How digital platform companies employ envelopment and what makes it a success

A comparative study on Adobe Systems and Smith Micro Software

Author: Luuk Damhuis
University of Twente
P.O. Box 217, 7500AE Enschede
The Netherlands

Through the emergence of the internet and other communication technologies digital companies such as Google and Adobe have grown more swiftly than companies in other markets. The need of userbases and the overlap of different userbases push digital platform companies to innovate their business model by enveloping rather than relying on traditional innovation. Eisenmann et al. (2010) developed three types of envelopment through which digital platform companies can evolve, however, few scholars have examined which strategy leads to platform dominance. This paper theorizes how digital platform companies innovate their value proposition in the pursuit of revenue. Through new value propositions offered by Adobe and Smith Micro, which were derived from a series of blog posts and press releases by both companies from 2006 to 2011, the envelopmental strategies of the case companies were analyzed. Subsequently two different strategies resulting in differing levels of success were shown to be utilized by these companies. It was found that the best way to innovate is a balanced one, namely to strengthen ones core business by enveloping focused before sporadically using dispersed envelopment to enter newly adjacent markets and repeating this cycle. Through these envelopmental strategies an updated envelopmental matrix was proposed based on the matrix previously derived by Müller, Kijl & Visjnic (2018). Here lies the proposition that there is one optimal route for envelopment, as is shown in the matrix. The main contribution of this paper lies in the direction it can give to digital platform companies to grow fast and sustainable and the theoretical ground it provides for further research.

Supervisors:
Ir. B. Kijl
Prof.Dr.Ir. L.J.M. Nieuwenhuis

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1. Introduction

Platform markets have been around for decades in the form of for example credit cards and newspapers. (Armstrong, 2006) These platform markets consist of products and/or services that bring together users and have independent providing end-users offer their services on the platform, such as for example Amazon. However, the emergence of the internet and other communication technologies have driven digital companies to grow swifter and more substantial than companies in other markets. Companies active in such digital platform markets have shown to adapt to stay competitive in an ever-changing market. (Gawer & Cusumano, 2008) The fact that a platform becomes more interesting the more users it has, combined with often overlapping user bases of platforms lead to companies innovating by enveloping into other markets, rather than relying on the more traditional Schumpeterian innovation. (Eisenmann, Parker, & Van Alstyne, 2006) Entry into other markets through envelopment is based on adding the functionality of the platform supplying the market into its own bundle, thereby enveloping the market. (Eisenmann, Parker, & Van Alstyne, 2010; Tiwana, 2014) Nowadays market boundaries seem to have dissipated as these companies converge on supra-platforms offering their end-users not only a simple product, but a complete bundle of products that cooperate with each other, such as the Nexus phone, running on android software, or the IPhone, running on iOS. Looking back at the developments within these digital platform markets, it can be observed that companies and standards evolve through sequential winner-take-all battles. (Schilling, 2002)

1.1. Problem Statement

Envelopment consists of the entry of a company into another market through bundling its own platform with that of the market it is attempting to gain entry to. To gain a better understanding of platform markets and their course of innovation Eisenmann et al. (2010) have developed a typology of envelopment. In this typology they assert that envelopment can be divided into the envelopment of weak substitutes, the envelopment of complements, and the envelopment of functionally unrelated markets, each focused on combining its own functionality with that of the rival platform to leverage shared user-bases or common components. (Eisenmann, Parker, & Van Alstyne, 2010) Two companies that have manifested themselves in the digital platform market are Adobe Systems[1] and Smith Micro Software[2], over the years both of these companies have battled for dominance and attempted to set a standard. Both companies fit the concept of a platform company and are seen as exemplar companies within their branches. Considering that these companies either entirely or for the largest part act in the software development market and have attained differing levels of success, executing a comparing research among these companies will be likely to yield insight in what variables and conditions offer a higher chance of success for platform companies. Even though it has been observed in what ways platform companies may innovate their business model or their value proposition, few scholars have examined in what way envelopment, and therefore business model change, leads to platform dominance. The main goal of this research proposal will be to explore how companies such as Adobe and Smith Micro Software innovate their business model to perpetuate growth. Therefore the following research question will guide this research:

How do digital platform companies innovate their value proposition in the pursuit of revenue growth?

In this paper we will study the two aforementioned companies to determine what may lead to excellence or failure when considering the above. Over the time period of 2006-2011 data has been gathered on product launches through press releases and blog posts. Through analyzing this data we will provide the scientific and managerial community insight into how digital platform companies innovate and what ways have proven most effective.

2. Theoretical Framework

To truly gain a perspective with regard to the research question, concepts among which platform markets, business models, envelopment, and network effects need to be

[1] From here on: Adobe

[2] From here on: Smith or Smith Micro

crystallized. This part of the paper will focus on conceptualizing and operationalizing the concepts at work.

2.1. Platform Markets

As a large part of the research question revolves around the concept of platform markets, it is important to fully grasp what a platform market entails. Platform markets are also known as two-sided or multi-sided markets; essentially it is a product or service that brings together two or more end-users. (Eisenmann, Parker, & Van Alstyne, 2006; 2010) It is worth stating that platforms, as the term suggests, are products or services that serve as foundations; they offer the possibility for complementary products, services, and technologies. Therefore the platform itself is evolvable; it is partitioned into stable core components and variable peripheral components, the latter may change over time and is even encouraged to do so. This is easily illustrated when one takes in mind for example the interface of a website or another platform. The interface of these services retain the basic interaction of components, yet change in appearance through time. Through reuse of the core components it is suited to respond to changes in the environment. (Gawer, 2009)

Over the past years organizations, and specifically service organizations, move away from a more vertical integrated approach, where in-house employees provide the product or service, and towards platform-based models where independent providing end-users offer their services or products on the platform provided by the organization. (Hagiu & Wright, 2015) Especially industries supplying complex products such as computers and smartphones tend to integrate platforms in their organization, (Hagiu & Wright, 2015) or in other words, mitigate vertical integration.

Considering the essence of this paper and the focus on digital platform companies, it is useful to recognize Tiwana et al., who consider platforms to be "the extensible codebase of a software-based system that provides core functionality shared by the modules that interoperate with it, and the interfaces through which they interoperate". (Tiwana, Konsynski, & Bush, 2010) Take for example Adobe and their product Creative Cloud; this is a subscription-based model on which subscribed members have access to the tools they need to "deliver consistent personalized experiences across channels." (Adobe, 2013) Over time they added extensive functionality to the platform, these complementary products can be defined as modules, adding functionality to the platform, and the entirety of the platform itself combined with its modules as an eco-system. (Tiwana et al., 2010; Eisenmann et al., 2010; Fransman, 2010)

However, to understand how platforms operate and therefore generate revenue, one must distinguish the form of a platform within the organization. Platforms, which have an triangle-like 'shape' consisting of the two user groups and the platform itself, (Eisenmann, et al., 2006) can be seen as an architecture: a design of products, services, and infrastructure facilitating the end-users to interact and create transactions through the means of the platform, (Eisenmann et al., 2006) while charging both sides appropriately. (Rochet & Tirole, 2006)

An important side note is that in order to classify a platform as being a de facto platform, they have to meet certain restrictions: (Hagiu & Wright, 2015)

1. Interactions between both sides have to be direct
2. Both sides need to be affiliated with the platform

Direct interactions means that the two distinct sides need to be in control of the key terms of the interaction, the platform functions as intermediary but never takes control of these key terms. Key terms of the interaction include pricing, bundling, marketing, and quality for example. (Hagiu & Wright, 2015)

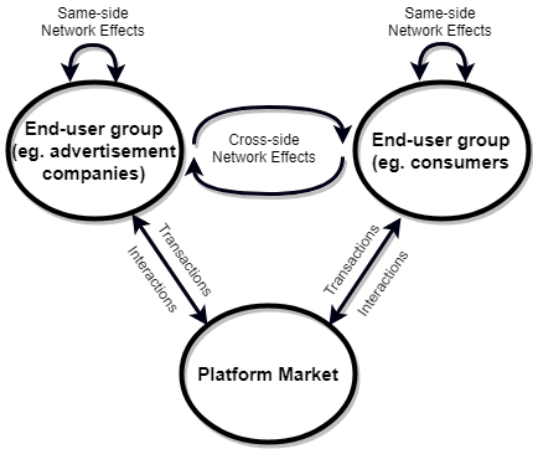

Fig. 1 - The architecture of a platform

Affiliation from both sides with the platform can be explained as that both sides need to consciously have made platform-specific investments, necessary for the end-users to be able to interact with each other directly. Such investments can be made in the form of time, money, or opportunity for example. (Hagiu & Wright, 2015) From these principles mentioned above, and with that especially from the second principle, it becomes clear that in a platform market both sides of the platform have made an investment that to a certain extent binds them to that platform and makes them interdependent. (Eisenmann et al., 2006; Gawer & Cusumano, 2008) This becomes evident when for example considering the Adobe Flash Player. Even though this was initially released outside of the scope of this research, it has been maintained throughout it and is one of the more well-known applications Adobe has developed. This platform requires developers to pay for an account to gain access to a collection of software used to develop content which can be played on the Adobe Flash Player, thus they are affiliated to the platform. At the same time people who want to see/use said content will have to use Adobe Flash Player. (Adobe Systems Inc., 2016) These properties of platform markets give rise to network externalities.

"The value of a product to one user depends on how many other users there are"
(Shapiro & Varian, 1999)

Network externalities, also known as network effects, can be explained by the fact that a platform becomes more attractive for end-users when it has more end-users; users want to interact and trade with other users and use the same components. (Shapiro & Varian, 1999; Farrel & Klemperer, 2007; Eisenmann et al., 2006) The value of the individual platform is largely dependent on the number of users on the network; this paves the way for the already established companies while deterring potential entrants. This in itself also gives rise to barriers for both the consumers as well as the companies in the platform markets. These barriers are known as the aforementioned network externalities and switching costs.

2.2. Entry Barriers to Platform Markets

When looking at platform markets and its properties, like any other market, entry barriers can be seen for organizations aspiring to gain entry into the market. (Eisenmann et al., 2006; Cennamo & Santalo, 2010) However, barriers appear different than in other markets when one takes a closer view.

Switching costs, resulting from platform-specific investments on the end-user sides of the platform, prevents end-users from switching rapidly and/or a lot from platforms. (Eisenmann et al., 2006) Network externalities are a second, closely related barrier. The concept of network effects translates to 'an increased value of consumption through the influence of a network of consumers using compatible products or services.' (Shankar & Bayus, 2002) It is here where a distinction can be made in two network effects that affect the value of the network differently, either positively or negatively. Eisenmann et al. (2006) propose that the value of a platform for a user depends for a great deal on the set of users of that platform, also called two-sided market effects. These network effects can be divided in cross-side network effects (also known as indirect network effects) and same-side network effects (also known as direct network effects). (Cennamo & Santalo, 2010; Eisenmann et al., 2006) Cross-side network effects occur when an increase in end-users on one side of the platform will encourage or discourage end-users on the other side of said platform to join, (Eisenmann et al., 2006) whose new addition will provide consequences indirect to the original growth on the other side of the platform. (Clements & Ohashi, 2005) Same-side network effects are similar, but with the difference being that when the set of users on a platform side grows, that same side will be less or more attractive to other consumers. (Eisenmann et al., 2006) As stated both of these network effects can be either positive or negative, however, cross-side network effects are more often than not positive and same-side network effects are more often negative. This is in part due to that an increase in same-side network users are often seen as competitors, hence making it harder to succesfully compete. Consider for example a gaming platform, for the user-side of the network it might be easier to bring other people into the experience or to trade games, but for game developers it means more competition. Cross-

side network effects in this case would be positive for both sides, there would be more end-users for the developers and more potential developers (thus games) for the end-user. Although it has to be stated that these cross-side network effects can also be negative, for instance when a TV platform (eg. NBC) has too many ads according to the public. (Eisenmann et al., 2006)

The network effects stated above give rise to the problem of the 'chicken and the egg', which Caillaud and Jullien discussed in their paper 'Chicken and Egg: Competition among Intermediation Service Providers'. (Caillaud & Jullien, 2003) To attract buyers, a platform needs a fair database of sellers, but to attract these sellers, a platform needs a fair database of buyers. (Caillaud & Jullien, 2003) It seems that to be able to acquire a network user database, one needs a small network user database to start.
Network effects and switching costs make it hard for new companies to gain entry into a platform market as they shelter the existing organizations from new potential entrants. (Eisenmann et al., 2010; Parker & van Alstyne, 2005) Because developing and capitalizing an innovation in a new platform market simply seems to fall short due to barriers to entry, (platform) organizations tend to combine its own functionality with that of other markets, also known as bundling, to be able to offer a larger user base and increased functionality. (Eisenmann et al., 2010)

2.3. Envelopment vs. Schumpeterian Innovation

When one looks at platform markets, more often than not there is one platform that has risen to dominance at the cost of others. This so-called 'dominant design' emerges through its superior benefits (e.g. compatibility and design) in sequential winner-take-all battles, and it can force the standardization of their product, as was the case with for example the PDF file; which was developed by Adobe and ultimately became the standard file format for documents when it was published as such by the International Organization for Standardization. (Utterback & Suárez, 1991; Garud & Kumaraswamy, 1993; Economides, 1989; Eisenmann et al., 2010; International Organization for Standardization, 2013)
To overcome this standard and its considerable barriers by the name of network effects and switching costs companies must offer revolutionary functionality. (Eisenmann et al., 2010)
Companies can approach their intent to penetrate other markets through the means of envelopment. Envelopment is a method for platform companies to enter other markets characterized by network effects without relying on the more 'traditional' Schumpeterian innovation. (Eisenmann et al., 2010) According to Eisenmann et al. (2010) envelopment encompasses: "entry by one platform provider into another's market by bundling its own platform's functionality with that of the target's so as to leverage shared user relationships and common components."
This becomes a possibility when markets share overlapping user bases and/or common components. As mentioned in the definition by Eisenmann et al. (2010) leveraging these shared user bases and common components, and offering the functionality of the rival platform along with its own in the form of a multi-platform bundle or an eco-system makes it possible to acquire the rival network. (Eisenmann et al., 2006; 2010) Through this multi-platform bundling the eco-system expands and offers a larger platform and additional modules. (Tiwana et al., 2010)

Envelopment is a widespread phenomenon and a powerful force shaping the evolution of platform markets.
(Eisenmann et al., 2010)

Envelopment itself becomes viable and most probable for success when at least one of three leverages presents itself within an opportunity; these leverages are user bases overlap, price discrimination benefits, and/or economies of scope. These opportunities can be leveraged through three types of envelopment. (Eisenmann et al., 2010)

Eco-systems develop in different markets, but also in different layers, as defined by Fransman (2010). Fransman devised a layer-based taxonomy, dividing the ICT sector into four hierarchically separated layers. These four layers consist of networked element providers (e.g. producers of computers, mobile phones and telecommunications), network operators (e.g. suppliers of telecommunications and cable

television), content and application providers, and final consumers. All four of these layers are hierarchically devised, but need each other to exist. The first layer creates networked technology, which the second layer interconnects. The third layer is where platform markets can be found, upon which content and application providers generate content to offer to the fourth layer, the final consumer. As mentioned these layers are interdependent and therefore need each other to exist. The fundaments of this hierarchy are competition and innovation, as Fransman (2010) states: *"It is innovation that provides the system with its fuel and drives its relentless change."*

However, due to the nature of the layers, it is the third layer that provokes the most interest to this research on the grounds that the first two layers are mostly hardware based necessities upon which within the third layer platforms, their content, and applications are created. We therefore propose that the third layer is subdivided further; a sub classification has been made into platforms, applications, and content, rather than go with the higher aggregation that Fransman chose.

Moreover, we also propose operating systems as a separate layer within the framework as established by Fransman, this is due to the disparate nature of the networked products and operating systems; operating systems serve as a mediator amid the user and the networked product. (Silberschatz & Galvin, 1994) Therefore, the guiding framework can be shown as depicted in figure 2.

As an addition to the previously stated taxonomy, a further segregation following the Software Product Classification will be made within the layers as to further distinguish what type of development or innovation has been introduced by either company and within which market it was introduced, this taxonomy as developed by Zahavi & Lavie (2009) is displayed in figure 3. This classification holds 5 main categories (Personal Application, System Infrastructure, Vertical Applications, Business Applications, and Packages) which are each subdivided into a range of 8 to 20 subdivisions. This classification mainly handles the nature of what the product is used for, rather than what part of a platform the product belongs to as stipulated in the adjusted taxonomy.

2.4. Types of envelopment

Envelopment of platforms occurs in two directions, as Tiwana (2014) states, namely horizontal and vertical. Horizontal envelopment, which attempts to supply its own user-base with new services outside its core market, has two requirements: a substantial overlap in user-base must exist, so the user-bases may be combined, and the bundled platform should provide a superior functionality over the existing rival platform. An interesting example is Adobe Digital Editions, which is an e-book reader software program. When Adobe introduced Digital Editions it had already established the PDF file as an industry standard, this addition expanded their offering. Vertical envelopment on the other hand attempts to expand the scope of the own platform by enveloping within the value chain. The platforms it desires to envelop are functionally related to the core business of the platform. (Tiwana, 2014) An example in this case is the Registry Cleaner as developed by Smith Micro. This software is an addition to their CheckIt line, ultimately expanding their existing suite for an existing user base as well as a new one in a functionally related way. Two general directions that are both focused on growth are stipulated, one focuses on building and expanding the core market, whereas the other attempts to penetrate new markets, somewhat or non-related to the core market.

Cooperating on this notion Eisenmann et al. (2010) distinguish three types of envelopment: envelopment of complements, envelopment of weak substitutes, and envelopment of unrelated platforms. All three types are based on a different type of connection or overlap between the

Layer	Description
1	Networked Products
2	Operating Systems
3	Networks
4a	Platforms
4b	Content
4c	Applications
5	Final Consumer

Fig. 2 - Adjusted Taxonomy

1. Personal Application		**3. Vertical Applications**	
1.1	Educational/training	3.1	Banking
1.2	Reference	3.2	Government
1.3	Games	3.3	Healthcare services and medicine
1.4	Entertainment	3.4	Insurance
1.5	Life style	3.5	Legal
1.6	Personal productivity	3.6	Entertainment and media communications
1.7	Personal multimedia productivity	3.7	Real estate
1.8	Personal productivity utilities	3.8	Aerospace and aviation
1.9	Business productivity	3.9	Agriculture and farming
1.10	Utility systems	3.10	Apparel and fashion
1.11	Operating system enhancements	3.11	Automotive
1.12	Internet communications	3.12	E-learning/education
		3.13	Food service and beverage
2. System Infrastructure		3.14	Hospitality/travel
2.1	Network management (logical)	3.15	Mapping
2.2	Network management (physical)	3.16	Not-for-profit
2.3	Data structuring, access, and manipulation	3.17	Telecommunications
2.4	Integrated development environment	3.18	Energy/utilities
2.5	Software application design	3.19	Retail and wholesale
2.6	Software application development	3.20	Science and engineering
2.7	System-level application		
2.8	Storage	**4. Business Applications**	
2.9	Security	4.1	Enterprise resource planning
2.10	Distributed Computing	4.2	Accounting
2.11	Middleware	4.3	Factory/facility management
2.12	IT system management software	4.4	Financial analysis & management
		4.5	Manufacturing
5. Packages		4.6	Sales & Marketing
5.1	Integrated development environment	4.7	Product design & development
5.2	Enterprise resource planning	4.8	Logistics
5.3	Office suite	4.9	Collaborative applications
5.4	Integrated accounting	4.10	Human resource management
5.5	Manufacturing resource planning	4.11	Data analysis
5.6	Customer relationship management	4.12	Decision support systems
5.7	Supply Chain Management		
5.8	Human Resource Management		

Fig. 3 - Software Product Classification

markets, and thus on leveraging different possible profits as mentioned. The envelopment of complements is aimed at enveloping adjacent platforms complementing their own platform in order to eliminate adjacent platform market leaders while expanding its own platform. This type of envelopment becomes particularly profitable when user bases overlap significantly, and the user bases have a strong need for both products. By bundling these products or platforms, platform providers can offer superior functionality over the rival platform market leader in the form of a multi-platform bundle with a higher shared gain. Adobe's eLearning Suite serves as an example as Adobe effectively rebundles existing software with newly developed software to gain entrance into a new market functionally closely related to its core. The market it attempted and succeeded to envelop is closely related to its core as is evident by Adobe's

ability to create the suite containing mostly adapted versions of existing programs. This move is not considered as the envelopment of unrelated platforms due to their presence in the e-learning market.

The envelopment of weak substitutes aims to envelop platforms that seek to supply the same user base and purpose, but satisfy different needs therein through the use of different technologies. As is the case with envelopment of complements, user bases tend to overlap, however, this is more often to a lesser extent than with the envelopment of complements. Due to the limited similarities in user bases and the shared purpose, users may see a greater relevance in the bundled platform, but only as far as the enveloped platform serves a unique functionality. Due to the former, companies will hardly be able to obtain a higher shared gain and will need to discount the bundled platforms and therefore the envelopment of weak substitutes serves to realize economies of scope. As per previously mentioned example Smith Micro developed Registry Cleaner as an addition to their CheckIt line, as stipulated it is a functionally related move equipped to serve an existing userbase and attain a new userbase. The software itself is a utility system, of which Smith Micro has multiple, which seeks to serve the existing and new userbase through bundling it with their suites.

The envelopment of unrelated platforms seeks to obtain a platform dissimilar to its own, which may include a shared user-base or common components nonetheless. Where the former two types of envelopment seek to envelop a platform at the very least close to their own, whether it serves to satisfy the same need through different means, or it serves to satisfy a need related to their own platform, the latter seeks to envelop markets not based on functionally related aspects but based on shared user-bases or common components to quickly penetrate multiple markets. (Eisenmann et al., 2010) When Smith Micro launched Poser and Anime Studio in 2007 it entered the market of personal multimedia productivity. Even though Smith Micro operates within the software segment, this move was not functionally related to their core and they stepped outside of their usual path.

It can therefore be stated that the former two types of envelopment seek to expand their core business, whereas the latter type is focused less on expanding the core business and more on quick penetration of markets and growth. This coincides with the vertical and horizontal approach developed by Tiwana (2014). The first two types of envelopment distinguished by Eisenmann et al. (2010) focus on expanding and enhancing the core market and can be compared to the vertical type of envelopment, the latter seeks functionally unrelated platforms to penetrate, which can be compared to the horizontal type of envelopment. Concluding the previous we propose two distinct types of envelopment as Müller et al. (2018) have: focused envelopment, which seeks to expand and enhance the core market on which the platform operates, and dispersed envelopment, based not on the core market of the platform company, but rather the swift penetration of markets and early growth.

On an early glance one can see that this applies highly to the case companies; in the early start of the company Adobe developed their first drawing program: Illustrator. From thereon they started adding other programs, all based in the multimedia and creative segment. (Adobe Systems Inc., 2016) Smith Micro Software on the other hand started off in the wireless and network products segment and moved to wireless access and mobile services in 2008, building at its core along the way, however, they also made a radical move entering the graphics segment of the mobile market culminating in for example Poser in 2007 which facilitates creating 3D animations. (Smith Micro Software, 2016) Types of envelopment therefore become apparent when one examines the type of innovations a company has brought forth.

Considering the above, it can be concluded that envelopment obscures the boundaries between markets, this is also known as convergence. (Eisenmann et al., 2010; Tiwana et al., 2010) (Tiwana, Konsynski, & Bush, 2010) This holds especially true for digital platform markets where technology increasingly amounts to higher levels. (Eisenmann et al., 2010; Al-Debei & Avison, 2010)

2.5. Business Models

Business models became a phenomenon among practitioners around the time that computers and spreadsheets became available; people were able to model the behavior of business better than ever before. (Magretta, 2002) One of the more acknowledged writers on this subject is Henry Chesbrough who states that to ensure the

capture of value; technologies have to be pursued with a suitable business model. (Chesbrough, 2009)

To gain an understanding of how platform companies generate value we need an understanding of the business model concept. In recent years the term business model has gained momentum and is widely acknowledged as an important driver in e-business oriented firms, especially since the rise of the internet-era. (Al-Debei & Avison, 2010; Al-Debei & Avison, 2010) To acknowledge the importance of business models, and especially in platform markets, Rochet & Tirole stated that *"the choice of a business model seems to be key to the success of a platform…*" (Rochet & Tirole, 2002) However, definitions are unclear and fragmented, leaving many in the dark on what a business model exactly comprises. (Tikkanen, Lamberg, Parvinen, & Kallunki, 2005; Al-Debei & Avison, 2010; Magretta, 2002; Morris, Schindehutte, & Allen, 2003) Many researchers have formulated definitions for the concept of business models, but a final, conclusive definition has yet to be articulated. (Al-Debei & Avison, 2010; Zott, Amit, & Massa, 2011) The ambiguity surrounding the concept of business models can be explained through three interacting factors. (Al-Debei & Avison, 2010)

"The economic value of a technology remains latent until it is commercialized in some way via a business model"
(Chesbrough, 2009)

First of all, it is a new concept, which still needs exploring and defining. (Osterwalder, Pigneur, & Tucci, 2005) This leads to many researchers being triggered by it because of its perceived usefulness, but a lot of the times researchers tend to consider just one or a few parts of the larger concept due to the respective field they are in, ignoring advances in other fields. (Shafer, Smith, & Linder, 2005) Last of all the scientific fields in which the business model is deemed most useful are relatively new themselves, in which specifically the digital business is named, which is why in this case there is need for a clear defined concept of a business model. (Al-Debei & Avison, 2010) In order to arrive at a working definition for this paper some of the most acknowledged definitions are elucidated below.

According to Amitt & Zott (2001) a business model is unit of analysis for capturing value creation; it "*depicts the design of transaction content, structure, and governance so as to create value through the exploitation of business opportunities*." According to Teece (2009) it describes the design or architecture of the value creation, value delivery, and value capture mechanisms employed. The essence, according to Teece (2009), is that it "*crystallizes customer needs and ability to pay, defines the manner by which the business enterprise responds to and delivers value to customers, entices customers to pay for value, and converts those payments to profit through the proper design and operation of the various elements of the value chain.*" (Teece, 2009) Chesbrough and Rosenbloom (2002) state that a business model articulates a value proposition; identifies a market segment; defines the structure of the value chain; estimates cost structure and profit potential; describes the position of the firm in the value network; and formulates a competitive strategy.
When considering the definitions it becomes clear that a business model is primarily a conceptualization of how an organization sees, responds to, and captures (new) business opportunities, and as Magretta states, more a description of the business that employs the business model. (Magretta, 2002) This fits well with the proposed notion of Amitt & Zott (2001) that the main locus of value creation covers the entire e-business and is captured by the business model itself. They found in their studies that efficiency, complementarities, lock-in, and novelty are key drivers of value creation within these e-businesses. (Amit & Zott, 2001) This in itself encompasses that on which e-businesses thrive and thus this definition fits most in this research considering that the focus of this research is on platform business.

"They are, at heart, stories – stories that explain how enterprises work."
(Magretta, 2002)

One of the problems that can be found when considering business models is its theoretical insignificant detachment from other concepts such as strategy, tactics, and goals, and therefore its unclear place within an organization. (Casadesus-Masanell & Ricart, 2010) With the rise of the internet, the concept of business models

became increasingly popular among practitioners and scholars alike. But without a clear definition, people would use business models interchangeably with terms such as strategy, business processes and tactics. (Magretta, 2002; Seddon & Lewis, 2003; Al-Debei & Avison, 2010) Casadesus-Manell & Ricart (2010) propose a framework clarifying the positioning of business models within organizations. To avoid confusion between the concepts they state that a business model refers to the logic of a firm, the way it operates and creates value, whereas a strategy refers to the choice of a business model with which they will compete in the market. The remaining choices are classified as tactics. (Casadesus-Masanell & Ricart, 2010)

The choice of a business model seems to be key to the success of a platform..
(Rochet & Tirole, 2002)

The unified framework as depicted by Al-Debei & Avison (2010) backs up this theory, stating that business models are an intermediate layer between business strategy and ICT-enables business processes. (Al-Debei & Avison, 2010) So it seems that there is a hierarchical order in which strategy precedes business models, which on its own precedes the tactics.

2.6. Innovating business models

In today's world, the environment for enterprises, and especially the digital technology-related e-businesses, is getting more and more complex, as are the business domains they find themselves in and the technologies they rely upon. (Al-Debei & Avison, 2010) Business model innovation is vital for any organization, especially for those endeavoring for the successful employment of digital technology, and those who fail to do so run the risk of failure. (Chesbrough, 2009; Teece, 2009; Al-Debei & Avison, 2010) It is evident that in this ever-changing scenario organizations need to adapt; this can be done through the installment of suitable business models aimed at an increased response to environmental changes for instance. (Al-Debei & Avison, 2010; Eisenmann et al., 2010)

Business model innovation is of interest for three reasons. For one it is an often overlooked form of value creation for companies, second of all it is often hard to imitate a new business model since the change spans the whole company. Lastly they state that because it is a powerful competitive tool, managers need to be aware of competitors, both inside and outside their market boundaries as they may move in on them. (Amitt & Zott, 2010) Changes to the business model have the power to disrupt the industry and thereby yield important profits, but small changes are capable of yielding these important benefits likewise. (Amitt & Zott, 2010)

Amitt and Zott make a compelling case when they state that: *"Business model innovation, which involves designing a modified or new activity system, relies on recombining the existing resources of a firm and its partners, and does not require significant investments in R&D."* When combined with their definition of a business model, which includes the transaction content, transaction structure, and transaction governance, it becomes clear that in order to innovate a business model one must recombine and redesign the aforementioned transaction content, structure, and governance.

Without a well-developed business model, innovators will fail to either deliver - or to capture - value from their innovations.
(Teece, 2009)

As mentioned earlier, Rochet & Tirole (2002) stated that the choice of business model is of utmost importance to the success of a platform. When considering these theories and the earlier mentioned responsiveness facilitated by the evolvability of a platform it becomes apparent that platform envelopment itself is a form of business model innovation. It is way to offer an (innovating) functionality to a market through the recombination of the existing transaction content, structure, and governance.

3. Methodology

This research spans the time period of 2006-2011, an extensive case study of Adobe and Smith Micro has been made by analyzing a list of blog posts and press releases by both companies during this period which have been selected and studied for their relevance. This section will start off with an elaboration on the case companies and their fit for the research, followed by the research design and the data analysis itself.

3.1. Case Companies

Both companies were founded before the digital revolution; however, since then each company has taken a different approach to establishing themselves further as platforms, resulting in varying levels of success.

Founded in 1982, Adobe is currently one of the biggest software companies in the world and recognized by Forbes as one of the top 100 most innovative companies in the world. (Forbes, 2015) Adobe, which operates in multimedia and creative software, continues to grow, recording a revenue of $4.79 billion and a net income of $268.4 million in 2015. Currently their core markets are digital media, digital marketing, and print and publishing, which are respectively accountable for 65%, 31%, and 4% of total revenue over 2015. (Adobe Systems Inc., 2015)

Also founded in 1982, Smith Micro Software specializes in wireless and network products, although they have moved to include a graphics products and tools segment in 2006 and wireless access and mobile services in 2008. (Smith Micro Software Inc., 2014;2016) The success of Smith Micro Software peaked over the years 2004 to 2010 and ultimately started declining in terms of revenue, profits, and cost of shares as of 2011. (NASDAQ, 2016) Operational to this day, Smith Micro Software operates within the same branch (software development) as Adobe; yet they do not share a common core market. Over 2014 Smith Micro software recorded a revenue of $36.9 million, but a negative net income of $11.7 million. (Smith Micro Software Inc., 2014) Smith Micro Software is active within the software market in the Wireless and Productivity segment and the Graphics segment wherein the first segment is responsible for 84,6% of revenue and the second segment is responsible for 15,4%. (Smith Micro Software Inc., 2014)

Both companies were founded before the digital revolution and both companies entered the software market. Since then they have both attempted to broaden their organization and to set industry standards. Over time one has clearly succeeded whereas the other has drifted behind. Because of these equal variables, such as starting places and markets, and different outcomes over time in success the difference in approach to innovating their business model is assumed to be the defining variable. External and internal validity are considered to be adequate. This paper attempts to theorize on digital platform companies, and although it can be stated that external validity may be threatened by the similar markets in which the companies operate causing it to not be generalizable to the larger pool of companies, it is upheld by the fact that the companies represent the subject of digital platform companies and scope of the paper well and therefore are generalizable to the larger group of digital platform companies. On the other hand, internal validity is adequate as a result of the previously noted similar starting standards. (Shadish, Cook, & Campbell, 2002)

3.2. Data Collection & Analysis

To analyze how Adobe and Smith Micro Software have innovated their business model in pursuit of revenue growth several methods of data collection have been applied. First and foremost, congruent with the literature discussion, new product launches are the subjects of analysis. New product launches are considered as ways of enveloping into new markets or fortifying their existing markets, whether or not these launches were focused or dispersed envelopment is based on whether or not the company was active in the market they launched the product in. This data was gathered by analyzing the press releases and blog posts by the respective companies. Studying and analyzing press releases and blog posts for radical or incremental innovations released within the time span of 2006 to 2011 by the companies themselves offers a reliable and detailed insight into when a new product has been launched. Second of all, the press releases and blog posts were gathered from the official websites when available, provided the official articles as released by the companies were no longer available Factiva was used as a secondary means of gaining the necessary press releases.

The press releases and blog posts were first categorized by date, product, product type, and customer classification. After that the communications by these companies were identified as being either a product launch, a new version of an existing product, a launch with partners, whether the company bundled products to create the product, and whether or not it belonged to the platform category. At last they were categorized into their respective software product classification as developed by Zahavi & Lavi (2009) and their corresponding ICT layer in the adjusted taxonomy based on the work of Fransman (2010). Using these methods of

analyzing different launches provides us with a solid database of product launches covering the time period of this research, which will result in a classification as what type of envelopment the companies practiced.
Using these methods we analyzed respectively 277 press releases and 712 blog posts by Adobe and 442 press releases and 116 blog posts by Smith Micro, which ultimately led to identifying 46 new product launches by Adobe as well as 36 new product launches by Smith Micro.

4. Results

The main question leading this research is how platform companies innovate their value proposition in the pursuit of revenue growth. An analysis of new or improved value propositions over the time period of 2006 – 2011 has revealed multiple insights into how Adobe and Smith Micro Systems approach innovation and market penetration.

When looking at the companies throughout the years and based on the product introductions during the span of this research and the taxonomy by Zahavi & Lavi (2009) it can be stated that Adobe's core markets at the start of this research were Personal productivity, Personal multimedia productivity, Entertainment & media communications, Internet communications, and Integrated development environment. At the end it would have enveloped into other markets, adding Sales & marketing and E-learning & education to their core markets. Though at the start in 1982 Smith Micro's core market was Middleware, over the years they have spread to Utility systems, Operating system enhancements, Storage, Security, Middleware, and Entertainment and media communications, which are the markets that Smith Micro places at its core at the start of this research. Markets of which some are neither similar to their core market nor adding to their core market such as Personal multimedia productivity and Entertainment & media communications. An example of the former is StuffIt Image, released in 2006, this product developed by Smith Micro served to handle multiple image formats.
Even though notable differences make an appearance among both companies, there are also similarities. For one both companies mainly develop new products based on the platform model, respectively 97.8% and 77.8% of Adobe's and Smith's new value propositions took place as platform introductions or part of a platform. Over the years Adobe has maintained nearly 100% of new product introductions as platform introduction, only in 2011 it would score 91.7%, Smith on the other hand had a different approach, fluctuating between 60% and 88.9% of new products being platform introductions (figure 4). Overall the majority of these introductions on the platform model took place with a form of bundling when one looks at Adobe, especially when compared with Smith Micro, respectively 87% and 44.4% of Adobe's and Smith's platform introductions incorporated some form of bundling overall.
One of the main differences seem to lie in the fact that Adobe operates purely on the 4th layer of the adjusted Fransman Taxonomy, which consists of platforms, content, and applications, whereas Smith also operates on the 2nd layer, namely operating systems where it has deployed several products in 2007 and 2008. A second notable difference lies in the fact that observations up until this point in the paper determine where Adobe has been steadily expanding their consumer base by strengthening their core, Smith Micro has attempted to broaden their horizon by entering multiple markets, occasionally dropping a market in favor of another market.
It is here where we predict the most interesting observations will take place, namely in the difference between the envelopment of complements and the envelopment of weak

NVP introduction on platform:

	2006	2007	2008	2009	2010	2011	Total
Smith Micro	83,33%	71,43%	83,33%	60,00%	88,89%	66,67%	77,78%
Adobe	100,00%	100,00%	100,00%	100,00%	100,00%	91,67%	97,83%

NVP bundling:

	2006	2007	2008	2009	2010	2011	Total
Smith Micro	50,00%	42,86%	33,33%	40,00%	44,44%	66,67%	44,44%
Adobe	100,00%	66,67%	83,33%	100,00%	100,00%	75,00%	86,96%

Fig. 4 - NVP introductions

substitutes (focused envelopment), and the envelopment of unrelated platforms (dispersed envelopment), and we expect to offer insight as to why some companies succeed through the means of envelopment where others stay behind. We predict that the fact that these companies operate within the same industry and similar/overlapping markets, both with their own approach to their business model and envelopment, will allow this paper to draw conclusions to what makes envelopment successful. In this section of the paper we will further discuss the ways Adobe and Smith Micro Systems attempted to increase their revenue growth through innovating their value propositions.

4.1. Adobe

Having started with a printing program called PostScript in 1982, which can be classified as being in the Personal Productivity segment, Adobe quickly moved to Personal Multimedia Productivity with their new product Illustrator in the mid 80's. From here on Adobe would focus mainly on video and photo editing applications, such as Premiere Pro and Photoshop, and their algorithms for printers and documents, which was their core market at the time. From here to 2006 Adobe would also deploy products in markets which handle products such as publishing software, development and design software, personal productivity software, referencing software, and internet communication software. Products developed for these markets are respectively Flash Player, Coldfusion, Acrobat, Digital Editions, and Connect. All of these can be classified as adjacent platforms or part of platforms sharing user bases and/or having a strong need for either product due to the similar or cooperating nature of the products, which becomes apparent when one looks at the purpose of the applications such as development design software, where the client creates the product, versus publishing software, where that same client publishes their product.

In 2006 they would acquire Serious Magic and Scene7, both either alternatives or additions to their existing portfolio.

In 2007 Adobe would move to e-learning by reassigning and adding to existing products as well as developing new complementary products to accommodate a larger user panel, all the while using these markets to strengthen their core market by supplying additional service to a shared user base. This is where the platforms that Adobe places at its core business model truly come into view, as they bundle their existing and new products into larger bundled software packs, such as the Technical Communication Suite in 2007. Despite having done this before with for example the Adobe Creative Suite, from here on Adobe would more often bundle products into new suites in respectively, 2009 (eLearning Suite), 2010 (Digital Publishing Suite), and 2011 (Marketing Suite).

In 2008 Adobe seemed to mainly focus on their core markets, only strengthening their core product or expanding their business by entering related markets.

In 2009 Adobe made their move on the market of the scholar. With products such as the Digital School Collection for young people aged 4 to 17 Adobe aims to educate the students and the educators in the digital workplace. This collection, rather than being an entirely new product, is again mostly comprised of existing software, bundled and improved for an education environment. Shortly hereafter they moved on another segment, also heavily influenced by digital technology, namely the field of sales and marketing.

In 2010 Adobe announced several updates to the Online Marketing Suite and its related software components after its acquisition of Omniture and Business Catalyst in late 2009.

In 2011 Adobe would go on updating its core components by launching products such as Adobe Social Analytics (part of the marketing branch) and the Adobe Touch Apps (part of the creative branch), thereby strengthening its market leader position. Overall when one looks at the markets Adobe has moved into and the products it has launched it becomes apparent that not only did they aim to enter new markets that they theorized would fit in their then current vision, existing clientele, and readily available resources, but at the same time and through the same means they attempted to fortify their position as market leader by offering expanded functionality among a shared user base and by attracting additional user bases through

incremental innovation and thus focused envelopment. This view is collaborated by the fact that even though Adobe did invest in markets without enveloping it into its core this number remained even, of the 9 markets at the start it had incorporated 5 of these into its core, at the end it had incorporated 7 of their 11 active markets into their core. From 2006 to 2011 Adobe has steadily increased its market presence from 5 to 7 different markets (as classified by Zahavi & Lavi), all the while maintaining their presence to one layer of the adjusted taxonomy. Adobe has shown a 93.48% focused envelopment and 6.52% dispersed envelopment during the timeframe of this research, divided into 43 focused envelopments and 3 dispersed envelopments (figure 5 and 7). When Adobe applied focused envelopment they evenly spread out their new market introductions with 53,49% of them classified as the envelopment of weak substitutes and the remaining 46,51% as the envelopment of complements. Their products often had already become or were in the process of becoming during the timeframe of this research the industry standard. When comparing this to the envelopment theory by Eisenmann et al. (2010) it becomes apparent that Adobe tried to fortify their position using the envelopment of complements combined with the envelopment of weak substitutes to move into new markets, after which it takes time to absorb it into its core and strengthening said core. When this is said and done they move to the next complementary platform, but using dispersed envelopment (for example: Omniture), as evidenced by their market presence. Even when deploying dispersed envelopment Adobe seems to not only utilize readily available resources, but deploy themselves in markets which would readily fit within their repertoire.

4.2. Smith Micro

Smith in its early years had a similar, though slightly deviating, basis as Adobe. In 1982 they started out with the Stock Portfolio System, quickly followed by MarketLink which was used to download stock quotes. Over the years they expanded serving markets desiring operating system enhancements, computer utility systems, computer storage, computer security, middleware, and even lifestyle applications. Examples of products manufactured for such markets are respectively: Spring Cleaning, StuffIt, Internet Cleanup, QuickLink Mobility, and QuickLink Music. Their offerings target a broader audience and therefore may suggest that Smith employed a tactic to diversify available software and technology to penetrate multiple markets, even prior to the period covered in this research, not necessarily focusing on overlapping user bases or adjacent/complementary markets as much as the swift penetration of new markets and the fast scale growth. This becomes evident when their product lines through the years as well as their acquisitions are viewed. Having started off as a company focused on (wireless) connectivity, in 2005 they changed their course and also took on markets and product lines involved with data storage and optimization, computer security, and image editing, all while keeping focus on connectivity and networking. Examples of products Smith introduced are Photags and StuffIt. Some of these markets are closely related and seem to have overlapping user bases which makes it either the envelopment of complements or weak substitutes and thus focused envelopment, such as connectivity and security, others seem more distant and to belong to the envelopment of unrelated platforms, such as image editing.

In 2006 Smith continued to expand their presence in the aforementioned markets, offering new

Year	Focused Envelopment			Dispersed Envelopment
	Focused Envelopment	Weak alternatives	Complements	
2006	80,00%	50,00%	50,00%	20,00%
2007	83,33%	80,00%	20,00%	16,67%
2008	100,00%	66,67%	33,33%	0,00%
2009	100,00%	54,55%	45,45%	0,00%
2010	83,33%	20,00%	80,00%	16,67%
2011	100,00%	50,00%	50,00%	0,00%
Totaal	**93,48%**	**53,49%**	**46,51%**	**6,52%**

Fig. 5 – Adobe – Envelopment

Year	Focused Envelopment			Dispersed Envelopment
	Focused Envelopment	Weak alternatives	Complements	
2006	60,00%	0,00%	100,00%	40,00%
2007	66,67%	25,00%	75,00%	33,33%
2008	66,67%	25,00%	75,00%	33,33%
2009	100,00%	20,00%	80,00%	0,00%
2010	100,00%	25,00%	75,00%	0,00%
2011	66,67%	50,00%	50,00%	33,33%
Totaal	**78,79%**	**23,08%**	**76,92%**	**21,21%**

Fig. 6 - Smith Micro – Envelopment

products such as StuffIt Image and the CheckIt Repair and Performance Suite. Like Adobe they are creating suites out of existing products, effectively remarketing their existing software in bundles. They also introduced Quicklink Music, with which, as a multimedia manager that offers music as well as the opportunity to share music, they seem to penetrate yet another market, namely that of media and entertainment communications. Whilst a certain logic that many of their new introductions are indeed based on connectivity is true, the nature of these new software solutions is different in its base. A music manager such as mentioned above has its service based on connectivity, however, the service it offers is not the connectivity itself, but in this case music. Therefore it can be stated that this offering does not have overlapping user bases with any of their current offerings and as such can be classified as envelopment of unrelated platforms, this becomes more apparent when one considers the user bases and their need for both products.

In 2007 Smith Micro attempted to broaden their horizon, dividing their attention between four instances of focused envelopment, of which three are the envelopment of complements, and two instances of dispersed envelopment. An example of focused envelopment is DTV4PC, which is a television broadcasting program for PCs, their Mobile Sweepstakes Generator, which is categorized as a dispersed envelopmental move, is a clear move on the marketing market, allowing businesses to setup digital 'scratch card' technology to interact with their customers.

In 2008, 2009, and 2010 Smith continued to develop their existing products and markets, focusing heavily on the complementary side of envelopment, 76.9% of their product introductions were complementary to their existing products/markets. This involved products such as the Quicklink IMS Client Suite (2008) and the CheckIt Netbook Utility Suite (2009). In 2011 Smith Micro would again envelop into uncharted territory when they launched Enterprise Mobility Command Center, which enables business to wirelessly regulate a wide array of machines such as mobile phones and laptops. Over the span of this research Smith Micro has presented 78.79% of their envelopmental moves as focused envelopment (26 NVPs) versus 21.21% dispersed envelopment (7 NVPs). Of their focused envelopmental moves 76.92% has been classified as the envelopment of complementaries, showing that Smith Micro weighed heavily on complementing their own platform rather than eliminating weaker subsidiaries and attaining their user bases. (figure 6 and 7)

Overall when looking at the markets Smith has moved into one can see that Smith attempted to target a large audience, not necessarily staying true to their existing user base and rather attempting to acquire new ones. This is exemplified by their core market presence, which over the timespan of this study only went from 6 to 7 markets which shows that they rarely attempted or succeeded to draw the new markets into its core. This seems counterintuitive but becomes clearer when one notes the markets in which they have launched NVP's. Even though their number of core markets has not necessarily grown a lot, they have invested in more markets along the way. Over the span of this research Smith Micro would have attempted to penetrate 5 markets in total, showing that they attempted dispersed envelopment, but never managed to pull these markets into their core. Examples of the former are the Mobile Sweepstakes Generator in the Sales & Marketing segment in 2007, Rapidweaver (a website builder) in the Personal productivity segment in 2008, and Sendstuffnow in the Data structuring, access, and

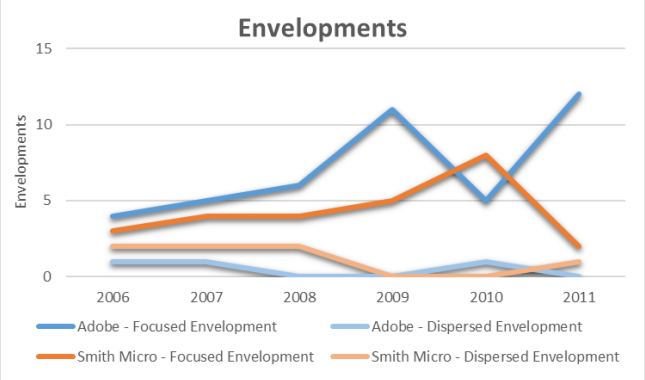

Fig. 7 - Envelopments

manipulation segment in 2011. Alongside this they had a similar tactic to Adobe bundling their products and remarketing them, effectively combining user bases and strengthening their core.

4.3. Financial insights

During the timeframe Adobe has managed to maintain a growing net income and assets. In 2006 they made $1.966.321.000 in revenue[3], compared to a net income[4] of $602.839.000, by 2011 their revenue has grown to $4.216.258.000 and their net income to $832.847.000. Over this time period they have maintained a steady positive revenue as well as per share growth and a profit growth along with stable sustainable growth rate[5]. This is all exemplified by their return on capital[6]. Adobe registered 15.22% ROC in 2006 and 14.88% in 2011, all the while never dropping below 12,26%. Smith has experienced a rather more explosive growth in these categories, however, this growth declined rapidly in 2011, succumbing to the negatives whereas Adobe persisted in their less explosive but stable growth. In 2006 Smith Micro recorded a revenue of $54.469.000 as compared to a net income of $4.724.000, by 2010 this had risen to $130.501.000 in revenue and 12.346.000 in net income. By 2011 this had declined back to $57.767.000 and $-159.606.000 in respectively revenue and net income. Following this drop their sustainable growth rate logically declined. The sustainable growth rate shown through the time period in which Smith was observed started relatively high with 18.22%, but showed a steady drop throughout, reporting mostly negatives by 2009, slowly picking up in 2010 and ultimately succumbing again in 2011. Even though Smith Micro managed to report a growing revenue and net income up until 2010, their sustainable growth rate dropped earlier, showing that the financial problems were lurking around the corner earlier than is shown in the financial data. This is also exemplified by their return on capital, which started at 10,65% in 2006, but declined rapidly to 1.69% and 6.26% in 2008 and 2009 before ultimately reaching the low point of -114.8% in 2011. The preceding fits the picture the data gathered from the NPI's illustrate, Adobe had its focus on slow but steady growth whereas Smith aimed to penetrate multiple markets in a short period of time. This caused a more volatile, positive as well as negative, financial status for Smith Micro Software and a rather steady financial status for Adobe. A more detailed look into the revenue and return on capital for both companies can be found in figure 8 where the left y-axis represents Adobe and the right y-axis represents Smith Micro.

4.4. A comparison

When comparing the two companies and their successes and pitfalls in the previous chapter some differences can be found. Smith over the years attempted to swiftly penetrate multiple

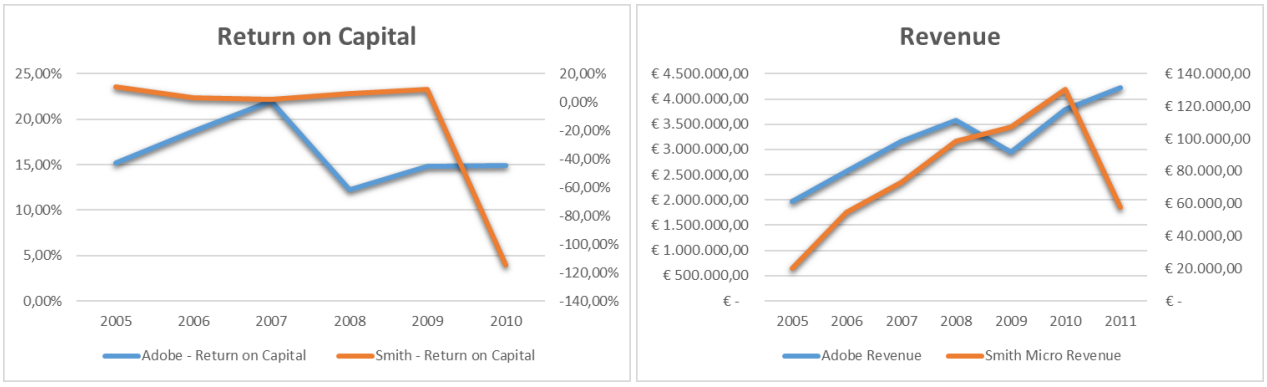

Fig. 8 - Financial Data

[3] The gross inflow of economic benefits (cash, receivables, other assets) arising from the ordinary operating activities of an entity (such as sales of goods, sales of services, interest, royalties, and dividends) (International Accounting Standards, n.d.)

[4] The total of income less expenses, excluding the components of other comprehensive income (International Accounting Standards, n.d.)

[5] Sustainable economic growth means a rate of growth which can be maintained without creating other significant economic problems (Economics Online, n.d.)

[6] Ratio measuring the profitability of a firm expressed as a percentage of funds acquired from investors and lenders. (Business Dictionary, n.d.)

markets sometimes regardless of compatibility to their core or user bases but with a keen eye on swift growth. Even though most of its envelopmental moves were focused, they displayed a significantly higher percentage of dispersed envelopment and lean significantly more towards the envelopment of complements within focused envelopment than Adobe, whereas Adobe attempted to fortify their core business by enveloping mostly weaker alternatives or complementary platforms, keeping these both in balance, ultimately enhancing their core and their user bases and only resorting to dispersed envelopment sporadically. This becomes clear when one takes the envelopments the companies have made into consideration. Over the period of this research Smith has engaged in 26 focused envelopments and 7 dispersed envelopments, or 78.79% focused envelopment and 21.21% dispersed envelopment. Adobe has respectively 93.48% of their envelopments classified as focused and 6.52% as dispersed. Smith shows a rather large amount of dispersed envelopment attempts as compared to Adobe, namely 21.21% vs 6.52%. Of the mentioned 93.48% of focused envelopment Adobe has engaged in, 53.49% can be classified as the envelopment of weak substitutes and 46.51% as the envelopment of complements. Smith has engaged in the envelopment of weak substitutes in 23.08% of their total of focused envelopments, which leaves 76.92% for the envelopment of complements. These differences carry over the years rather than it being a one-time occurrence, as can be seen in the figures 5, 6 and 7.

Adobe had multiple new value introductions each year, however, they only seemed to enter new markets about every few years, in contradiction to Smith Micro, who entered a new market every year on average. Adobe sought to enter new markets with a more balanced view on focused envelopment, enveloping these markets into their core and taking their time to fortify themselves within this markets as well as incorporating their current new markets with the previous markets. They took it on themselves to not only add functionality to their platform in order to outperform other players and attain new userbases, but to expand their user base with less focus on financial gain and more focus on the attainment of markets serving the same purpose through a method differing (slightly) from their own. Only when this process was done would they look to envelop other platforms again as evidenced by their high number of focused envelopment actions. Smith Micro seems to have prioritized adding functionality to their product by enveloping adjacent platforms attempting to outperform other platform leaders through added functionality and larger, differing userbases. This ultimately led to Adobe enveloping into two new markets, successfully incorporating these markets into their core, whereas Smith Micro has attempted to envelop into 5 markets, effectively adding one of these to their core.

The difference becomes more obvious when we take into account how the focused envelopment is divided between these two companies. As stated before, focused envelopment consists of the envelopment of weak substitutes and the envelopment of complements and in this scenario Smith Micro has favored the envelopment of complements heavily over the envelopment of weaker substitutes in contrast to Adobe who has seemed to have created a balance here. This is also where companies stride for winning sequential winner-takes-all battles.

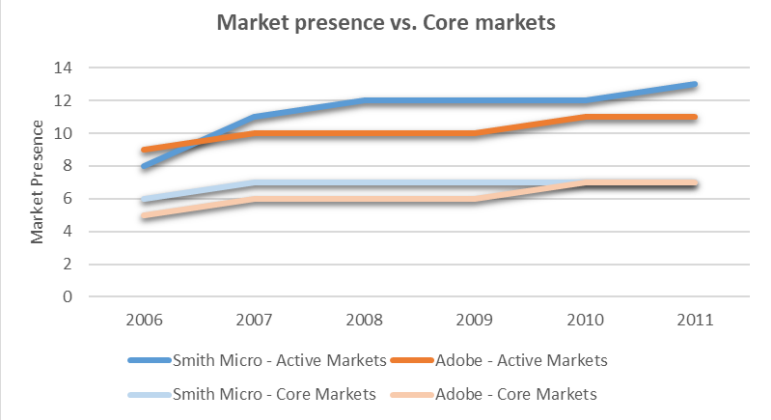

Fig. 9 - Market presence vs. Core markets

Adobe has taken to winning these sequential winner-takes-all battles again and again over the years with products defined as industry standards such as the PDF file and their Creative Suite. Smith Micro has shown no such advancements, with the main differences in this research with Adobe being that 1. Smith Micro has a significantly higher rate of dispersed envelopment, 2. Smith Micro is leaning significantly more on the envelopment of complements, rather than a balanced or weak substitute-based type of focused envelopment and 3. Smith Micro ultimately failed to incorporate newly approached markets into their core. As mentioned in the literature research, companies and standards evolve through sequential winner-take-all battles. We can conclude that sequential winner-take-all battles are won through on one hand strengthening ones core and when moving on another market taking the time to incorporate said market into ones core, and on the other hand strengthening ones core seems to be reliant on a mix of complementing ones product through the envelopment of complements, and thus markets which have a large user base overlap and need for both products, and the envelopment of weak substitutes, effectively growing their user base through enveloping markets with products that serve a similar purpose. The conclusion that lies within this statement is that sequential winner-take-all battles can only be won through a deeply incorporated core, attained through strengthening that core through balanced focused envelopment.

The conclusion here is that dispersed envelopment is a constructive way of enveloping as it is a way to reach markets outside of their current userbase and/or common components, it is also a viable form of short-term revenue as evidenced by Smith Micro, but it is insufficient on its own. Businesses which wish to envelop in the digital world need to be aware of their user base and core business and strengthen those rather than attempt to swiftly grow by penetrating unrelated markets, as is evidenced by the two businesses used in this research. The proper way to position oneself within the digital platform economy is to strengthen ones core business and expand on this core business by enveloping in a balanced focused manner, using dispersed envelopment only sparsely to expand into newly adjacent markets. The findings here fortify the findings by Müller, Kijl & Visjnic (2018) which they phrased as follows: *"Sustainable envelopment can be achieved leveraging market presence via related i.e. the envelopment of complements and weak substitutes to gradually move into adjacent markets."*

5. Discussion

When combining the previous information it becomes apparent that the different strategies employed by these companies yielded different results. Smith Micro has shown to have a rather fluctuating number of new product introductions, a higher increasing number of markets in which it resides, and a volatile financial status. Adobe has shown a rather stable, ever slightly increasing average number of new product introductions combined with a slightly increasing number of markets in which it resides, and an increasing financial household. It appears as well that Adobe has risen to industry standard products on multiple occasions and that Adobe has managed to incorporate new markets into its core whereas Smith Micro has had no such success in both cases.

To summarize, Adobe aimed mostly at the envelopment of adjacent and/or weaker platforms supported by periodic dispersed envelopment, after which it takes time to absorb it into its core and strengthening said core. Smith Micro Systems took another course attempting to envelop unrelated platforms as well as weak and complementary substitutes, this approach seems to emphasize more on swiftly entering other markets than Adobe did, not necessarily related to their own core values, and fast large scale growth. On top of this when taking part in focused envelopment Adobe maintained a balanced, roughly equal, division of the envelopment of weaker substitutes and complements, whereas Smith focused heavily on the envelopments of complements within this segment, which suggests that Smith was focused more on gaining a higher revenue through added functionality, whereas Adobe was, although also with a focus on the former, expanding their user base through a focus on the attainment of markets serving the same purpose. Also, as stated before, Smith Micro attempted to envelop 5 new

markets during the span of this research, effectively adding 1 core market to their portfolio. Adobe on the other hand attempted to envelop 2 new markets, successfully adding these markets to their core.

After gathering and analyzing the data it has been found that to innovate ones value proposition to create revenue one must first focus on developing their core concept. Swift envelopment into unrelated markets gathers success on the short term, i.e. short term profits, but on the long term it has proven detrimental to the business in case of Smith Micro Software. Dispersed envelopment on itself is useful, but only when it is followed by focused envelopment to embed the concept of the new market into their core, strengthening it through focused envelopment. Focused envelopment and dispersed envelopment do seem to go well together, when kept in balance.

5.1. The Envelopment Matrix

Based on the conclusion as written in the previous paragraph, we propose the following matrix (figure 10) to explain and outline envelopment as is deployed by the two companies in this research. This matrix was first introduced by Müller, Kijl & Visjnic (2018) in their paper on envelopment in the cases of Google and Yahoo. Here we attempt to further theorize on this construct. Moreover, we propose that envelopment has one optimal route which will yield the greatest return on investment, as has been discussed in this research. The variables chosen in this diagram, namely envelopment outlook and market presence, are selected based on their relevance to the study and evaluation of Adobe and Smith Micro.

In figure 10 we can see that Smith Micro and Adobe took different paths on their pursuit of success. As has been discussed Smith Micro tended to envelop into unrelated markets early on, not necessarily strengthening their presence in a new market or incorporating new markets into their core. Adobe on the other hand seemed to be less focused on swift expansion and chose

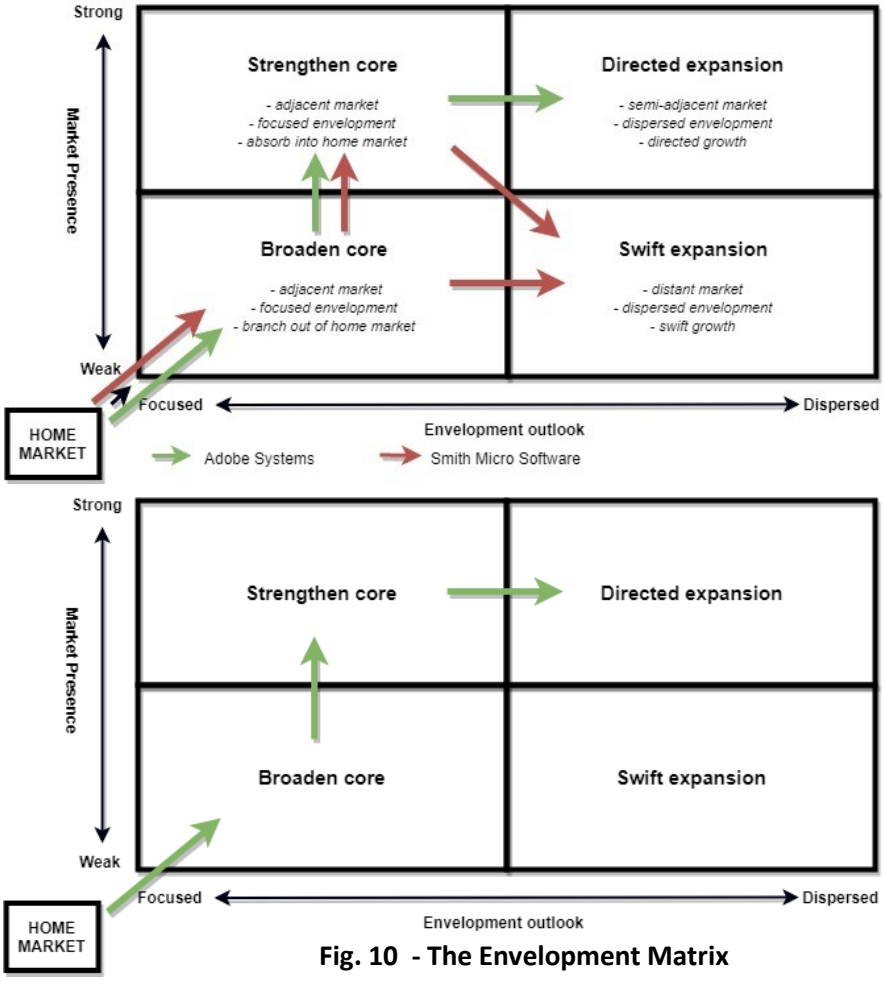

Fig. 10 - The Envelopment Matrix

to fully encapsulate markets into their core before heading on to new markets. It is here where we find the theoretical basis for the envelopment matrix. In figure 10 the first matrix shows the path Adobe and Smith Micro have taken, the second matrix shows the proposed optimal path for envelopment.

When companies are looking out to expand beyond their current boundaries they should first broaden their core, these are markets closely related to their home market, mostly sharing userbases and/or common components ('Broaden core'). As the company broadens its core its market presence grows as it envelops into adjacent markets ('Strengthen core'). Here the companies fully incorporate new markets into their core through focused envelopment. Once focused envelopment helped a company expand their core dispersed envelopment comes into play. When these new markets are fully incorporated once distant markets are now nearer. This allows the company the possibility to enter markets which were once distant ('Directed expansion'), from here on the process starts over with a company having to employ focused envelopment to fully incorporate a market into its core before moving on with another 'Directed expansion' as evidenced by the case of Adobe and Smith Micro. As has become evident by analyzing Adobe and Smith Micro, swift expansion on its own holds no benefits on the long-term. On the short-term it created fast financial growth, but on the long-term this growth was both too unstable and short-lived.

6. Conclusion

This paper was written with the directive of studying how digital companies attempt to innovate their business model in order to generate revenue. Over the course of this paper we have thoroughly studied available literature on business models and envelopment in order to understand how companies enact focused and dispersed envelopment in order to envelop other platform markets. During this paper Adobe and Smith Micro were the case companies which helped us study practical subjects and analyze their envelopment strategies.

We found that Smith Micro had a very different strategy when considering envelopment than Adobe has shown. Smith Micro attempted to swiftly penetrate markets practicing dispersed envelopment significantly more than Adobe has. Adobe on the other hand seemed to rely more on focused envelopment to incorporate new platform markets into their core before advancing using dispersed envelopment. On top of this Adobe showed a balanced view of focused envelopment using the envelopment of weaker substitutes as much as the envelopment of complements, Smith Micro on the other hand preferred the envelopment of complementaries over the envelopment of weaker substitutes. These differences culminated in Adobe successfully incorporating the two markets they enveloped into their core whereas Smith Micro has only succeeded in enveloping one out of five markets into their core. Moreover when one compares financial results from both companies such as revenue and return on capital it becomes clear that where Smith Micro experienced fast short-term growth followed by a steep decline, Adobe showed a less explosive but stable growth. Over the course of the years Adobe's tactic of enveloping markets, incorporating these markets into their core and only after that sparsely enveloping in a dispersed manner have shown to be a more long-term profitable way of enveloping than the tactic employed by Smith Micro. Based on the former we suggest that a proper envelopment strategy is needed when enveloping as a digital platform market. It is advised that when attempting envelopment businesses establish a core, broaden that core and subsequently strengthen that core both using focused envelopment. Dispersed envelopment can be employed once the markets have been fully incorporated, using directed expansion as shown in the matrix above. These envelopment tactics are not a one-time tactic but have to be repeated as business envelop into new markets.

6.1. Research Contribution

Over the years there have been multiple researchers giving insight to how digital platform companies innovate and generate revenue through the employment of envelopment. Though it has been researched how these companies might innovate, it has not been examined in what way envelopment may lead to sustainable value generation. Through the research in this paper a sustainable strategy for enacting envelopment has been developed based on cases by Adobe and Smith Micro throughout

the years 2006-2011. Secondly, this paper validates the paper by Müller, Kijl & Visjnic (2018) that states that companies need to employ focused envelopment to build a core market before using dispersed envelopment to enter new markets and repeat this sequence in order to expand in a sustainable manner. As a result the envelopment matrix was proposed based on the one by Müller, Kijl & Visjnic (2018), validating the latter.

6.2. Practical Contribution

The envelopment matrix as developed by Müller, Kijl & Visjnic (2018) and further theorized on in this paper provides a route for digital platform companies who are considering to pursue revenue generation through growth. The main contribution is to add important remarks on how to employ envelopment as developed by Eisenmann et al. (2010) for sustainable growth. The matrix stipulates a path not based on explosive growth, but rather on disciplined growth as has been evidenced by the case companies Adobe and Smith Micro. It illustrates how to endeavor focused and dispersed envelopment to generate stable and lasting growth. It shows how to incorporate and be 'the winner' with standardization of products rather than short-term gain.

6.3. Limitations

This study is based on two case companies, both of which were founded in the same year, were active in the digital platform market and attempted to use envelopment and bundling to increase their market presence and revenue. This creates good internal validity but seems to threaten external validity making it less generalizable. We do consider external validity upheld as both companies represent the subject of digital platform companies and the scope of the paper well. Because this study is focused on explaining a phenomenon on which little is known, internal validity is considered to be more important.

6.4. Future Research

Like most studies this subject requires more research in order to substantialize. The theory on envelopment and platform companies is still in its infancy. For one, future research may focus on creating stronger external validity through the evaluation of more companies. A second interesting approach would be to further test the envelopment matrix as created by Müller, Kijl & Visjnic (2018) and theorized on in this study by for example applying it to companies not residing in the digital market or in different stages of maturity. A third option would be to research how supra-platform markets, where market boundaries have dissipated and platform companies battle in an ever-growing market, evolve and coexist and how envelopment plays a role in this new type of market. Over the years boundaries have shrunk and disappeared allowing platform companies to act on increasingly larger markets. Lastly coopetition among platform companies has not been considered in this research and may prove a valuable insight to how platform companies generate value. Coopetition is a relationship where both companies both compete and cooperate for market presence at the same time. Consider for instance how Google Maps works on the Apple Iphone or how Google reportedly pays Apple $9 billion to remain the default search engine in Apple's browser (9to5Mac, 2019).

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