1.5 MaterialUp

The online community MaterialUp is a place for users to share and discover good examples of *Material Design*, a popular design and visual language introduced by Google in the summer of 2014. Users vote for the designs they like the best, and there is also a commenting function where they can discuss the submitted designs. All users also have a profile page, where all the designs they have *upvoted*, *designed*, and *submitted* are listed.

The front page of MaterialUp is a leaderboard in the form of a visual feed, where the most popular designs are listed towards the top and given more focus than the less popular designs. The community mostly consist of designers and programmers (Aussaguel, 2015).
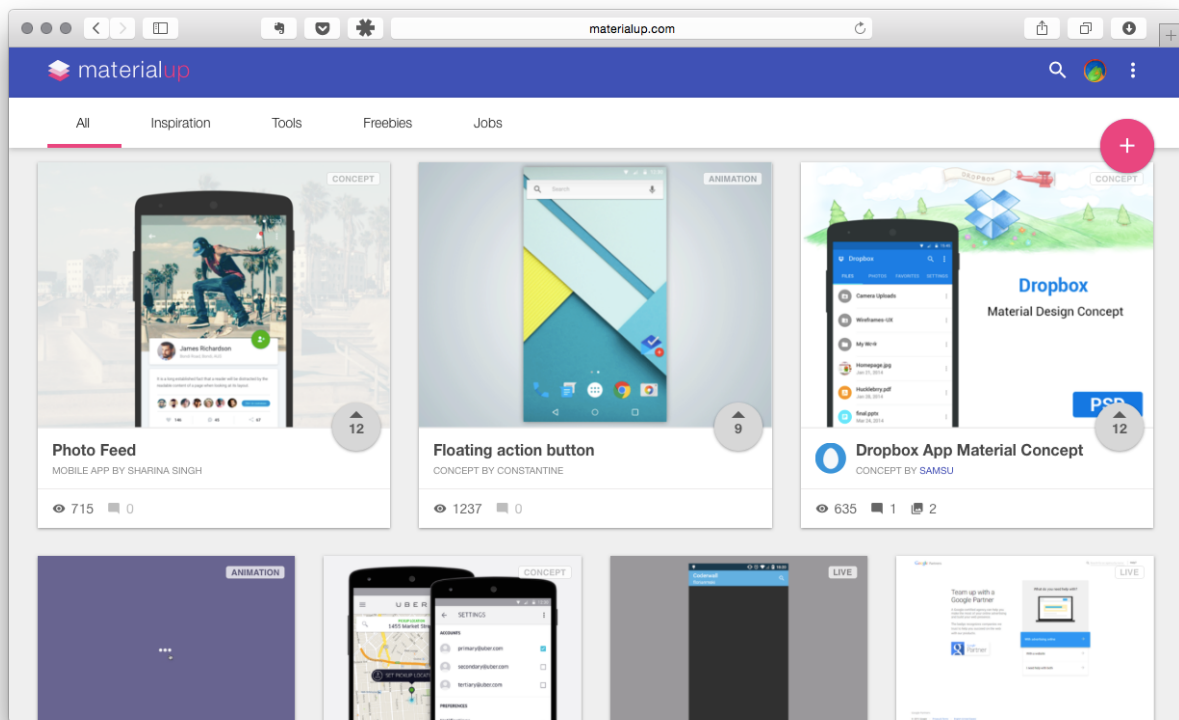
Illustration 5: Screenshot of the MaterialUp front page feed

As the the youngest of the case companies, MaterialUp was started and launched in December 2014 in Berlin, by Matthieu Aussaguel.

4.1.6 ReadingPack

The social network ReadingPack was built in order to simplify both the discovery and consumption of online articles and blog posts. Users can *recommend* articles, meaning that the article will appear in their followers' feed. The more users you follow that recommend an article, the higher that article will rank in your feed. Users can also save articles to their *pack*, a collection of articles they want to read later.

The primary ways of interacting with ReadingPack are through the web interface, through a browser extension (to recommend articles or add them to your pack), and through apps for Android and iOS.
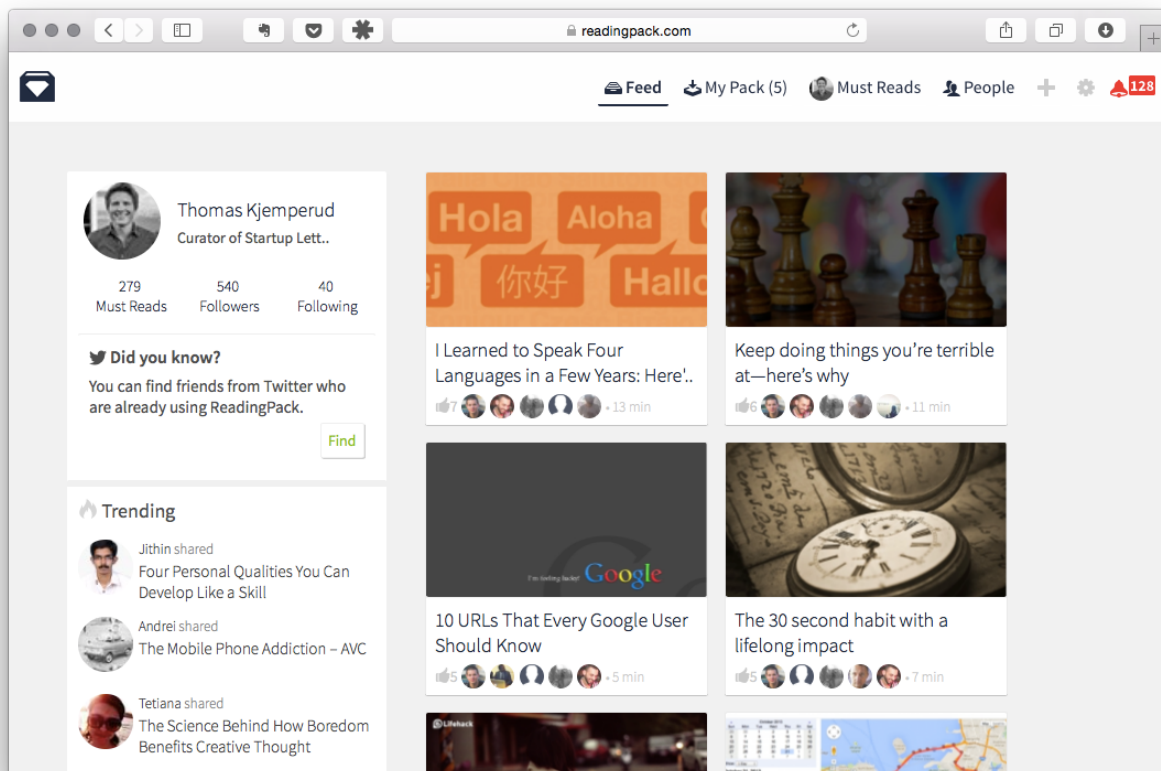
Illustration 6: Screenshot of the ReadingPack feed

ReadingPack was founded by Yuval Shoshan in the summer of 2013, in Tel Aviv. The iOS and Android apps were built by volunteers in Germany and New Zealand.

4.1.7 Timely

Timely was built to radically improve the way people track time, by letting people both *plan* their work day and *log time* in the same interface. Users can add both estimates (i.e. how much they plan to work on a project) and actual logged time through an interface that is familiar for anyone who has ever used an online calendar. They can also track time directly in the calendar interface. All time tracked or estimated is attached to a project, that can be either billable or not billable. Projects can also have time or monetary budgets.
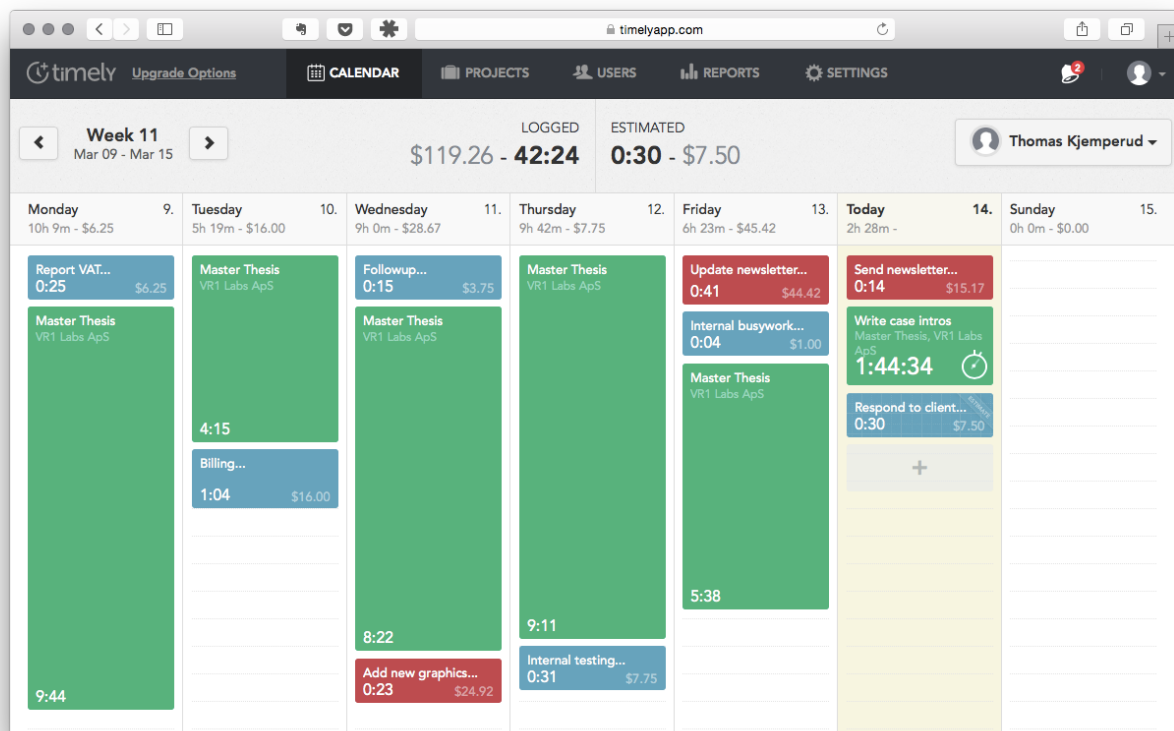
Illustration 7: Screenshot of the Timely calendar

The interviewee, Mathias Mikkelsen, founded Timely in the summer of 2012. Timely is currently headquartered in San Francisco, but have employees working from all over the world.

4.2 Findings

This section is attempting to summarize the highlights from the case interviews, being mainly descriptive in nature, and trying to identify common themes that emerge from the interviews. Chapter 5 looks closer at how the themes surfaced in this section fit together with each other and the theory, and eventually proposes a model for increasing user engagement in SaaS and Social products.

Although it is not surprising that all the interviewed companies in some way or another were trying to improve their user engagement, most of them adopted different definitions of what an engaged user actually is – which is natural when all the products are quite different. One common theme, though, was the focus on *activation* and *retention* as two distinct concepts for achieving engaged users. In the two next subsections these concepts are being presented in more detail. Themes related to user satisfaction and lock-ins are presented in the last two subsections.

4.2.1 Activation

First, let us look closer at how the case companies defines and works to improve activation. One of the companies, Goodbits, shared that they are a "big fan of the Pirate Metrics" by tech investor and former entrepreneur Dave McClure (Sandhu, 2015). The Pirate Metrics consist of Acquisition, Activation, Retention, Referral and Revenue (McClure, 2007), where Activation and Retention are the metrics that are most relevant for Engagement. Acquisition and Referral are mainly relevant for Growth and Revenue is relevant for Monetization, both of which are outside the scope of this thesis.

That is also in line with what Sandhu said in the interview:

> We've been focusing on our activation and retention metric. So we measure, obviously signups, but the more important number is how many people have a proper happy path. Not "I've used the product, and clicked Test send email. No, I've actually gone all the way and becoming a real user, I've sent a real newsletter with you guys." That's our activation metric. (Sandhu, 2015)

So activation is not the same as signing up for a product. All startups need to define their own activation metric, and it will rarely be exactly the same for two different products. And finding the right way of measuring activation can be challenging. Sandhu continues:

> Our product adoption time could be a month, or three months. It could be someone looked at [the product] and replied back with […] "this is exactly what I looked for," but don't get to actually activating until three months later. So it has been really challenging to find a good metric that measures in the right way. (Sandhu, 2015)

Defining this moment where users are likely to stay engaged is something that many of the interview subjects highlighted as a challenge they had focused on. The very early stage startup MaterialUp was still trying to define this at the time of the interview:

> One of my goals is to define what an active user is. Is an active user someone that has done 5 likes? Or is an active user someone who has submitted someone else's work? (Aussaguel, 2015)

This relates to what has been called an *Aha! moment* by industry pundits (Griffel, 2012; Price, 2012) and interview subjects alike. For example Tictail has a strong focus on this:

> [The] framework that we've kinda [used] is to bring users to "aha moment" as fast as possible. Which for stores is getting sales. And then try to repeat that as many times as possible. (Waldekranz, 2015)

For the social product Fitbay, *how many* and *who* you follow seem to be a strong predictor for user engagement.

And so to your question about driving engagement, we look at those numbers a lot, and see what are the trends are driving very active users. [...] So one of the things that we quickly found out was that of course the more the more people you're following, and are you following friends, is really important. (Wylonis, 2015)

According to a blog post by Griffel (2012), the reason why this is often dubbed the *Aha! moment* is because it is the moment when a user *gets* a product and understands why it may be useful or valuable to them. Ideally new users should get to this realization as soon as possible (Price, 2012). Because of this many companies try to get users to this point as part of the onboarding process. For example, Goodbits redesigned the entire onboarding flow as a result of this.

The major [improvements came from] things like having a better on-boarding process. [...] One good example is we used to have a guide with page description boxes, saying "this is what you're about come into and what you can do with Goodbits." Very much the way mobile apps might have a screen. And we removed that and sent people directly to the newsletter. We had populated links in there, and said "drag one of these here." [...] So the theory there is obviously to getting people to use your product faster and seeing the value quicker. So that was obviously one that improved the activation rate. So did the ability to send a test email without connecting your account. (Sandhu, 2015)

And the *onboarding process* is something nearly all of the interviewed startups had focused on improving. Wylonis of Fitbay shared their three main objectives with the onboarding process:

How do you make an on-boarding process where [...] (1) you teach the user about the concept, (2) how do you get them to follow people, and (3) how do you make them contribute the first content? (Wylonis, 2015)

The onboarding process of the social mobile game Fun Run has changed over time, resulting in a higher conversion rate for users actually starting to play the game.

When we launched it the first time you had to type in a username, your email and a password to get started. Then we took away the email and password part, so you just had to type a username, which increased the [conversion rate] for how many people actually started playing from 70% to 85% I think. And in Fun Run 2 it's even easier now, where you can play a small tutorial before you have to type your username. (Petersen, 2015)

They also noticed that some users did not understand how a certain aspect of the game worked, which lead to the introduction of an interactive tutorial for new players, pointing out the different buttons and what they are for. (Petersen, 2015)

Also ReadingPack has an onboarding process designed to get users to the Aha! moment as soon as possible. A newly registered user is taken through a series of steps where they can download the Chrome extension, mobile apps, and follow featured users that regularly share good content on the platform (Shoshan, 2015). And a newly registered user of *Timely* will even see dummy data in her timesheet together with an interactive tutorial teaching her how to estimate and track time using the dummy data:

> So on the web, new users sign up and literally what you end up on is just... we pre-create hours for you and then explain the app that way. [Then] we say "Hey, do you see this entry? This is an estimated entry; you can drag it, [and so on]" (Mikkelsen, 2015)

A general trend seems to be trying to get users to a point where they actually experience the value of a product as soon as possible after (or even before) signup. Of the products that had worked to improve the activation and onboarding experience in such a way, all said they had seen improvements in activation and engagement.

Although letting users experience the value of a product on first touch is important for most products, it seems to be especially important and challenging for the social products. Wylonis of Fitbay detailed what can be described as the *cold start problem for social products*:

> You join a social network, zero people following you, and you're following zero people. You can post something, but basically you're screaming into a void. (Wylonis, 2015)

If a social product only starts providing value once a significant chunk of a user's friends join the platform, it would be extremely challenging to reach such a point. The product would have huge network effects stacked against it, and there would be very little incentive for users to invite their friends to yet another social network, which also does not provide any immediate value. Dirtybit solved this in Fun Run by letting you play against random players that happened to be online at the same time as you:

> Interviewer: Was there any reason why you allowed people to play with random people, other than their friends?
>
> Yeah, that's because you didn't have all your friends in the game when it first launched, so we needed to have something where you could play with other people. (Petersen, 2015)

Cold start problems are less common for SaaS products, as they usually provide users with tangible utility from the start, such as time tracking in the case of Timely or a newsletter curation tool and editor in the case of Goodbits.

4.2.2 Retention

Once a user is activated and has experienced the value of a product, it is time to make sure the user will come back over and over again. For the startups interviewed in this paper, the far most common tactic for bringing people back to the product is using various forms of triggers. Usually, these are in the form of external triggers, such as an email, a push notification, or a notification within the product itself (only visible by entering the product first). Keep in mind that a trigger within a product itself is still considered an external trigger. *Internal triggers* refer to mental connections happening in a user's mind that triggers a particular interaction with the product, without them explicitly being told what to do.

Some companies have adopted a more holistic approach to retention than just relying on triggers however, and are trying to build long-term habits for their users. This is being explored in further detail later in subsection 4.2.2.2.

4.2.2.1 Triggers

Triggers are something all of the companies interviewed utilized in one form or another. Often the triggers used are related to activity and interactions within the product. That is the case for the social network Fitbay:

> *I mean the triggers [are] of course associated with the notifications you get in the app as well. You get notifications when somebody follows you, the when somebody of course comments or likes on something that you have added. (Wylonis, 2015)*

Dirtybit has also started to utilize external triggers in the form of push notifications to bring inactive users back to their game Fun Run 2. As a result, their retention rate improved.

> *In Fun Run 2, we added push notifications, so if you hadn't played in a long time, you would get a notification saying "come back to the game."*
>
> **Interviewer: How did that work?**
>
> *It worked well. I don't have the latest numbers on it, but the retention [rate] went up thanks to the push notifications. (Petersen, 2015)*

Retention is definitely also a concern for the design community MaterialUp. In a tactic that is unlike what the other companies shared, the founder even reaches out to users via Twitter to ask them to join the discussion – in an effort to spur more activity on the site.

> *I'm definitely looking at mechanics to [improve] retention. So for example, I'm working on the comments, trying to notify the right people when there's a comment on the new designs. Or trying to notify everyone who's contributing to*

> *the conversation, the designer itself, and all these people. Maybe reaching out*
> *to them on Twitter. (Aussaguel, 2015)*

But it is not only reaching out to users manually that has had an effect for MaterialUp. A more sustainable approach is a weekly newsletter featuring the best designs from the previous seven days:

> *The newsletter is also a very successful media for retention. It is a very good*
> *first approach. [Users] might just subscribe when they are not so interested,*
> *and then they realize that they are very interested. (Aussaguel, 2015)*

By asking visitors to sign up for the newsletter, MaterialUp also gets the person's email address, which can be used to follow up or sending triggers via email. Based on the feedback Aussaguel receives when asking the few people that actually unsubscribe from the newsletter, it seems people use it as a form of reminder to visit the site.

> *[The MaterialUp newsletter] have 7100 subscribers. And 201 who unsubscribed. And*
> *to the 201 I have sent a personal email, asking why. I think around 140 people*
> *replied. […] Most people will unsubscribe because they visit the website daily.*
>
> **Interviewer: So they don't feel like they need the emails anymore?**
>
> *Exactly, or they would use the Twitter feed or RSS. But most of the time they*
> *would say "I'm coming back every day, and so I don't need the*
> *newsletter." (Aussaguel, 2015)*

Although email and push notifications were the most common external triggers observed amongst the case companies, they are far from the only ones. The ReadingPack browser extension, for example, will add a dedicated button to share a post or article to Reading Pack, but only when you are actually reading a blog post.

> *What I did was to create this extension, that not only lets you save and*
> *recommend articles, but also help increase engagement. I'll give you an example.*
> *You are looking for articles when you are surfing the web. […] It will detect if*
> *it's a Wordpress site. And if it's Wordpress, you will see a little button in*
> *the bottom of the page, so you can save and recommend articles. […] It's about*
> *pull and push for users. Push is to go to the extension and recommend articles,*
> *and pull is to give you the button in the right time and the place. So I know*
> *you are reading an article and I will show you these buttons. (Shoshan, 2015)*

That statement does not only demonstrate an alternative trigger channel, but also that timing and context is important. By being out of the way when not relevant, but appearing when a user is reading an article, the user is more likely to notice the button and add the article to ReadingPack. Also other companies had realized the value of timing. For example, the Tictail founder said

"making sure people are prompted to do the right actions at the right time" was their main approach to retain active users (Waldekranz, 2015). And to the question of the timing of their push notifications in Fun Run 2, Petersen explained:

> *It would appear during daytime, based on your time zone, 3 or 5 days after your stopped playing.*
>
> **Interviewer: And what time of day would it normally appear?**
>
> *Around 12 pm to 4 pm. […] We could see that most people would play around that time, so that's why we targeted that time. The probability is higher for that your friends are online as well during that time, as well as more random people playing. (Petersen, 2015)*

Not only triggers outside of the product benefit from being timed well. To the question of what had the most significant impact on Tictail's user engagement, Waldekranz highlighted the way they had turned the control panel for store owners into a timely feed of actions:

> *Well, the biggest thing [was] the change to our interface, to become the Tictail feed[1]. So instead of [store owners] going through different sections of the page, such as the order page to look at orders, you would go to the products page to upload new products, you would go to the ads page to create ads. Now we have created a feed where all of the actions you can do [are] served to you all on one page, and highlighting what's most important at any given time. It was just a massive, massive change. All of the sudden, people started realizing all the things that they could do. They weren't clicking around on all of these pages. Instead we were bringing them the actions in neat little pockets. (Waldekranz, 2015)*

The notion that changes to the product itself (not only external communications to bring people back) can have a significant impact on user engagement leads us to the next topic; habits.

4.2.2.2 Habits

It is clear that some companies work more targeted with increasing user engagement than others. Some even use specific frameworks. To a question about their use of triggers to bring inactive users back, Kalvir Sandhu of Goodbits responded the following:

> *We believe in the Hook model. I don't know if you're aware of Nir Eyal? […] So basically, we do an element of the reward step... It's similar but it's not exactly what you describe. It highlights the success of the investment. An*

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[1] See screenshot of the feed in subsection 4.1.3

> *example of that is you get the daily [email] report the next day about how well*
> *your email has worked. (Sandhu, 2015)*

The Hook model, to which Sandhu refers, came up in multiple interviews, without first being mentioned by the interviewer. Also the Fun Run makers used it actively to improve user engagement.

> *We […] use the Hook model to find out where in the loop we are missing things.*
> *Such as variable rewards, commitment and so on. (Petersen, 2015)*

Others, such as the MaterialUp founder, did not explicitly follow the Hook Model, but states that he is "definitely trying to create habits." (Aussaguel, 2015). A contrasting sentiment occasionally observed in the interviews was the general lack of time to focus on frameworks such as the Hook Model. Mikkelsen of Timely said:

> *I know the Hooked model, and I would love to dive deeper into that, but […]it's*
> *been more... "we gotta fucking fix this stuff and get it going." (Mikkelsen,*
> *2015)*

Actually, *measuring* the degree of habituation for users of different products is clearly outside the scope of this thesis. It is helpful, however, to understand that gaining habituated users is often the goal of user engagement initiatives. Also keep in mind that not all products need habits to be successful (Eyal, 2014), but based on the interviews it does seem like it is helpful for most SaaS and Social products – due to the need for retaining users over time to keep making money from them.

4.2.3 Reliability and User Satisfaction

Because both SaaS and social products are forms of continuous service providers, and Bolton (1998) found that customer satisfaction had significant impact on retention for such products, all the interviews touched upon this topic. Recall from the literature review that Bolton (1998) found that perceived negative experiences (such as downtime) had a much higher impact on satisfaction levels than perceived positive experiences.

It turns out all of the companies in question had experienced at least one technical outage in their lifetime. Still, and maybe a little surprisingly given Bolton's (1998) findings, on average they did very little to measure and improve *satisfaction levels* of their user base.

A few interview subjects said they had considered or intended to measure user satisfaction at some point, but without doing much yet. For example, the team behind Goodbits had considered measuring NPS (Net Promoter Score), but had not yet been able to implement it:

> *In short no, we've debated on and off to kinda measure Net Promoter Score, and*
> *we just haven't been able to roll out something. (Sandhu, 2015)*

Some companies did not directly measure customer satisfaction or NPS, but used other metrics as proxies for satisfaction. For example the creators of the Fun Run games would use the ratings in the App Store and Google Play (Petersen, 2015), while Fitbay used the weekly and monthly retention rates as proxies:

> For us, I mean, customer satisfaction is the percent of users that are coming
> back weekly, and it's how many times are they coming back on a monthly basis.
> That's kind of our satisfaction survey, so no we don't do a specific one.
> (Wylonis, 2015)

Most of the companies do not measure customer satisfaction in a structured way, however. Instead they rely on a more qualitative approach to getting feedback. ReadingPack will email active users asking them for ideas, feedback and suggestions (Shoshan, 2015). MaterialUp follows up with unsubscribers (Aussaguel, 2015). Goodbits follows up with new users (Sandhu, 2015).

Tictail do actually measure satisfaction, but they could admittedly do so in a more structured way:

> We do a survey probably every six months where we ask people what they feel
> about the platform. We don't use any standard formats like NPS or anything like
> that. I think it would be better if we did. (Waldekranz, 2015)

Incidentally, Tictail is the product that has been around the longest (since May 2012), and in the SaaS category it is by far the oldest. Uptime in SaaS is often more *critical* than in social products, as they often serve a tangible (business) purpose. Social products tend to be more *nice to have*, rather than *need to have*. Based on the limited data collected through the interviews for this paper, it seems likely that the focus on measuring and improving user satisfaction is (and probably should be) greater for business-critical SaaS products than Social products. It also seems likely that it becomes a more common focus later in a startup company's lifetime. In the very early stages it is more critical for the company to make and ship the first versions of the product, and get qualitative feedback to make sure they are building the right thing.

Still, even early stage startups try to keep the product running smoothly, and to avoid any serious downtime. Some of the interview subjects highlighted systems they had in place to prevent and quickly solve any issues that may surface. That was the case for the developers behind the young SaaS product, Goodbits:

> Coming from a developer background we take development of products quite
> seriously, so we have instant error alerting. So we even get an error alert of a
> specific user. So if you had an error on our product tomorrow, it would say
> "user blah blah blah just had this error." We've practically fixed issues and
> then sent an email to them, saying "hey, we noticed you had an error while doing
> this." And that's brilliant, customers really love that! (Sandhu, 2015)

But even though a company monitors what it can, it is nearly inevitable to experience some form of service disruption. E.g. for MaterialUp it was their hosting provider that failed, taking the site offline for about 90 minutes (Aussaguel, 2015).

All the other companies had experienced downtime too. Goodbits and Timely had experienced that their DNS provider was hit by a DDoS (Denial-of-service) attack. Fitbay and ReadingPack both went down for some time as they got featured in the popular blog, *Lifehacker,* and the product discovery community, *Product Hunt.* Tictail is "deeply hosted on Amazon Web Services," so whenever AWS goes down, they go down (Waldekranz, 2015). When Dirtybit experienced sudden success with Fun Run, they had a lot of downtime for about a month:

> Especially during Christmas of 2012, the servers broke down a lot of times. We
> created servers for handling about maximum 7000 people simultaneously playing.
> And at that time the load was about 100 000 people simultaneously playing.
> (Petersen, 2015)

If service disruptions and other errors are near inevitable, what matters is how you deal with them when they do happen. One element of that is obviously doing what you can to rectify the problem. When Goodbits' DNS provider was hit by the DDoS attack, the Brewhouse team moved quickly:

> It took down the whole DNS, but then we moved to a backup very quickly. Being
> developers we had a snapshot of the DNS zones, so we stuck it up in Route 53 and
> then we switched the thing. So I think it was down for about an hour. […] And to
> be honest, no one actually reported it. We were back up before most of our
> customers knew about it.

Often, especially if the disruption lasts for a long time or you have a lot of active users (or both), a lot of people will take notice. That was definitely the case for Dirtybit in the aforementioned period where they struggled to scale their servers to handle the massive amounts of simultaneous users. During that time they "got about *400 emails per day* complaining" (Petersen, 2015).

Many of the interview subjects also highlighted the importance of transparency before, while, and after dealing with the issue itself. Keeping users that try to use the product while it is down in the loop is a top priority for ReadingPack:

> The first thing is to make sure that if you can put a message on the website. If
> the database is down, you will see a message on ReadingPack "We're down
> maintenance, follow us on Twitter." And what I usually do, before I try to
> understand why the site is down, if I know it is a really bad problem, I will
> update on Twitter that we have a problem and we are looking into it. And then I
> try to handle the issue. (Shoshan, 2015)

Tictail, in addition to keeping people in the loop as best they can through multiple channels, takes it a step further by compensating store owners for any serious downtime they were to blame for:

> *Well, people get upset, because their store is offline and they're not selling. If it is definitely our fault, then we try to give something for it, like free add-ons or different extra services to make up for their losses. And apart from that we just try to communicate with all of our stores through email, and Twitter, and Facebook, so they know what is happening. And let them know where they can track the status of the page, expected downtime etc. (Waldekranz, 2015)*

And according to the Timely founder, being open with your users (e.g. keeping them informed) and acknowledging the issue goes a long way to making an initially negative experience better:

> *[Users] get pissed if they don't get information. As long as you tell them what is happening, you find [that] instantly they go from "what the fuck is happening?" Like that kind of attitude, and then we say what's up and they say "Ah, okay, continue. By the way, love Timely!" It's very strange that and as soon as they get any kind of update and you just tell them in a straight way: "This is what is happening […] we know it sucks, but we are really trying." And that just... literally it becomes a positive experience, almost. I mean not entirely, but yeah. And that's when I think a small startup like this shines, instead of being "we apologize for the inconvenience." And then like "fuck we're sorry, we're fixing this," that kind of attitude is very different. (Mikkelsen, 2015)*

And Mikkelsen's last point about attitudes and communication styles for startups being different than the more formal approaches often seen in more mature corporations was also witnessed in other interviews. Specifically, many interviewees said they tried to keep both communications with users and the product and web copy fairly informal. When Tictail was created, the voices of the team shone through to the copy and messaging, and it still does to this day:

> *It's extremely casual, to a point where I think we might want to take a step back. […] When we created the product we used our own voice, and we never really changed that. (Waldekranz, 2015)*

It is not only when dealing with service disruptions that the Timely team tries to separate themselves from a larger, well-established company:

> *Yeah, we're trying to be informal. Trying to be a little startup that's very focused on quality and making really, really good stuff. And that's all very intentional, where we definitely don't want to be the "sorry for the inconvenience, we hereby apologize, blah blah blah." All that stuff, we're very afraid of doing. So that's why every customer is going to get a "personal" email*

Others were trying to strike a balance between formal and boring, and informal and fun. Among those we find Fitbay, that tries to keep things less serious, yet professional. And ReadingPack, that mostly use formal language throughout the site, but use for informal, encouraging, humorous language in certain parts of the product, such as in the sign-up process:

> *So in specific places, when I think both me and the user can benefit from this*
> *kind of language, I think it is really powerful. (Shoshan, 2015)*

The language choice for MaterialUp acknowledges that the site has a very international audience, and that not all designers are that well-versed in English – something the other companies did not mention. Thus they try to keep the language "straight forward" (Aussaguel, 2015).

4.2.4 Competition and Lock-In

The final important theme from the startup interviews was how they think about and deal with competition and lock-ins. For the SaaS companies, there were already some extremely large companies/platforms operating in the respective industries. In Goodbits' case, you have popular email service providers like MailChimp, Aweber, Constant Contact, but also large integrated marketing platforms such as Pardot, Marketo and Hubspot. In Tictail's case you have Shopify, Magento and Bigcommerce as leading players. For Timely you have a mix of other time tracking software, such as Harvest and Freckle, as well as more complete accounting and invoicing tools that also offer time tracking, such as Freshbooks.

Both Goodbits and Timely are products that drastically innovates and simplifies certain *specific* use cases compared to the *do-it-all* solutions that exist in the market. Even though they have some small to mid-sized competitors working on the same or similar use cases, they do not really consider the large platforms direct competitors. Instead they try to integrate with them.

> *But a lot of [the other players in the market] always do accounting or invoicing*
> *at the same time as they do time tracking, something we're not doing and*
> *probably will never do either. […] Plus we want to piggyback on top of the*
> *straight up invoicing companies, instead of actually competing with them.*
> *(Mikkelsen, 2015)*

In other words, Timely is focusing on one thing, and doing that really well. That leaves a lot of potential users out that need extra features and integrations that are normally only found in large, integrated productivity suites aimed at larger organizations:

> *In particular the "we're using all their stuff" kind of lock-in, where the time*
> *tracking is part of the system. So they bought an accounting thing, they bought*

> *the different parts. And then they just get time tracking with that. (Mikkelsen,*
> *2015)*

The Timely team is focused on offering integrations with these large suites, and recently launched their own API. Currently, offering a strong set of integrations is high on their priority list, and so far it has just been "a question of resources and how to prioritize" the various integrations (Mikkelsen, 2015). And it turns out many of the large players want to integrate with Timely too:

> *But what we've seen, and that we've even seen from our competitors, is they're*
> *very keen on partnering and integrating Timely, even though they offer it*
> *themselves. Because they aren't able to focus on it that much. (Mikkelsen, 2015)*

Goodbits is facing a very similar issue, where a lot of users really see a lot of value in the way of curating content that they offer, but need the product to fit in with their current workflow in whatever marketing platform they are using:

> *Big marketing suites, like Pardot, Marketo, Hubspot, you know where the*
> *organization has a huge marketing platform managing every element of social*
> *media and everything. And all the content and customers are plugged directly*
> *into there, and they want us to do the email marketing. And they go "great, we*
> *would love to be able to collect content so easy and drag and drop it into a*
> *template, but I need it to be sent into this workflow." And the problem with*
> *that is that, we've looked into integrating with them, but they don't offer the*
> *granularity of the APIs. But we know that's coming quite a bit. (Sandhu, 2015)*

But while the APIs of the aforementioned marketing suites still are quite limited, the Goodbits team is focusing on integrating with a range of email service providers. This is especially necessary, because a lot of potential users already use these platforms to manage their email lists. And while not impossible to move an email list, it still takes some effort and you lose a lot of historical data. They already integrate with MailChimp, which is one of the most popular providers in the market today (with a powerful API), and are planning on expanding to more soon.

Tictail, on the other hand, is replacing many individual tools making it much easier and affordable to get started with your own online store, addressing a niche that was previously underserved in the market:

> *What I think is interesting, if you look at Tictail, most of our customers are*
> *first-time sellers. We are not actively recruiting from Shopify or Magento or*
> *any of those platforms. […] There are 150 million micro businesses in the world.*
> *Shopify powers about 150 thousand stores. The market is not being served by*
> *these platforms yet. (Waldekranz, 2015)*

One of the arguments for targeting first-time sellers rather than targeting their competitors' users relates to acquisition costs.

> *It is much, much cheaper to acquire those customers. You start becoming committed to the platform, when you start getting your orders there, you have your followers there, and so on. The long view on a platform [is] stickiness. (Waldekranz, 2015)*

This statement definitely points to strong lock-ins once a store owner selects one platform over another. It is not impossible to migrate from one platform to another, but it would be a lot of work and possibly quite costly. The Tictail team recognizes this fact, and they are even trying to make sure their own platform will create significant future lock-ins for its users. And in a sense Tictail is actually quite different than most of their competitors:

> *I think what's interesting about Tictail, unlike a lot of our competitors like Shopify or Bigcommerce, these are backends. If you take a store from two of those platforms and put them next to each other, it is no way to tell which store belongs to which platform. Tictail is a network of stores, where in each store you can see in the top-right corner a particular badge. And we get so many signups coming in from other stores. (Waldekranz, 2015)*

They are also focusing more on their marketplace, which pulls in products from all Tictail stores, and in turn generates extra sales for their customers. Waldekranz also believes that the more data they collect from their network of stores, the better results they can deliver to the store owners, resulting in a virtuous cycle for Tictail:

> *I believe network effects, like leveraging the network is the biggest component of Tictail's success. And I mean, our [new] stores are basically coming from other stores, and the tools that we're building and the intelligence of the feed, is based on the data from all of the stores on the platform. So the more stores that join the platform, the more intelligent the product becomes, and the more intelligent the product becomes, the more traffic the stores are getting. And the more traffic the stores are getting, the more stores sign up for Tictail. (Waldekranz, 2015)*

For the social products the dynamics tend to be a little different than for the SaaS products already discussed. For most users they are not something they *need* to use (like sending marketing emails for your job), but rather something extra you can spend your time on if you *want* – entertainment in a sense. Dirtybit even defines Fun Run's competition as "anything in the form of entertainment" (Petersen, 2015).

Social products are obviously different from each other (and the SaaS products), but as mentioned in section 4.2.1, they tend to face *cold start problems*, i.e. the challenge of providing value without a significant number of social connections on the service. That being said, we do not see many new networks like Facebook where the main value lies in having all your social connections in one place.

Facebook is becoming more *need to have* now anyway - like email - especially for teens and young adults, according to the blogger Andrew Watts (who is himself a teenager). It is convenient for messaging your friends and interacting with groups of friends at school and university. And by not having it you might come across as weird. (Andrew Watts, 2015)

Newer social networks and products seem to be more about discovery, following and interacting with strangers (not necessarily your friends), and community. And that is the case for the social products that are part of this paper. In response to a question about if potential Fitbay users face lock-ins in the form of having all their friends on other social networks, Wylonis shared the following:

> The idea of Fitbay is really not to follow your friends, the idea of Fitbay is
> actually to follow strangers, your body doubles and so on. It is a really
> interesting question because, because the idea of another social network where
> you're following your friends, I think is getting harder and harder. (Wylonis,
> 2015)

Social graph logins (e.g. using Facebook, Twitter and so on to sign up and login on other sites) can still be helpful however. It is especially important if you need to connect with your existing social graph to get value from the product, i.e. the product is designed for you to interact with your friends or other social connections. But also social networks that are about discovery can use them to simplify the signup process by pre-filling profile information, as well as spurring growth through easier sharing, which is why Fitbay offer Facebook (and soon Twitter) sign up:

> In the beginning we just did Facebook just to make the signup process faster, to
> be honest. It was the only reason why we did it. But now we're going to do
> growth hacking it makes sense to do the Twitter integration. And with Instagram
> you can't do an integration the same way, but you still need to think about
> sharing on Instagram. (Wylonis, 2015)

Based on the interviews it seems likely that even social products focused on discovery can benefit from integrating with related products in the same discovery or consumption flow. One example of that is Reading Pack implementing integrations to make it easier to use your favorite *read-it-later app*, such as Pocket and Instapaper:

> *In order to increase engagement, I have a channel in IFTTT. It has been really great to increase the engagement of users. […] A lot of people wanted to use Pocket, but also Reading Pack. I wanted to say "it's okay to use Pocket, but you can also use ReadingPack at the same time." So with IFTTT, users can keep using Instapaper or Pocket, and use ReadingPack together. I think it's really good to not say you can [only] use Pocket OR Instapaper OR ReadingPack, but you can use and enjoy both services. (Shoshan, 2015)*

IFTTT (short for If This Then That) is a web service that let users create *connections* between different web and mobile apps, using with so-called *recipes* ("About IFTTT," n.d.). So when Shoshan say he created an IFTTT channel, that means anyone that signs up with IFTTT can connect their ReadingPack account to dozens of other apps, such as Pocket and Instapaper. In this case a user could *favorite* an article in the Pocket app, and it would automatically be recommended to the person's followers on the ReadingPack platform.

MaterialUp actually integrates with their biggest competitor on the design side, namely Dribbble. Not for social logins, but for submitting new designs on MaterialUp. Designers often publish their work on Dribbble, and now it is easy to cross-publish to MaterialUp:

> *Originally I wanted to use a Dribbble option for logging in. But it is still a small social network, so I decided to go with Twitter. […] But designers can now submit their Dribbble works. MaterialUp integrates using Dribbble's API. You only copy and paste the URL, and from this I will get the image, the title, and your username.*

Still, the founder of Fitbay argues that it is difficult to outcompete an already successful social network (thanks to the strong network effects), and he hopes that will benefit them in the future:

> *I mean, the beauty of building social products is that we don't have to be as concerned about another network popping up. Because we are the world's largest community for finding clothes that fit. That sounds more impressive than it actually is, because we are the only one. But the whole point is that with a social product, there are tie-ins. Which means that of course we could definitely be outcompeted, if somebody built a better product than us and can execute better. But it's harder to push social products off the leaderboard.*

In summary, the most prominent issues raised among the SaaS products relates to the need of fitting into an existing workflow or alternatively creating a new and simple workflow to attract people that are currently outside the market due to complexity or similar reasons. For the social products, however, the biggest challenge is to overcome the cold start problem. This difference is being discussed further in the next chapter.

5 Discussion

The purpose of this chapter is to reflect at how the findings fit together, what themes are the most significant for answering the research questions, and finally propose a model for increasing user engagement in SaaS and social products.

5.1 Discussion of Findings

This section is structured around the identified themes, and how they relate to the theories from the literature review and each other.

5.1.1 Persuasive Technology View

The first step of the analysis revolves around the Fogg Behavior Model (FBM) with its three elements *motivation*, *ability* and *trigger* (Fogg, 2009), as well as the Behavior Grid with a focus on the *Green*, *Blue* and *Purple Path* behaviors (Fogg & Hreha, 2010).

5.1.1.1 Activation: Green Path Behaviors

One of the first findings was that the activities meant to promote user engagement mainly fit into two buckets from Dave McClure's Pirate Metrics; activation and retention. While McClure mainly defines an account sign up as activation (McClure, 2007), based on the findings it is more accurate to define it as someone who has experienced the value of the product. As Sandhu, the founder of Brewhouse stated, their activation metric was someone who had "gone all the way and becoming a real user" by sending "a real newsletter" (Sandhu, 2015). If we keep that definition of activation, it very closely correlates with Fogg's Green Path behavior. Which in turn dictates that the user needs to be sufficiently motivated (if not already), enhancing their ability to do the behavior (by teaching them how, or by making it easier to do), and when both sufficient motivation and ability is in place they should be triggered to do the behavior for the first time (Stanford Behavior Wizard Team, 2010b).

If we look closer at Sandhu's statement, he mentioned that new users often do not activate *soon after* signing up. For some it might take one to three months before sending their first newsletter with Goodbits, even though they have indicated that Goodbits was exactly what they were looking for. That suggests it is something other than motivation that keep the user from activating. According to Fogg's theory, that leaves ability as the prime suspect.

The fact that redesigning the Goodbits onboarding flow to become more interactive made the activation rate increase significantly, indicates that making it easier to get started (i.e increasing ability) has a positive effect on activation. Exactly as Fogg's theory predicts. Also allowing users to send *test emails* without going through the extra steps of connecting their MailChimp account also gave the activation metric a boost, suggesting that the user *seeing the value quicker* also helps

boosting motivation – and in turn making it more likely that a user would take the time to go through the rest of the necessary setup to send *real emails* to their email list (connecting their MailChimp account, and so on).

This also relates to the *Aha! moment*, i.e. when users experience the value of a product for the first time. It makes intuitive sense that when a person *really* understands the value a product can provide them, they will get more motivated to adopt the product into their daily lives. This was something several of the startups focused on too; both defining an engaged user as well as improving the respective onboarding processes to help users reach this moment. Fitbay discovered that users following a specific number of people would be more active, so they focused on that. Fun Run implemented an interactive tutorial to help new players understand the game (improved ability), which in turn improved their activation rate significantly. ReadingPack would encourage new users to follow a selection of *featured users*, that have proven to share popular content on a regular basis. That in turn would help surface interesting content right away, hopefully demonstrating Reading Pack's value to the user.

Overall, there seems to be a lot of support for the effectiveness of the Aha! moment, and also for the importance of using the Green Path approach (i.e. focusing on motivation, ability and trigger) when guiding a user towards it.

5.1.1.2 Retention: Blue & Purple Path Behaviors

Let us move back to Goodbits for a minute. After a user actually has sent a real email to their email list (i.e. has activated), the challenge is no longer to teach how to use the product, but rather make sure the user will stay active over time. This is the domain of the Blue Path behavior. Because the user has already demonstrated that she has both the ability and the motivation to send newsletters, the focus is now on triggering the behavior at the right time – while of course maintaining the user's motivation to keep on sending it (Stanford Behavior Wizard Team, 2010a).

Most of Goodbits' users currently send their newsletters weekly (Sandhu, 2015), and that is a habit the Goodbits team is trying to reinforce by using well timed triggers. In addition to emailing users the day after their newsletter was sent (in an attempt to boost motivation by highlighting "*the success of the investment*"), Goodbits can also send the user an email weekly or monthly with a reminder to build and send the newsletter (Sandhu, 2015). These timely triggers will then help to establish the new routine of sending the newsletter on a regular basis, which (if effective) is exactly what Fogg dictates for Blue Path behaviors.

ReadingPack embeds itself into people's existing workflows with its browser extensions, adding calls to action when users are reading articles or blog posts on any site powered by Wordpress. Chances are they were already in the habit of reading articles on their computer before they signed

up, and now they will be nudged to interact with ReadingPack again and again, hopefully leading to a new habit.

The weekly newsletter that MaterialUp sends out to all its newsletter subscribers works both as a trigger, but also as a boost for motivation. When a user sees some of the great designs featured in the newsletter, she is reminded why she joined MaterialUp in the first place.

Even though the FBM and the Behavior Grid can be used to describe many of the measures that these startups have used to successfully improve user engagement, it still looks like the additional steps that Eyal's Hook Model outlines are useful for understanding certain aspects. The Variable Reward step and the Investment step can actually be seen as specific ways of addressing the problem of lacking motivation, *especially long-term*. Now we are moving into the Purple Path territory, that dictates that if a person is not doing the intended behavior as much as desired, at least one of the three elements (trigger, motivation, and ability) are not sufficiently present (Stanford Behavior Wizard Team, 2010c). And that is where Variable Rewards and Investments come in.

For *social products*, interaction with other humans is a common approach for tying together Investments and Variable Rewards (via Triggers based on those Investments). For example, both Fitbay and MaterialUp will send email notifications to users based on their interactions on the site. Fitbay notifies users based on activity from the people they follow which is relevant to them, and MaterialUp notifies users of new comments in discussions they are active in. Because one can never know what someone else will say or post, it is definitely *variable*. And as long as a person uses the product to comment, interact, like or post (i.e. investments), chances are other people will interact with that content – and in turn *loading* a new trigger, pulling the user back to the product to check what was said or posted.

In Fun Run 2, Dirtybit added push notifications designed to bring a player back if she has not played in three to five days. To make sure the notification arrived at a time when the person could play the game (ability), they looked at when most players were active, and focused the push notifications around that time. But even though a player gets a notification (trigger), and has the ability to play, she might not be motivated. Petersen also admits this, saying that "a game has a limited lifetime compared to a social network," also stating that it is completely natural that "people get bored of the game and don't want to play it anymore" (Petersen, 2015). And that is clearly a problem of motivation due to a lack of long-term variability. In his book, Eyal also highlights the case of Zynga, the producer of the once highly successful online game Farmville, to demonstrate what he calls *finite variability*: "Online games like FarmVille suffer from what I call 'finite variability' — an experience, which becomes predictable after use" (Eyal, 2014, p. 97).

However, by getting users to *store value* in a product (e.g. data, social capital such as followers, etc), the product can actually be made more valuable over time. For example, the more you use Fitbay (the more *body-doubles* you find and follow, the more data you input over time to get a more accurate profile), the more useful the product becomes. Using it over time will improve accuracy, as well as the amount of relevant recommendations Fitbay will surface for the individual user.

Not only do these investments help a user's motivation by making the product more valuable, but according to the Hook Model they are also likely to create internal triggers over time. Still, actually pointing to examples of users returning to a product due to internal triggers (i.e. habituated users) in the interview findings is naturally challenging. It is very difficult to *prove* that users are being brought back to a product by internal triggers (e.g. by directly observing such triggers in action – after all they are just mental connections in a user's mind), yet there is one example that at least *indicates* that it might be the case – namely the users unsubscribing from the MaterialUp newsletter. According to Aussaguel, most of the users that unsubscribed said it was because they were returning to MaterialUp daily anyway. It is true that some were returning due to other external triggers, such as posts from MaterialUp in their Twitter feed, but it would not be a stretch to suggest that at least some of the users, some of the time, were actually returning due to internal triggers. Incidentally, this is also a good example of why it is useful to have the mindset of a critical realist when conducting this study.

And it is not just in the Social products users store value. Even with a SaaS product like Goodbits, users will store value over time. Although there is little to no challenge in moving your email list around, Goodbits is working on providing meaningful time based analytics, where it is easy to see how the performance of your newsletter is developing, issue by issue (Sandhu, 2015). This data becomes more and more valuable over time, and switching providers would entail losing access to it. Users will also store many articles in Goodbits over time, create their own templates, and so on. All of these things are forms of *investment* likely to boost your motivation to keep going, not to talk about all the subscribers that come to expect your newsletter on a regular basis.

Also the Tictail feed is a prime example of stored value. It is also a prime example of how the stored value leads to new triggers, even without the human-to-human interactions of a social network. The more you use Tictail, the better it becomes at helping you grow and run your online business. The Tictail feed will give you timely recommendations of what to do next, based on what you have already done (as well as what other users do). So by using Tictail, it gets smarter and in turn provides you with increasingly valuable insights. Not only are the recommendations valuable in themselves, they also act as powerful triggers loaded with motivation – and by making it so easy and actionable, it even increases your ability to do well.

There were also a few examples where language was used to help motivate a user to complete certain actions, such as completing the onboarding funnel for ReadingPack (Shoshan, 2015). Contrary to what Fogg (2002) suggests however, there were not observed any attempts at designing products in a way where they would be perceived as more human – except through the occasional use of informal and motivating language. Also, no clear distinction between SaaS and Social products was observed in this area.

5.1.2 Network Economics View

Moving into the network economics view, let us first look briefly back at the theory. Shapiro & Varian (1999) listed seven types of lock-in and associated switching costs: Contractual commitments, durable purchases, brand-specific training, information and databases, specialized suppliers, search costs, and loyalty programs. Based on the interviews, there is only support for a few of them, both as lock-ins facing new users, as well as lock-ins that may eventually face the users of a product down the line. In Table 3, the evidence for the different types of lock-ins in the case of SaaS and Social are summed up and color coded.

Types of Lock-In	Associated Switching Costs	Evidence for relevance in SaaS and Social
Type of Lock-In	*Switching Costs*	*Evidence*
Color coding: Red = No or little support, Orange = Limited support, Green = Supported.		
Contractual commitments	Compensatory or liquidated damages	No users facing this lock-in, no companies offering significant contracts
Durable purchases	Replacement of equipment; tends to decline as the durable ages	Not applicable to any of the case companies in any significant way. May be somewhat relevant for applications that are only available on either iOS or Android, as users of the other platform would need to purchase a new smartphone to use the app. There are a few examples of this outside of the case companies however, such as Evernote selling complementary goods designed to work specifically with Evernote, such as special Post-it notes, an Evernote scanner, and special Moleskine notebooks ("Evernote Market," n.d.). This is still rare though.
Brand-specific training	Learning a new system, both direct costs and lost productivity; tends to rise over time	This is highly applicable. Probably an important contributing factor for why Tictail finds it much easier to attract users that are just starting their first online store, rather than to attract users away from their main competitors. That being said, many products today are designed in a way making them relatively easy to learn for beginners, and a competitor might still use a similar interface to lower this barrier (such as Timely looking and acting a lot like an ordinary calendar). Changing habits that are built around a certain product or workflow would be more challenging however.
Information and databases	Converting data to new format; tends to rise over time as collection grows	Although liberal APIs and data interoperability are on the rise, this is still a relevant lock-in. Especially where users will lose out on insights based on their accumulated use of a product.
Specialized suppliers	Funding of new supplier; may rise over time if capabilities are hard to find/maintain	Not very relevant for SaaS and Social products. On an infrastructure level it might have more relevance, but not so much on the application level.
Search costs	Combined buyer and seller search costs; includes learning about quality of alternatives	Less and less relevant, thanks to Google (with the Play Store and Google search) and Apple (with the App Store). You might not find *all* available alternatives, but likely a solid handful at the very least.
Loyalty programs	Any lost benefits from incumbent supplier, plus possible need to rebuild cumulative use	Not very common today. Sometimes users might be *grandfathered* into their current plan, e.g. if there are price increases. Leaving the product would mean losing access to this preferential rate later – but it is not really a loyalty program.

Table 3: Lock-Ins & Switching Costs, with added Supporting Evidence

Adapted from (Shapiro & Varian, 1999, p. 177)

The two most relevant types of lock-in are *brand specific training* and *information and databases*. The former is not something any of the case companies explicitly highlighted, but it is likely that it is still very much the case, at least for the SaaS companies. However, this is one of the reasons for why understanding the process of activating new users is so important. Specifically, this corresponds to the ability element of the FBM. By teaching how the product works in an interactive tutorial (like Goodbits and Timely does) mitigates part of this problem – especially for relatively simple products. It would be a different case altogether if a product tries to replace for example Adobe Photoshop, a product that takes year to really master. And that is probably why, for instance, an online graphics editor like *Pixlr Editor* looks very similar to Photoshop (Ivanoff, 2014).

Tictail takes it even further than just an interactive tutorial to teach users the basics of the product. The main way of interfacing with their control panel is by responding to or completing a variety of contextually relevant mini-tasks. Each little task explains what needs to be done, and you even complete the task right within the notification. This is a radical shift (i.e. simplification) in interface from their competitors, which might feel unusual for someone that is used to manage a more traditional online store. It does align well with their decision not to target their competitors' users directly, but rather capture a large share of the first time store owners. This can in fact be seen as a *revolution strategy* according to Shapiro & Varian (1999), as it is incompatible with existing solutions.

One lock-in that Timely faces, that potential customers already use a complete suite of products where time tracking is only one of the features (Mikkelsen, 2015), is a little different. The problem for Timely in such a case is that they are only offering a single feature of the larger system. An appropriate analogy could be someone offering a really good car stereo in a market where most cars come with stereos that cannot easily be swapped out – and no one will swap a complete, working car for only a stereo. It is obvious that for the stereo to be successful, it would need to be made compatible with the car somehow. And that is what they are working to do now. In other words, they are working to remove the *information lock-in*, where applicable.

In fact, Timely is not the only product facing this issue. It is also the case for Goodbits, where quite a few potential customers already have "a huge marketing platform managing every element of social media and everything" (Sandhu, 2015). The problem here is the lack of a *good enough* API to interface with these integrates suites. It is easy to argue that this is another prime example of an *information lock-in*, but it might not last that long. According to the Goodbits founder, these marketing platforms currently "don't offer the needed granularity of the APIs, but we know that's coming quite a bit" (Sandhu, 2015).

Both Timely and Goodbits follow the *evolution strategy* as far as possible, trying to make their software compatible with the most relevant incumbents. That makes a lot of sense, especially where potential users are locked-in to a larger system. Goodbits has stated, however, that they are working on their own email service – meaning users do not need to rely on a third party email service provider like MailChimp, but can use Goodbits by itself.

Given that it is mainly information and training lock-ins that face SaaS and Social products today, it also make sense that those are the forms of lock-ins that are most realistic for such companies to build over time with *their own products*. But as it is getting easier and easier to move data, what becomes especially interesting is what they do with the data itself. This is the prediction of the Timely founder as well: "I definitely think we're gonna end up at some place where it's super, super easy to move data" (Mikkelsen, 2015). He also predicts that with all the time estimation and tracking data they collect, they will be able to provide users with extra value by more accurately predicting how they will spend their time – something a competitor would not be able to do just by exporting one user's logged hours. And as previously mentioned, Tictail is using aggregate data from their entire user base to make the Tictail feed give smarter and more timely suggested actions – resulting in sheer performance gains that are difficult to replicate for a future competitor. It seems that data in itself is not sufficient for creating sustainable lock-ins anymore. It is what you do with that data that matters the most, and where the real opportunity lies.

In contrast to what Shapiro & Varian (1999) suggested, there are very few monopolies today (in software in general, and SaaS and Social especially). In most cases you will find at least a duopoly, usually even more. You might find niche monopolies however, especially within social products. Although Facebook *won the war* against Myspace, we have seen plenty of new social products emerge later addressing their own niche. You have LinkedIn for professional connections, Twitter is popular among people in the tech and media industries, Dribbble among designers, and so on. Fitbay might very well maintain and solidify its position as a leader in its own niche, *getting inspiration for new clothes*. So there might still be *tippy market dynamics* at play, but mostly contained within certain niches.

5.1.3 Reliability View

Moving on to the topic of whether or not perceptions of reliability among a user base (and the resulting impact on customer satisfaction) has any impact on retention, as Bolton (1998) suggested. Although all the case companies had experienced some sort of an outage, most did not attempt to measure the effects on user satisfaction. Still, the companies generally tried to avoid downtime or other disruptions as much as possible.

One interesting finding, however, was the differences observed between SaaS and Social products in how important they viewed the issue of reliability and user satisfaction. Most of the SaaS

companies would reach out with a sincere apology after any incident or disruption, and Tictail would even compensate their customers by offering complimentary add-ons in case any significant downtime was their fault. The Brewhouse team had not yet needed to resort to such measures, but they nevertheless had a very proactive approach to following up with users encountering errors while using Goodbits – even following up with users that experienced an error without reporting it. They could do this thanks to a robust automatic testing system that would alert the staff whenever any user would encounter an error within the product. It does appear like SaaS companies take the matter of uptime and reliability seriously, implying that they assume it is important for either customer retention, referrals or future opportunities to monetize.

Based on the interviews, it seemed that the Social companies would not go as far as the SaaS companies to avoid downtime or other issues. They would still try to keep users in the loop though. It does make intuitive sense that this is a more important issue for the SaaS companies overall, especially due to the fact that their users are (usually) paying them directly to solve a particular problem. So in the case of downtime the users would not be able to use the product for whatever purpose they had paid to use it.

Still, there was no indication that companies with a worse track record in terms of reliability and uptime experienced any significant impact on *long-term* user engagement and retention. So other than recognizing that it likely is good practice – especially in SaaS – to make your users and customers happy throughout your relationship (and that doing so *probably* prevents some users from looking for alternatives), these findings are not being used directly in the integrated model being proposed in the next section. Rather they should be considered a factor with potential to influence a user's *ability* and *motivation* to use a product.

5.2 Towards an Integrated Model

Based on the presented theories and findings, this section outlines a proposal for an integrated model for increasing long-term user engagement in SaaS and Social products. The model describes three successive stages of a user's interaction with a product: *Activation*, *Manual Retention*, and *Automatic Retention*.

In Figure 4, the top row (the red boxes) represents the three stages outlined above, and can be understood as column headers. The other rows represent certain topics of particular importance for the various stages, according to which header they are listed beneath. The first of these rows (solid blue boxes) represent the most relevant goal or tactic for each stage. These are directly based on the information uncovered through the analysis process. The two last rows give an indication of what elements from the Persuasive Technology View and Network Economics View are relevant for that particular stage of the model. The gradient colors used for these rows symbolize that the

various elements here do not exclusively belong in one of the stages, but are subject to a more fluid transition.
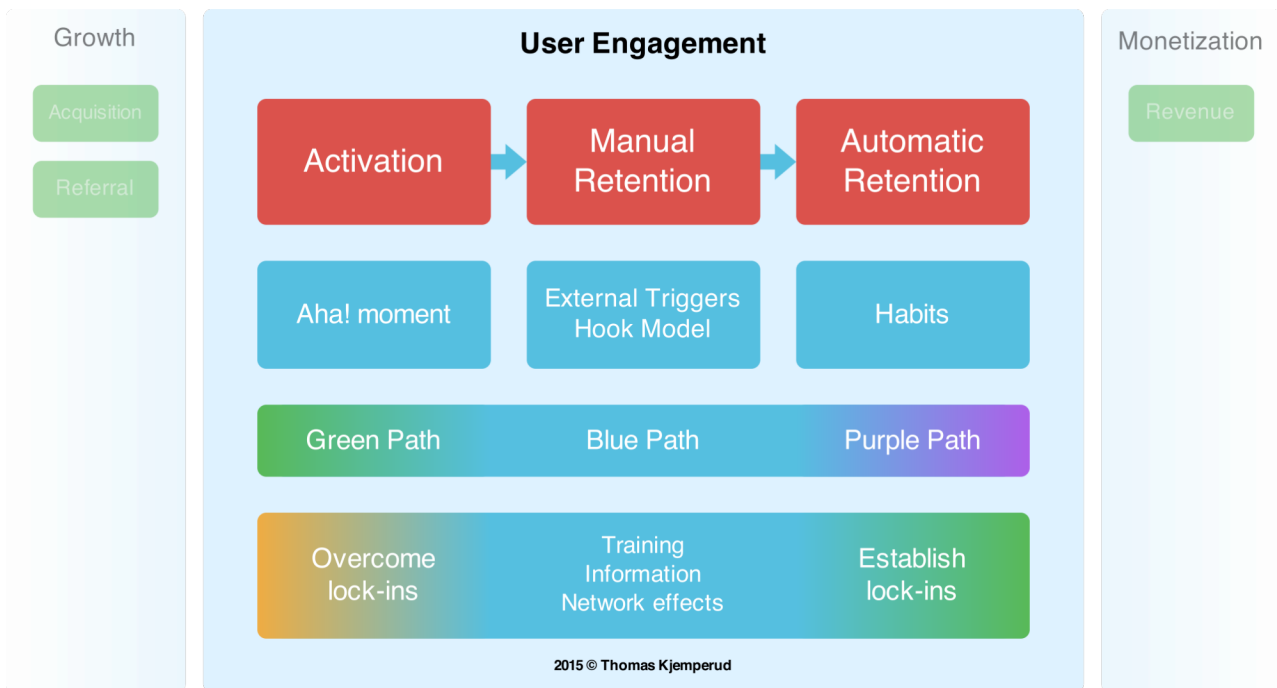

Figure 4: Integrated model for increasing user engagement in SaaS and Social products. Own development.

Please note that the faded out Growth and Monetization boxes on the sides are meant to demonstrate that they fall outside the scope of this paper, which focus solely on methods for increasing User Engagement. Also note that the topics listed in the center of the last row refer to the types of lock-ins that seemingly are relevant for SaaS and Social products, both to overcome and potentially establish with time.

The next few subsections describes the stages of the model in more detail.

5.2.1 Activation

In the activation stage the goal is to bring the user to the *Aha! moment*, in other words to let the user get to know the product and especially demonstrate the value the product will have for the user. In line with the discussion in the previous chapters, the Aha! moment is defined as the very moment when a user understands or experiences the value of the product through actual use.

This stage very much relates to the Green Path behaviors described in Fogg's Behavior Grid (Fogg & Hreha, 2010), i.e. doing a new and unfamiliar behavior, and continue doing it from now on. For a user to do the wanted behavior she needs to have the ability and motivation to do so. So that should be the first focus, boosting ability and motivation, typically through the onboarding

process. When ability and motivation is sufficiently established, the user may be triggered to do the intended behavior.

Part of the process of increasing ability (and potentially) motivation involves overcoming any existing lock-ins the user might face from a competitor, or other player. Typically for SaaS and Social products these lock-ins may include prior training and skills for using the competing product, existing data or information that is difficult to move to the new product, or certain network effects working against you (e.g. many suppliers of complementary products or services that integrate with the competing product due to its market position).

5.2.2 Manual Retention

After the user has experienced the Aha! moment, learned how to use the product and overcome relevant lock-ins, we arrive at the *Manual Retention* stage. The name implies that, at this stage, users are *unlikely to automatically return* to the product on a regular basis without intervention from external triggers. Accordingly, the goal here is to make sure users come back to the product frequently by primarily relying on such triggers. The intention is to gradually habituate the users, so they eventually will start returning to the product on their own. This relates to Blue Path behaviors in Fogg's Behavior Grid.

For the external triggers to work however, the user still needs to be motivated (and have the ability) to use the product. To maintain and even increase motivation, it is helpful to understand how *Variable Rewards* and *Investments* (as defined in Nir Eyal's *Hook Model*) work. In brief, Variable Rewards refers to users getting what they came for when using the product, without it becoming predictable. Investments are an effort on the user's part, leading to stored value and the potential loading of new triggers. Investments leading to stored value may also start building lock-ins tied to the information and data stored in the product, making it potentially more difficult for a competitor to attract the users of the product.

5.2.3 Automatic Retention

If the effort to habituate the user is successful, we enter the Automatic Retention stage. At this stage the user is brought back not only (if at all) by external triggers, but rather *internal triggers*. In short, the user has developed a habit of returning to and using the product. From here on out the challenge is to maintain and solidify the habit. If the usage of the product decrease over time, the Purple Path from Fogg's Behavior Grid dictates that one should examine if the user is still sufficiently motivated, able to use the product and triggered to do so at an optimal time.

Again, in an effort to understand why a user may become less motivated over time, it can be helpful to consult the Hook Model – in particular the Variable Rewards and Investment steps. E.g.

the product might have become predictable over time due to lack of variability. Users should also be encouraged to continue storing value in the product, further building future lock-ins.

5.2.4 Applicability of the Model

Although the integrated model primarily is put together with Software as a Service and Social products (like social networks and communities) in mind, it is not unlikely that it is applicable for certain other products, both online and offline – at least to some extent. Other online services that come to mind include media streaming services, such as Spotify (music streaming) and Netflix (movie and TV streaming), as well as online newspapers. Maybe a bit surprisingly, even *offline* products like a local bookstore or a gym might find (at least parts) of the model applicable in their own context.

6 Concluding Thoughts

The goal of this paper was to uncover a practical approach or approaches to increase user engagement in online services, and in SaaS and Social products in particular. The literature review did result in a number of perspectives from the fields of persuasive technology (captology), behavior and network economics, and customer satisfaction research. Following from the thematic analysis of a group of early stage software startups an integrated model emerged, focusing on three distinctive stages in the process of facilitating long-term engagement for users: activation, manual retention, and automatic retention.

To the best of my knowledge, this is the first academic paper attempting to discover an integrated model of user engagement in online services while taking into account multiple theoretical views. It was never the goal of this thesis to empirically verify its findings through experimentation or other deductive approaches. Additional work is required to demonstrate and improve the external validity of the proposed model. While this paper is limited to SaaS and Social products, it is likely that the findings are relevant for other online and digital services requiring ongoing use. Testing the model through careful experimentation should be possible, albeit challenging and potentially expensive and time consuming. On the other hand, as the findings can have significant impact for product makers, such experimentation might very well prove worthwhile – but such endeavors will be left up to other researchers to explore for now.

I do believe that understanding the principles of what drives the use of technology only will be of increasing importance in the coming future, especially as behavior altering technology rapidly becomes more pervasive in our increasingly connected lives. Consequently, there also lie a responsibility with product makers, designers, and entrepreneurs to avoid exploiting these insights in unethical ways, but rather adopting them in a responsible and constructive manner.

The latest version of this thesis and additional resources can be accessed online at thomas.do/thesis.

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8 Appendices

8.1 Abbreviations

- FBM: Fogg Behavior Model
- DAU: Daily Active Users
- MAU: Monthly Active Users
- SaaS: Software as a Service
- CS: Customer Service
- NPS: Net Promoter Score
- K: Thousand (e.g. 10K = ten thousand)
- M: Million (e.g. 5M = five million)
- DDoS attack - Denial-of-service attack
- OBM: Online Behavior Metrics

8.2 The Hook Model - A Brief Outline

In short the Hook model is an approach for designing habit-forming products, developed by serial entrepreneur Nir Eyal. It dictates that product makers should take users through a loop consisting of four basic steps (trigger, action, variable reward, investment) and do it with enough frequency to create a habit. One of the goals is to create internal triggers with your users, meaning that you don't have to tell them to come back to your product, but that a certain situation (e.g. walking into a grocery store) or mental state (e.g. boredom) will trigger your use of the product. (Eyal, 2014)
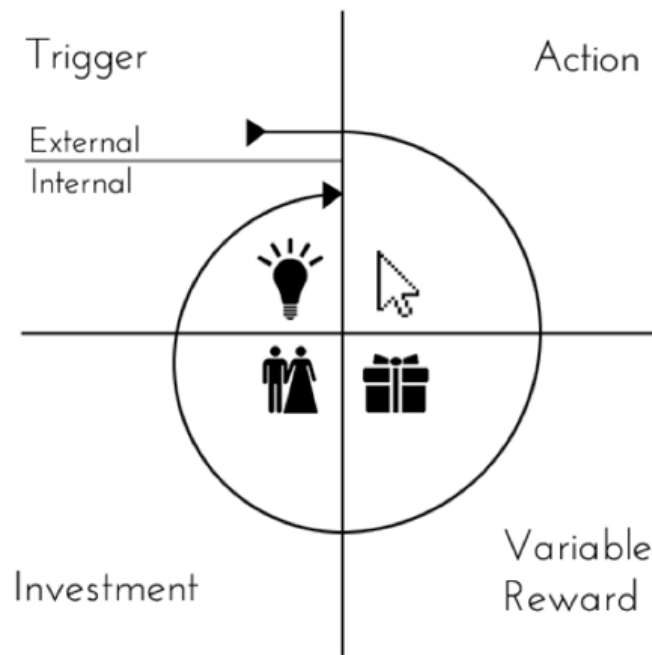
The four basic steps of the Hook model. © Nir Eyal. NirAndFar.com

Here is a brief introduction to each step in the model. This short list will not go into the underlying psychology of the different steps in the model, but rather briefly summarize the recommendations from each step:

Trigger
External triggers has been covered earlier in the section. *Internal triggers* is a little different. Instead of the user seeing a notification or similar from a product, something in their environment, a mental state, or context triggers a mental connection to use a product. E.g. if you are bored, you might open Youtube without making a conscious decision to do so. Or if you see something cool around you, you might open Instagram or Snapchat to save and share the moment with your friends. The goal of the Hook model is to design your product in such a way you over time develop such internal triggers to spur automatic use of the product. (Eyal, 2014)

Action
This step relates a lot to the Fogg Behavior Model. In fact, FBM is the main component of the action step of the Hook model. As the FBM dictates, you need three things for an action to take place: sufficient motivation and ability, and a trigger. (Eyal, 2014)

Variable Reward
You also have to give the user what she came for, i.e. give her a reward that matches the reason why she came to the product in the first place. E.g. if a user opened Youtube because she was bored, it should be easy to find entertaining videos. The fact that the reward should be *variable*

means it should not become predictable – a bit of mystery keeps things interesting over time. (Eyal, 2014)

Investment

In this step a user should somehow *store value* in the product – for example data, social followers and so on. Stored value can make a user more dependent on a product and less likely to switch to another product over time. The investments can also be used to *load the next trigger*, so that the loop can start over. For example if a user posts a funny dog video on a social network, someone commenting on the video can serve as a perfect external trigger by sending the user an email saying a friend commented on the picture. It is not unlikely that is enough to bring the user back to the product in order see what her friend wrote. **(Eyal, 2014)**

Remaining appendices are available on request.

See thomas.do/thesis for more information.