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# Digital Competition and the Market for Corporate Control

*A theoretical study on how digital competition affects the market for corporate control*

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This thesis was written as a part of the Master of Science in Economics and Business Administration at NHH. Please note that neither the institution nor the examiners are responsible - through the approval of this thesis - for the theories and methods used, or results and conclusions drawn in this work.

## Abstract

Mergers and acquisitions are a fundamental part of the corporate world. This is also the case for digital companies. How the competition in the digital market affects the acquisition patterns of digital companies is a relatively unexplored topic, making it highly interesting to research. This thesis aims to analyze how the market for corporate control for digital companies is affected by the digital competition. From an analysis of the implications of digital competition on the market for corporate control, we find that the digital competition causes a higher number of acquisitions. In which there is an apparent tendency to acquire a firm in the early stages of its life cycle. Consequently, increasing the incentives to establish new innovative companies as the acquirers are reliant on innovation through acquisitions. Furthermore, we find profitability to be secondary to growth, making variable cost synergies less relevant for digital acquisitions. We assess the acquisition history of four digital companies: Alphabet, Amazon, Apple, and Facebook. Observing that the companies acquire innovative companies to obtain innovation, with a focus on intangible resources like human capital. In the final part of the thesis, we predict that the digital incumbents will develop into conglomerates as a result of current acquisition and expansion strategies. Additionally, the digital incumbents are likely to create incubators to improve the research and development and reduce dependency on external innovation. In turn, reducing the premiums in the market for corporate control due to the reduced acquisition activity of the Big Four. Finally, we find that in the markets of which the digital companies wish to expand, digital competition will ensue. Resulting in the market for corporate control within said markets to function similarly to that in the digital market.

## Preface

This master thesis is written as part of our Master of Science in Economics and Business Administration at the Norwegian School of Economics, within our majors in Strategy and Management. The process of writing this thesis has been both challenging and time-consuming, but more importantly, it has been a rewarding and exciting process with great learning outcomes.

The digitization in the market of today affects us in various ways both privately and professionally, which makes it an exciting topic. This thesis has provided an opportunity to study the behavior of the leading digital companies in the world, of which it will be interesting to observe the development over the coming years. A development we are eager to witness.

Finally, we would like to wholeheartedly thank our supervisor Lasse Lien for his guidance, constructive feedback and his great sense of humor.

Bergen, June 1st, 2018



Jakob Grinvoll



Tord Røstad

# Contents

Abstract . . . . .	i
Preface . . . . .	ii
List of Figures . . . . .	v
<b>1 Introduction</b>	<b>1</b>
<b>2 The Market for Corporate Control</b>	<b>3</b>
2.1 Synergy Effects . . . . .	3
2.1.1 Value Creation and Value Capture . . . . .	6
2.2 Market Functionality . . . . .	7
<b>3 Digital Competition</b>	<b>10</b>
3.1 Digital Companies . . . . .	10
3.2 Digitization and Innovation Transforms Industries . . . . .	11
3.3 Network Effects and Winner-Take-All Dynamics . . . . .	13
3.3.1 Ecosystems and Platforms . . . . .	15
3.4 Low Costs and High Margins . . . . .	16
3.5 Intangibles . . . . .	17
<b>4 Digital Competitions' Implications on the Market for Corporate Control</b>	<b>19</b>
4.1 Acquisition as a Means to an Edge . . . . .	19
4.2 A Higher Number of Acquisitions . . . . .	20
4.3 Earlier Acquisitions . . . . .	23
4.4 Increased Incentive to Innovate . . . . .	26
4.5 The Search for Synergies . . . . .	28
4.6 The Network Effects of Digital Companies . . . . .	31
4.7 The Functionality of the Market for Corporate Control for Digital Companies . .	33
<b>5 A Historic View on the Market for Corporate Control for Digital Companies</b>	<b>37</b>
5.1 High Number of Acquisitions . . . . .	37
5.2 The Big Get Bigger . . . . .	38
5.3 Diversity Among M&A Deals . . . . .	42

5.4	Acquisitions as a Means to an Edge . . . . .	46
5.5	Acqui-Hire . . . . .	47
5.6	Acquisitions Early in the Life Cycle of the Target . . . . .	47
<b>6</b>	<b>Predictions</b>	<b>50</b>
6.1	The New Era of Conglomerates . . . . .	50
6.1.1	Heterogeneity or Homogeneity of the Conglomerates . . . . .	52
6.2	Future Innovation by the Incumbents . . . . .	53
6.3	Changes in the Market for Corporate Control in the Energy Market . . . . .	54
<b>7</b>	<b>Conclusion</b>	<b>57</b>
	<b>Appendix</b>	<b>60</b>

## List of Figures

2.1	Synergy . . . . .	4
2.2	Market for corporate control when well functioning, and $(A+T)$ is not greater than $A+T$ . . . . .	8
2.3	Market for corporate control when not well functioning, and $(A+T)$ is not greater than $A+T$ . . . . .	8
2.4	Market for corporate control when well functioning, but $(A+T) > A+T$ . . . . .	9
2.5	Market for corporate control when not well functioning, but $(A+T) > A+T$ . . . . .	9
3.1	How digitization transforms industries . . . . .	12
3.2	Value of extra user . . . . .	14
4.1	Digital market for corporate control when not well functioning, and $(A+T) > A+T$ . . . . .	34
4.2	Digital market for corporate control when not well functioning, and $(A+T) > A+T$ , but one bidder and two targets . . . . .	35
5.1	All acquisitions unrelated of category . . . . .	37
5.2	Acquisitions per company and year total . . . . .	38
5.3	Yearly revenue for each digital company . . . . .	39
5.4	Profitability measured in gross margin per firm . . . . .	39
5.5	Apple's operating profit value share in smartphone market . . . . .	41
5.6	Acquisitions of Retail companies . . . . .	44
5.7	Acquisitions of Robotics companies . . . . .	44
5.8	Acquisitions of VR/AR companies . . . . .	45
5.9	Acquisitions of Assistant/AI companies . . . . .	45

# 1. Introduction

Bob Dylan once famously sang “The times they are a-changin’,” and equally is digitization<sup>1</sup> changing the world. The growth in digital, both seen as digital companies and the importance of digitization, over the last decade have affected the way we interact with each other, and the way we work. Through automation have tasks been made more efficient and labor costs decreased. Network effects have made users dependent on specific networks be they social or marketplaces. New technologies like virtual- (VR) and augmented reality (AR) and artificial intelligence (AI) have emerged, and digitization has turned into one of the most important fundamental aspects of a company, and a buzzword which affects everyday decisions in all companies. Moreover, have digital companies become some of the most prominent companies in the world. On June 16th, 2017, Amazon announced its acquisition of Whole Foods Market (Amazon, 2017). A move that surprised the rest of the market as traditional companies usually acquired digital companies, and not the other way around. This against-the-stream attitude attracted our interest towards the digital market and how it works with regards to the different merger and acquisition strategies. Consequently, this thesis looked into four of the largest digital companies to date, referred to as the Big Four: Alphabet, Amazon, Apple, and Facebook. We have over the last decade witnessed these digital companies turn into giants, both regarding profitability and number of customers. Further did the findings of Coyle and Polsky (2013) regarding the high number of acquisitions completed within the digital market peak our interest, hence affecting the research question of the thesis. During our assessment of the acquisitions of the Big Four, we find that acquisitions have been completed both due to a need for innovation, while also a need for human capital.

To understand the motives behind these acquisitions, we looked deeper into the literature about mergers and acquisitions. The theory about the market for corporate control describes the functionality behind acquisitions and became a natural basis to understand the recent activities by the Big Four. Jarrel et al. (1988) researched the market for corporate control in the 1980s, with a focus on the timing of acquisition offers and antitakeover measures. Manne (1965) found mergers to be efficient for corporate takeovers and favorable from the view of welfare economics. Jensen and Ruback (1983) found corporate takeovers to generate positive gains and that shareholders of the target firm captured value from the acquisition. However, there is

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<sup>1</sup>We see digitization as converting analog information and processes into the digital format.

limited research on how the digital companies act with regards to the specifics the market for corporate control. Taking into account the growth that has occurred within the digital market, we find it relevant to take a more in-depth look at how digital competition, the competition between digital companies, has affected the market for corporate control for digital companies.

When establishing the aim of this thesis, we decide to research the market for corporate control with an emphasis on the potential changes caused by the digital competition. We want to take a closer look at how the competitive dynamics of the digital market operates. A market which seems to be in a constant state of innovation and acquisitions. We further aim to increase the understanding of how the digital competition affects the acquisitions patterns of the digital companies, and increase the understanding of why the number of acquisitions is as high as it is. Hence, the research question of our thesis becomes:

*How does digital competition affect the market for corporate control?*

To answer the research question, we apply the following chronological structure. Firstly, how **should** the digital market for the corporate control function? This question will be analyzed by applying the theory of the market for corporate control and theory of digital competition. Secondly, what does the history of the digital market for corporate control show us about the **actual** workings of the market? A question which is discussed through collecting and assessing data on merger and acquisition (M&A) deals done by the Big Four: Alphabet, Amazon, Apple, and Facebook and look for indications on how the digital market for corporate control functions. Thirdly, how **will** the future digital market for the corporate control function? Here, an assessment of the two prior questions will be applied to establish indications for the future market for corporate control for digital companies. Finally, we will conclude and briefly indicate future research opportunities.

## 2. The Market for Corporate Control

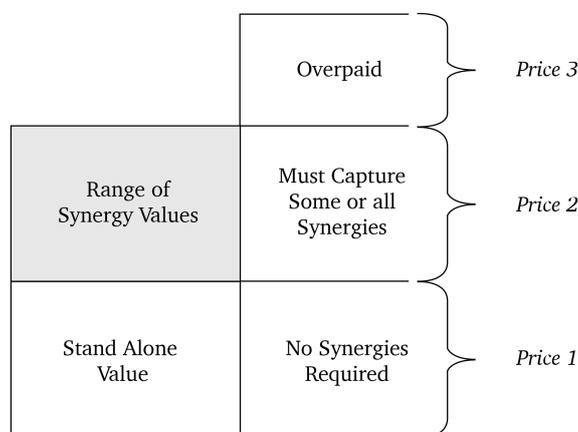
The market for corporate control was first referred to by Manne (1965) as the acquisition of underperforming or undervalued companies by willing acquirers. Later research defines it as the corporate takeover market (Jensen and Ruback, 1983) and the market where the right for management control over corporate resources are acquired (Jarrel et al., 1988). This paper aims to analyze how the market for corporate control is affected by the digital competition, a competition that has led to numerous acquisitions the last decade. In turn, making acquisitions a significant focus of this thesis. Hence, the market for corporate control is defined in this thesis as a corporate takeover market where the right for management control over corporate resources is acquired. In the market for corporate control, the target will be acquired by the most suitable owner. The value created when combining the two companies should be larger than the current stand-alone value of the two. If not, the acquirer has no incentive to acquire the target as it would not yield any additional value. Further, the market for corporate control will enable change in ownership, allowing for resources to shift from underperforming companies to companies that can draw more significant benefits from the resources. By doing so, the market for corporate control will create societal benefits.

When assessing the market for corporate control, two questions need to be answered. The first is whether the combination of the target (T) and acquirer (A) is worth more than the two separately, presented as  $(A+T) > A+T$ , and the second is whether the market is well functioning.

### 2.1. Synergy Effects

When the combined value of the target and the acquirer exceed the stand-alone value of the two companies, the acquisition realizes synergy values. Hitt et al. (2001) state that synergies are the primary incentive behind mergers. Pearson (1999) illustrates synergies through the equation  $2+2=5$ . An equation that shares similarities with  $(A+T) > A+T$ , indicating the importance of synergistic effects in the market for corporate control. Additionally, if the cash flow of either the acquirer or the target improves after an M&A, the realization of synergies occurs (Schweiger and Very, 2003). Accordingly, synergy is defined as the potential improvement of cash flows making the combined value of target and acquirer exceed the two separately. Schweiger and

Very (2003) further explain how the acquisition price defines whether synergies may be realized, which is illustrated in Figure 2.1.



**Figure 2.1** – Synergy

This figure, originally published in Schweiger (2002) and later in Schweiger and Very (2003), illustrates how three different price points defines whether synergy may be realized. Price 1 needs no synergies to create value, Price 2 assumes that capturing of synergies must be done to create value and Price 3 indicates overvaluation of target.

In Figure 2.1 one sees that when the price (Price 1) is lower than the stand-alone value of the target, value creation is possible. If this is the case, the captured value will befall the acquirer, as the target gets acquired at a discount. In a scenario where the acquisition occurs at a discount it is essential to reduce negative synergies. Such synergies could be a reduction in historical revenues of the target or loss of human talent. Indicating that the integration is essential when acquiring at a discount. Further, when the price goes beyond the stand-alone value (Price 2), synergies must be captured for value to be realized. When the target is acquired at price two, changes within the target or acquirer are necessary for cash flows to be improved, and thus the realization of value. Finally, Schweiger and Very (2003) see the value creation as the realized synergies. Thus, would an overpriced acquisition (Price 3) exceed all possible synergies and see target shareholders capture all value.

According to Schweiger and Very (2003) synergistic effects allow the acquirer to reduce costs, increase prices or both. They divide cost synergy into the reduction of fixed and variable costs. Both are associated with an increase in productivity. The fixed cost reduction is associated with economies of scope and scale, while variable cost reduction is associated with an increase

in purchasing power. Economies of scope are cost savings due to the scope, or reach, of the company. In regards to M&A, may economies of scope, for example, be realized when both target and acquirer share the same factors of production. Economies of scale are cost savings due to the mechanisms of scale production. Savings which materialize due to the inverse relationship between output per unit and fixed cost per unit. Examples of variable costs are material cost, distribution costs and, transaction costs. Given that the fixed costs remain equal after an M&A, a reduction in variable costs should thus result in a better bargaining position with suppliers. In turn, reducing the input cost. Additionally, paving the way for a higher margin and potentially a higher profit.

Schweiger and Very (2003, p. 4) define revenue synergies as the *cross-selling of products or services through complementary (i.e., non-overlapping) sales organizations or distribution channels that serve different geographic regions, customer groups or technologies*. In simple terms, being able to sell at a higher volume as a combined unit than the two separately. They further find that revenue synergies may occur from an increase in the acquirer's product and service portfolio, enabling bundling and an extensive offering. Schweiger and Very (2003), however, find that revenue synergies rarely are realized and that the complementary markets need to have similar product preferences. Given that the markets have similar product preferences, and cross-selling of products or services occur, market power synergies should follow. Such synergies stem from the elimination of competitors or capacity in the market. Increased market power will, in turn, make it possible to increase prices, given that the market position is significant.

The possibility of synergistic effects is instrumental in the market for corporate control and may lead to high premiums on target prices. However, paying a premium for potential synergistic effects is purchasing an opportunity, not a certainty (Ficery et al., 2007). Underlining the difficulty of determining whether an M&A will result in synergistic effects and improved cash flows. The winner's curse theory might explain an explanation for companies being acquired at a premium (Varaiya and Ferris, 1987). Suggesting that if there is competition for a takeover candidate, the winning bid will often be the one that overestimates the target's value, which in turn may result in adverse returns (Varaiya and Ferris, 1987). Thaler (1988) adds a second way an acquirer may be affected by the winner's curse. Stating that if the value of the acquisition is less than the previous estimate, the acquirer will be disappointed. Making it possible for the winning bid, even if overvalued, to be profitable. Further, do the winner's curse only occur when not all bidders are rational. However, Graaf and Pienaar (2013) argue that the slight notion

of synergistic effects often justifies the high premiums. All in all, indicating that potential synergistic effects result in irrational bidding.

### 2.1.1 Value Creation and Value Capture

After discussing the importance of synergies, one also need to take into consideration how potential gains are shared between a target and an acquirer. Making it essential to highlight the value creation and value capture in M&As. Value is created if the combined value of the target and acquirer exceeds the stand-alone value of the two, i.e., synergy. Value capture, however, concerns how the value is divided between the target and the acquirer within an acquisition. Empirical research, conducted by Andrade et al. (2001), explores the abnormal returns, for acquisitions completed by American public companies from 1973 to 1998. The findings are displayed in Table 2.1.

	1973-79	1980-89	1990-98	1973-98
<i>Combined</i>				
[-1, +1]	1.5%	2.6%	1.4%	1.8%
[-20, Close]	0.1%	3.2%	1.6%	1.9%
<i>Target</i>				
[-1, +1]	16.0%	16.0%	15.9%	16.0%
[-20, Close]	24.8%	23.9%	23.3%	23.8%
<i>Acquirer</i>				
[-1, +1]	-0.3%	-0.4%	-1.0%	-0.7%
[-20, Close]	-4.5%	-3.1%	-3.9%	-3.8%
No. Obs.	598	1226	1864	3688

**Table 2.1** – Abnormal returns for acquisitions completed by American public companies 1973-1998 (Andrade et al., 2001)

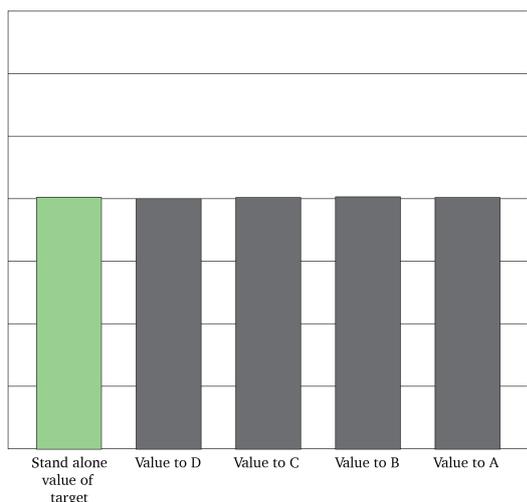
In Table 2.1, we see the abnormal returns by decade filtered by announcement period. The combined numbers indicate the value creation, while the target and acquirer numbers indicate the value capture. The numbers [-1, +1] refers to the change in stock price from one day before the M&A and one day after. Followingly does [-20, Close] refer to twenty days before the M&A announcement and the closing stock price on the day of the announcement. From the combined numbers we can see that value creation occurs, hence realization of synergistic effects. Additionally do the target’s capture most of the value, while the acquirers’ return is negative. The empirical research of Andrade et al. (2001) concentrates on a period where digitization was

at a different place than it is today. Moreover is the study only comprised of listed companies. What happens with the creation and capture of value when the targets are not public companies? Koeplin et al. (2000) estimated the private company discount by comparing private US companies to its public counterparts, pairing them up against size and time of acquisition. The findings were that US private companies were acquired at an average 20-30 percent discount, relative to its public counterparts. A result that may not be too surprising, given that the private market lacks a well-functioning market for corporate control. Further, did Hansen and Lott (1996) research the same discount and found a negative acquirer return in 65 percent of public acquisitions, while only 43 percent in private acquisitions. Based on Koeplin et al. (2000) and Hansen and Lott (1996) one can, therefore, argue that public acquisitions are more expensive than the private counterparts. However, due to the information advantages of the public market, the risk of acquiring a private company should be more substantial. At the same time, the lack of public information on privately owned targets will create value-creating possibilities for exploiting private information (Capron and Shen, 2007).

## **2.2. Market Functionality**

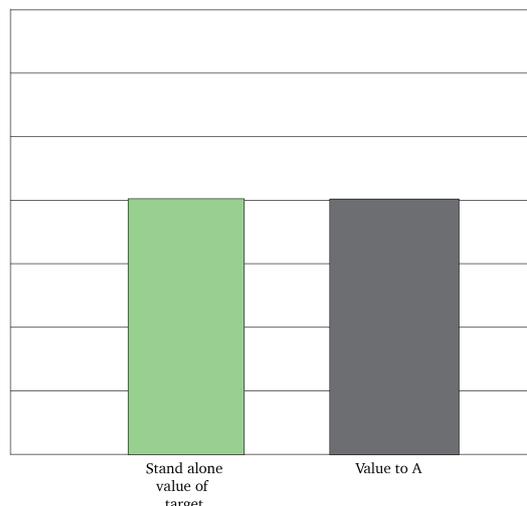
For the market for corporate control to be deemed well functioning, two conditions must be upheld. First, there must be several identical buyers in the market, i.e., no unique gains from integration. Second, all participants in the market must possess equal and useful information about the target as is.

When the combination of acquirer and target is not more valuable than the two companies alone, we end up with the following two situations in Figure 2.2 and Figure 2.3. The letters A through D represent different acquirers. Neither acquirer nor target will gain supernatural returns, as the acquisition must be made at full price. This is due to the market being well functioning, i.e., several identical buyers and equal information about the target as is. What happens when the information remains equal, but there is only one buyer, is displayed in Figure 2.3. Here we see that the acquisition price will not exceed the stand-alone of the target, as the combined value of the two is not higher than the two separately. The lack of a functioning market may result in private information about the value of the target (Capron and Shen, 2007). Hence, making it possible for the acquirer to capture supernatural returns.



**Figure 2.2** – Market for corporate control when well functioning, and  $(A+T)$  is not greater than  $A+T$

The market for corporate control when acquirers are similar and have equal information. Also, no synergistic value is believed to be created from the combination.



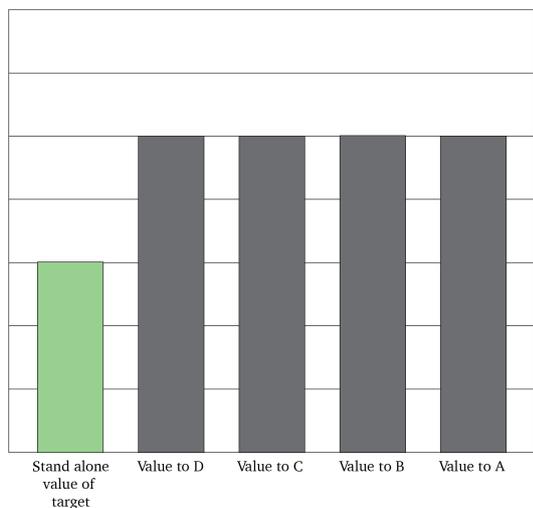
**Figure 2.3** – Market for corporate control when not well functioning, and  $(A+T)$  is not greater than  $A+T$

The market for corporate control when there is one acquirer, but no synergistic value is believed to be created from the combination of target and acquirer.

In Figure 2.3 the market for corporate control is not well functioning. The acquiring companies are not identical, making room for unique integration benefits. The acquirers do not possess equal information about the target, which will result in different valuations of the target for each acquirer. In this specific situation would the target be acquired by company A with a premium equal to  $(Z - Y)$ , while the acquirer would receive a return equal to  $(X - Z)$ . This is consistent with the argument of Barney (1986) that acquirers can only obtain supernatural returns when the market for corporate control is not perfectly functioning.

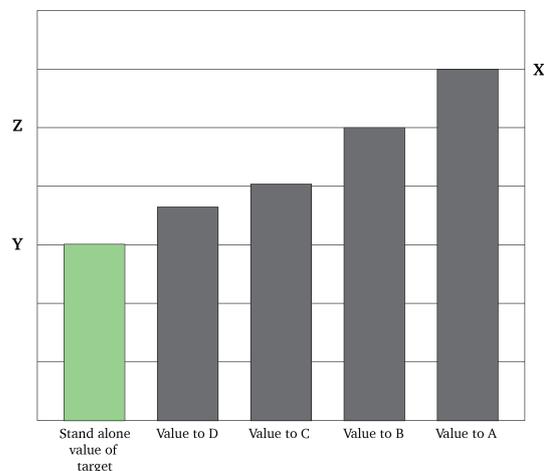
Assuming that the combination is more valuable than the two companies separately, we end up with the scenarios displayed in Figure 2.4 and 2.5. Figure 2.4 shows the market for corporate control when the market is well functioning. Here, due to the similarity in both companies and information, every acquirer will deem the combined value to be equal for all. Resulting in a situation where the target's shareholders capture all value. However, Figure 2.4 illustrates a situation where all acquirers are perfectly rational, something Thaler (1988) finds unlikely to occur. He states that based on the available information the acquirer must distinguish between the expected value of the target and the expected value condition of winning the auction for

the target. In turn, making the optimal bid challenging to determine. Therefore, the market for corporate control often ends up in the situation displayed in Figure 2.5.



**Figure 2.4** – Market for corporate control when well functioning, but  $(A+T) > A+T$

The market for corporate control when all acquirers are similar and have equal information, but there is synergistic value believed to be created from the combination.



**Figure 2.5** – Market for corporate control when not well functioning, but  $(A+T) > A+T$

The market for corporate control when the acquirers are dissimilar and have unequal information. Also, there is synergistic value believed to be created from the combination of target and acquirer.

In Figure 2.5, the abnormal returns captured by the acquirer stem from the dysfunctionality of the market and the specific value that the acquirer gives to the combination with the target. A valuation that may have been based on private information held by the acquirer. Information that most likely concerns the resources of the acquirer, and its combination with the target's resources. Private information may lead to winner's curse in the way of overestimating synergistic effects (Thaler, 1988, Graaf and Pienaar, 2013). In which, the target has an incentive to distribute private information, to inform bidders about potential synergistic effects. Resulting in a higher number of bidders and higher premiums, due to the premiums being lower if there are no competing bidders. Also, if the premium is low, the acquirer will acquire the target below its full valuation, and capture a significant part of the value creation. Therefore, it might be a priority for the acquirer to limit the number of willing acquirers. Which may be done by making target managers positively attuned to the deal. Also, the potential synergies can be kept hidden from the target, i.e., hiding the complete possible value creation, or the deal can be closed quickly, limiting the time for other potential acquirers to enter the bidding war.

### 3. Digital Competition

This chapter will provide a closer look at the competition in the digital market. We begin with defining the digital company, before presenting how digital companies have affected the digital market structure and competition.

#### 3.1. Digital Companies

Digital and digitization have become buzzwords, used by many in everyday speech. In turn, making it difficult to define what a digital company is. Dörner and Edelman (2015) see digital as a way of doing things, all the way from the business model, to the delivery of the service or product to the interaction with the customer. Also, is the digital business, the business that digital companies conduct, defined as the creation of new business designs and underlines that digital business makes it possible for new value chains to emerge that has been difficult for traditional businesses to offer (Capgemini, 2014). From this, one can argue that a centerpiece when it comes to digital companies is not only to what degree they apply digital technology in their operations but to what degree it utilizes all the capabilities and possibilities that follows of said technology. Digital companies are also deemed to be quick and data-driven and depend on continuous delivery and improvement of its products (Olanrewaju et al., 2014). The speed is essential to adapt to the competition in the market continuously, and the gathered customer data allows for this process to function. This process often plays out as creating live betas of digital products and gathering data on the acceptance of the different betas. A process which is consistent with the findings of (Dorner and Edelman, 2015) who argue that digital companies apply real-time automation. How the digital companies are capable, in the give-and-take relationship with the customers, to always address the feedback and in real time implementing the changes in the business model. Further, this explains how digital companies create multiple projects with zero-based budgets. A way of budgeting in which all expenses are justified for each period (Investopedia, 2018). The projects are given a limited time span to create value. If the created value is low or close to zero, the project gets terminated, while the ones that create significant value are further built upon (Olanrewaju et al., 2014).

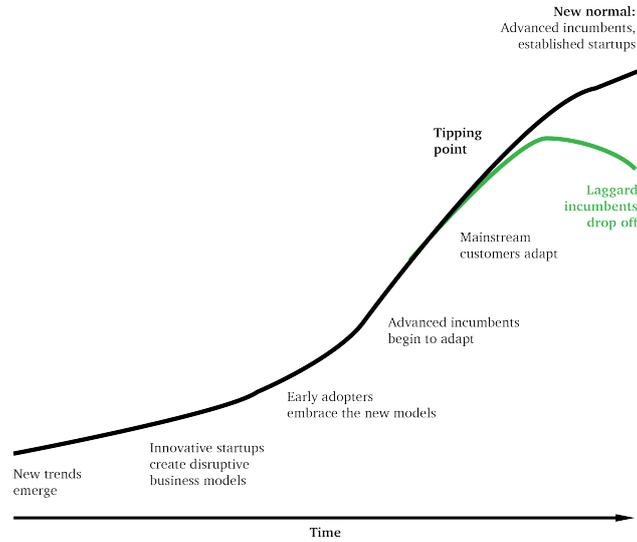
Customers and the associated customer data are essential to digital companies (Olanrewaju et al., 2014). A characteristic probably all companies possess, unrelated to its digital aptitude.

The essence, however, lays in how digital companies learn from its customer. The focus on customers among the digital companies derives from the customer data gathered, which in turn increases the companies' value proposition through better and more personalized products. Moreover, does it seems likely that the amount of data gathered by the digital companies exceed that of the non-digital companies. In turn, emphasizing its extreme customer focus.

We define digital companies as data-driven companies that distribute end-to-end digital tools to their customers and have digital knowledge as the backbone of their business. Following is the digital market made out of companies that fall under the definition of a digital company. Finally, as we only focus on the digital part of the market, will we label all companies that fall outside of the digital definition to be traditional companies.

### **3.2. Digitization and Innovation Transforms Industries**

Digital advancements over the last decades have affected all parts of the general market. Even though the general market functions apply to the digital market, there are some differences that digital competition has brought forward. The first dynamic is how digitization transforms industries. Hirt and Willmott (2014) drafts a conceptual curve displaying how slow or lag-gard incumbents have lost their position in industries due to digital disruption. This curve is illustrated in Figure 3.1. Hirt and Willmott (2014) point out that determining the stage of digitization within a market determines the time span that an incumbent has to adjust or fall behind. In turn, making the landscape uncertain due to the speed of technological leaps within the industry. Figure 3.1 illustrates how new trends in the market, occurring for instance in niche markets, create new business models in which innovative start-ups and adaptive incumbents use to create a new normal in the market. Incumbents that are slow to adopt this new way of conducting business will eventually fall behind in the competition.



**Figure 3.1** – How digitization transforms industries

The figure, developed by Hirt and Willmott (2014), illustrates how digitization affects laggard incumbents. The incumbents have until the digitized innovation becomes mainstream to adapt to the new situation.

According to Credit Suisse, cited by CNBC, the average lifespan of an S&P 500 company has gone down from 60 years in the 1950s to 20 years in 2017 (Boorstin, 2010). A statistic that might strengthen the validity of Hirt and Willmott’s curve indicating how the digital capabilities may continually disrupt the market. However, the higher turnover in the S&P 500 list does not immediately argue for more bankruptcies, but rather a higher number of merger and acquisitions between the companies on the S&P 500 (Gittleston, 2012). Yet, this implies that the competition in the digital market is distinctive from that of the traditional market with regards to the speed of innovations and adaptability of new technologies and business models.

Li (2017) research how the digital technology has made business model innovations possible for firms in the creative industries. His findings were that digital technologies facilitate a more extensive range of business models to be adopted by companies, to a greater extent than before possible. Thus, indicating how the digital technologies create new ways of conducting business and innovates on several levels in the market.

Figure 3.1 builds upon the theory of disruptive innovation which states that disruptive innovations occur in young and small companies in a market, or in an entirely new market (Christensen

et al., 2015). Innovation which often is conducted by smaller companies with fewer resources than an incumbent. The disruption is complete when mainstream customers start to buy the products of the disruptor in volume. However, King and Tucci (2002) found that incumbents could be disruptive themselves and survive waves of disruption if they had sufficient experience from previous transitions into new markets. By learning from these earlier encounters, they were found to be more adaptable to new changes. Indicating that disruptive innovation can arise from several positions and stages in the market and that the possibilities to disrupt have become more accessible as a consequence of digitization. Christensen et al. (2015) further point out that the notion of adapt or die may be overestimated, that an incumbent should adapt to potential entrants, but still maintain a substantial focus on its current products or services. Nonetheless, the digital companies have developed new ways of competing and overtaking incumbents, changing the scene of competition.<sup>1</sup>

### **3.3. Network Effects and Winner-Take-All Dynamics**

An essential dynamic for the digital market is network effects. Katz and Shapiro (1985) describe network effects as when the value of a good increase alongside the number of users. An example of this is Facebook, a digital social platform business. The more significant portion of a consumer's social circle that has an account on Facebook, the higher the value is for the consumer. Not only the social interactions with known and unknown people, but also all other parties involved generates value to the platform, ranging from game developers, advertisers, and different firms who have a digital presence. In total, all parties involved will generate a more meaningful experience.

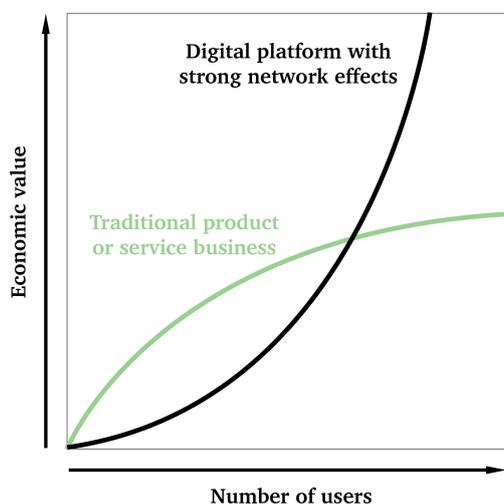
A market can have several network effects, be it one-sided, two-sided, or multi-sided. A one-sided network effect is when the value stream is running in one particular direction (Rysman, 2009). At every stage, through the value stream, there is only one interaction between buyer and seller of a good. After the completion of the deal, the upstream part is indifferent to the success of the downstream part (Rysman, 2009). This can be exemplified by a farmer who sells his merchandises to a grocer. The revenue of the farmer is independent of how successful the grocer is since the transaction already is complete. How the grocer interacts with his customers is a new interaction along the value stream. A two-sided network effect occurs when a product or service brings two groups together (Eisenmann et al., 2006). The value stream goes both ways

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<sup>1</sup>Indicating competition for innovation that will be further covered in Chapter 4.

and both parties are dependent upon the other. The value of a two-sided network increases when it matches the demands of the parties on both sides of the intermediary (Eisenmann et al., 2006). An expansion of a two-sided network with several parties on both sides of the intermediary is called multi-sided networks. Customers favor networks with several outlets, and merchants prefer networks with several users and potential customers. For instance, does Facebook represent an intermediary between users, social game developers, advertisers, and companies.

When network effects are present, companies will see an increase in returns per user (Katz and Shapiro, 1985, Iansiti and Lakhani, 2017). The marginal cost of serving one extra customer is close to zero, and digital companies applying network effects are therefore not restricted by traditional business theories about expansion and growth. Figure 3.2 display that traditional businesses have a decreasing value gain per extra customer after a certain point. However, digital platforms as Facebook becomes more valuable with the increase of users in the network. Figure 3.2 also indicate the capacity restraints traditional companies experience when compared to the digital companies. The cost related to an extra user or customer is close to zero on any digital platform or social media, whereas there are definite restrictions on the number of customers in traditional outlets.



**Figure 3.2** – Value of extra user

The figure, developed by Iansiti and Lakhani (2017), illustrates how digital platforms, due to network effects, experience increased economic value from an increase in number of users. Which is the the opposite of traditional products.

Network effects represent a significant barrier to entry through the winner-take-all dynamic. Hagiu and Rothman (2016) define it as a chicken-and-egg problem, to get a critical mass of buyers one also need a critical mass of sellers or suppliers. A notion shared with the findings of Eisenmann et al. (2006). The problem is that to attract suppliers, one also need many buyers. Thus, entering a market where there are strong network effects present is difficult. Fjell et al. (2010) states that the presence of network effects in a market indicates that the largest networks are the one harvesting the positive feedback effects. In turn, leading to the reinforcement of the position of the largest, and reducing the capabilities for growth for the smaller. Thus ending up with a winner-takes-all situation, as the customers obtain greater value from a bigger platform, due to positive externalities, than a small platform.

### 3.3.1 Ecosystems and Platforms

Companies utilizing platforms and ecosystems take advantage of the benefits of network effects. An ecosystem consists of manufactured products and services that combined will generate a meaningful solution (Douglas and Eisenhardt, 2018). Moreover, is an ecosystem thought to be a technical infrastructure that connects, transport and distributes services and information of digital objects within the digital infrastructure (Nachira et al., 2007). An ecosystem consists of the complementary solutions and can increase in size by integrating third-party products and services (Hirt and Willmott, 2014). For instance, have Apple created an ecosystem around its products. The benefit of owning an iPhone and a Mac is greater than owning an iPhone and a different computer. Due to the integration and connection benefits between the devices being more significant when Apple manufactures both. The benefits expand when adding additional Apple devices. In turn, resulting in significant switching costs for the consumer if he or she wishes to own devices from other manufacturers. Moreover are there other digital devices that are Apple-certified, making the width of the possible connections within the ecosystem larger.

A platform is defined by (Eisenmann et al., 2006, p. 2) *as a product or service that bring together groups of users in two-sided networks*. The intermediary in which the different parties are connected to each other is often referred to as the platform (Armstrong, 2006). Be it a marketplace like Amazon, or a social media platform like Facebook. The different groups on either side of the platform will create externalities that other sides find beneficiary, thus choosing the platform in which the highest benefit is gained from other parties. Armstrong (2006) discusses how vital it is for platforms to identify which groups that create the most

substantial positive externalities and target them aggressively. Armstrong exemplified this by looking at a nightclub. If men gain a higher benefit in interacting with women than vice versa, the platform should subsidize the women to attract them to the nightclub.

### **3.4. Low Costs and High Margins**

A consequence of the digitization is lower costs (Hirt and Willmott, 2014). Digital businesses reduce labor and transaction costs, predominantly variable costs, indicating how the digital market overall has lower variable costs than the traditional market. Moreover, Hirt and Willmott (2014) state that online retailers may, per employee, generate three times the level of revenue compared to a top-performing discounter. Because digital companies, which runs their operation by digital means, requires little to no physical resources, they reduce the costs and entry barriers. Moreover, have the variable costs decreased due to lower coordination costs and marginal costs related to each new customer or user. A notion backed up by Evans (2015) who states that a digitally based business model needs significant smaller amounts of capital than analog businesses and that digital businesses can bring vast economies of scale, resulting in higher revenues and lower variable costs.

Contrary to the variable costs, which have been reduced, the fixed costs in digital companies have increased (Brousseau and Penard, 2007). An increase caused by the technologies necessary to manage the quantities of data created and gathered by the digital companies. Further, the fixed costs related to the platforms, utilized by the companies, increases by the transaction cost needed to match the supply and demand sides of the platforms. A fixed cost related to digital firms is the interoperability between the digital tools and instruments needed to perform operations. Interoperability being how the data collected is analyzed and utilized in a more or less seamless manner to give the consumer a value-added service. This interoperability is costly because of the specialized hardware and software required to complete the assigned tasks. In assembling such components, the design has to be done in relation to one another, causing greater developing costs. Lastly are the operating costs high as the platforms and business models need to be operational at all hours in a day.

Based on the lower variable costs do Porter (2001) find that the digitization lowers the entry barriers in the digital market. However, he finds the low entry barriers to be a challenge to profitability, stating that the most critical determinant of a market's potential for profit is the power of the buyer and seller. If either side possesses products that are differentiated, its

bargaining power should result in a significant value capture. Hirt and Willmott (2014) also point out that digital markets experience near-perfect transparency, which makes it easy to compare product performance, prices or service levels. Which in turn will increase pressure on prices and margins.

### **3.5. Intangibles**

The value of a company often rely on the intangible assets, and according to Kaplan and Norton (2004) intangibles are far more valuable than the tangible assets. Kaplan and Norton (2004) categorize intangibles into three groups. First, human capital consisting of skills, talents, and knowledge of the employees. Second, information capital consisting of the IT systems, databases and the technological infrastructure. Third, organizational capital which is the culture of the company, leadership and the competence of the employees to share their knowledge. Further, reasoning that intangibles are more valuable than physical and financial assets due to the difficulty in imitation, they enables competitive advantages. Moreover are the intangibles seldom the source of the value creation, but combined with other assets they function as a contributor and reinforcer of the actions of value creation. Consistent with the findings of Hall (1992) who find employee know-how and reputation to be the resources that are perceived to be most significant when considering business success. The study, though, was conducted on executives in the U.K. during a time long before digitization was at its current state. However, intangible resources as employee know-how and reputation are perhaps even more crucial in the digital companies of today. Indicated by the market value of Google at the end the financial year of 2014, where 73 percent of its total value was intangible resources (Jeny, 2015). Given the value of intangible resources, and thus the importance of resources as human capital, it becomes interesting to see whether this may affect the acquisition strategies of the digital companies or not. A notion which is covered in Chapter 4.

Finally, the value of big data has grown significantly over the last years. Manyika et al. (2011) predicted in 2011 that the increase in volume and detail of captured information by companies, should lead to an exponential growth in data for the foreseeable future. A prediction confirmed by Henke et al. (2016) in 2016. The intangible resource of big data may give competitive advantages, as the data may enable better decision making. Also, as the volume of big data increases, the possibility to advertise and deliver content and products tailored to every customer may result in competitive advantages. However, as of the 25th of May, 2018, the General

Data Protection Regulation (GDPR) will be enforced (Jaffe and Hautala, 2018). A regulation designed to protect the consumers against mismanagement of the collected user data. Making it questionable to what extent the consumer data may be applied in tailoring products and services. Even though GDRP sets limitations for the digital companies, the big data is still greatly beneficial to the operations of the digital companies.

## 4. Digital Competitions' Implications on the Market for Corporate Control

In this chapter, we will analyze how digital competition affects the market for corporate control for digital companies. The sections are structured with the heading indicating the findings, while the following analysis entails the reasoning behind the findings.

### 4.1. Acquisition as a Means to an Edge

According to Toppenberg et al. (2015), acquisitions within digital industries have become an essential part of retaining the technological edge. The technological edge is one of the differentiators between the digital companies. As the consumers are flexible in selecting products or services, they will purchase from the company providing the best solution at the time. What is unique about the digital market is the speed of the innovation and the development. Causing the competition among the companies to be intensified, and increasing the pressure on innovation to maintain the technological edge and improve or maintain the market position. In this section, we will analyze the strategy of acquisition as a means to an edge.

Acquirers within platform markets are typically platform leaders, thus making acquisitions a vital tool in the digital market to maintain one's position (Toppenberg et al., 2015). Acquisition as a means to an edge as an acquisition strategy is further backed by Goedhart et al. (2017) who state that one should pick (acquire) a winner early and assist in developing the business.<sup>1</sup> They further argue that the fierce competition has escalated the need for technology. Resulting in some companies finding the acquisition price to be lower than the cost of research and development (R&D). In turn, making it more profitable in some instances to obtain innovation through acquisition rather than internal R&D. Akdogu (2009) implies that acquisitions are a strategic investment tool to restructure the organizations in counter to market shocks, such as disruptive innovations. His research was based on an industry after a shock, and the findings indicated that in an environment under change, acquirers surpassed non-acquirers in adaptability and restructuring activities. When considering the growth in the digital market and its pressure to innovate, one can argue that the digital market has experienced significant

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<sup>1</sup>A notion further covered in Section 4.3.

change. A notion backed up by the change in the S&P 500 list.

Acquisition as a means to an edge can also be used to acquire companies that evolved new business models. Hirt and Willmott (2014) state that new business models have been discovered through digitization. Digital technologies have enabled new business models to develop, and following the growth in innovations, there should be a growth in new business models. In turn, creating an opportunity for digital companies willing to acquire. However, a business model is imitable, thus questioning the reason behind such an acquisition. An example could be a potential acquisition of Uber. The on-demand car service revolutionized the taxi market by allowing everyone with a car deliver taxi services. The business model is not difficult to imitate, but given the network effects of Uber's platform <sup>2</sup>, the business model is difficult to imitate, thus making an acquisition a viable solution. The decision to acquire a company for its innovative business model is backed up by Chesbrough (2007) who underlines the importance of business models seen up against technology and states that a good business model is more valuable than good technology.

Companies conducting acquisitions are more likely to stagnate their internal innovation (Hitt et al., 1996). Consequently, companies applying acquisitions as a means to an edge will be dependent on external innovation. The pressure on maintaining the technological edge will lead to pressure to innovate among the digital companies. Resulting, due to the dependency on external innovation, in a self-reinforcing spiral of acquisitions to obtain innovation in the market for corporate control for digital companies. The digital companies finding themselves in this spiral are therefore more likely to utilize the strategy of acquisition as a means to an edge to keep up with the competition for innovation. Hence, there are clear indications of a higher number of acquisitions completed by digital companies than traditional companies. Coinciding with the findings of Coyle and Polsky (2013) concerning a high number of acquisitions in the digital market.

## **4.2. A Higher Number of Acquisitions**

From Section 4.1 we see that acquisitions have become an essential part of retaining the technological edge of digital incumbents (Toppenberg et al., 2015). Moreover, are the cost and time requirements related to R&D significant (Goedhart et al., 2017). Hence, indicating that external innovation may be the easiest way to acquire new innovative technology. In turn, leading

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<sup>2</sup>Which will be further covered in Section 4.6.

to high demand for innovation, and thus a high number of willing buyers. In this section, we will look at how the digital competition leads to a higher number of acquisitions, and how it affects the market for corporate control.

The digital market is under a constant pressure to innovate and deliver new products, hence enhancing the value proposition to its customers. The digital companies compete to maintain the technological edge through delivering new innovations to the digital market and win over customers. In turn, making the competition for innovation hard between the digital companies. The innovation, be it minor or extensive, has led to the disruption of previously secure market positions, resulting in a massive decrease in average lifespan of an S&P 500 company. A statistic which indicates how the general market is affected by the innovation. Further, the digital companies are not only under pressure to innovate, but they are also a target for disruptive innovation, making it plausible that such a threat can increase willingness to acquire the disruptors. However, it may be argued that the threat level of disruptive innovation be increased due to the actions of the digital companies. The increased pressure to innovate leads to an increase in the number of innovations, and possibly disruptive, occurring. Hence, being more prone to disruptive innovation. Finally, when assessing the dynamic as a whole, the disruptor will be acquired, and the acquirer will look to nascent companies for new disruptive innovations.

King and Tucci (2002) find that incumbents can survive waves of disruption if they have sufficient experience from previous transitions into new markets. The digital market has undergone significant innovation, thus making it likely that the current companies within the digital market have knowledge and experience surrounding the impact of disruptive technologies. Making it questionable whether the digital incumbents of today are at risk of losing significant market shares and profitability to disruptive innovation. Facebook's acquisition of WhatsApp and Instagram may argue the case for the digital incumbents' experience. Both companies delivered products that were direct competitors to Facebook's current operations, hence serving as a threat to the position of Facebook in the digital market. By acquiring the two companies, Facebook strengthened its position and fought off the possibility of losing market shares and profit to disruptors. Implying that Facebook may have learned a lesson from the history of companies like Nokia. A company that changed our every day by making cell phones accessible to everyone, but found itself at a loss when smartphones became the new standard. To say that the companies are safe from disruption seems unlikely, but it seems like the willingness to acquire disruptive companies is indicative of its awareness of disruptive innovation.

Technological innovation is not alone in affecting the high number of acquisitions. Big data, and its appliances, also represent a reason for acquiring promising companies. Digital companies are not only reliant on data for improving its value proposition but also defined by it. By applying big data analysis on the customer data, may the digital companies better understand its customers' needs, and using predictive analytics to understand the future needs. However, predictive analysis is by definition predictive and not absolute. Leading to another strategy by the digital companies, trying out different betas or minor projects to test its viability. Projects that operate on a zero-based budget over a limited time (Olanrewaju et al., 2014). By doing so, can the digital companies minimize the total cost of testing whether the big data analysis is correct. While at the same time, reap the harvest from the ones that turn out to be profitable. Data is thus an essential part of digital companies, and in turn, digital competition. The largest companies in the digital market should benefit the most if we assume that more data leads to better decision making. However, even though data may transcend markets due to the likelihood of a customer being present in more than one market, external companies may own unique data relevant to the incumbent. Take Facebook's acquisition of Oculus VR. Facebook has vast amounts of customer data, and thus deliver a product tailored to the customer's needs. Facebook did not have any presence in virtual reality (VR), making the likeliness of Facebook owning VR-specific data slim. However, from the customer data could Facebook find indications of an increased interest in VR. Indicating that VR could turn out to be a significant technology in the future. With the acquisition, Facebook naturally obtained VR-technology, but also the data concerning how the technology is applied and used by consumers. Data that increased Facebook's understanding of both how consumers apply the technology, and how it works.

For the high number of acquisitions to be sustained, is it necessary that there always is a willing acquirer and target. When there is a surge in demand, as have been shown through increased demand for innovation and data, the competition within the market for corporate control should increase. This should lead to a higher number of willing acquirers, in turn increasing the premiums at which the targets are acquired. We should also see an increase in value created, as the acquirers will create synergistic effects with the resources of the targets. Thus, continue to grow in size and enhance the acquirer's value proposition to its customers. Moreover, due to the self-reinforcing effect of applying acquisitions as a means to an edge, the digital incumbents become reliant on the acquisitions. In turn, further strengthening the argument that there will be an increase in acquirers. The targets will reap the benefits of

the increased demand through the increased premiums. The value will mostly be captured by the target's shareholders, thus making this specific market situation profitable for the targets. However, due to fundamental market dynamics, one should assume that there also will be an increase in targets. A point that will be further elaborated on in Section 4.4.

### **4.3. Earlier Acquisitions**

The discussions above in Section 4.1 and 4.2 indicate that pressure on innovation leads to a higher number of acquisitions. From Figure 3.1 we see that innovation stems from the lower end of the market. A notion further backed up Christensen et al. (2015) who finds that disruptive innovations often begins in small companies with fewer resources than the incumbents. In this section, we will look at how the digital competition leads to earlier acquisitions, and how it affects the market for corporate control.

The increased pressure on innovation should lead to an increase in acquisitions. However, innovation is not an endless resource, it takes time to innovate, and it requires a bit of luck and timing to innovate successfully. Thus, could it be argued that if the demand for innovation maintains high, younger and smaller companies will be acquired. The time needed to grow an innovative company or technology into maturity is merely too long for the acquirers. Further, we argue in Section 4.2 that the digital competition will cause the market for corporate control to contain numerous acquisitions. Following the notion this is primarily due to the search for positive synergies through innovation, it may be argued that the well of such innovations will eventually run dry. Still, the demand for innovations will not decrease, making it likely that the acquirers will turn to even younger companies. Indicating that the small, innovative, companies will be acquired at the slightest notion of the innovative technology being relevant for the digital acquirers. Earlier acquisitions will, in turn, increase the likelihood of acquiring private companies. Due to the innovations primarily occurring in young and small companies, this probably happens even if the acquisitions are not deemed to be early. Further, when we argue for the acquisitions to happen earlier, due to innovation not being allowed to grow into maturity, the acquisitions will move further down the market, towards younger companies, increasing the chances of acquiring a private company. Additionally, leading the acquisitions premiums to decrease (Koeplin et al., 2000, Hansen and Lott, 1996). Indicating a lack of a well-functioning market in the market for corporate control among private US companies. However, assigning a premium to a private company may be difficult. If we assume that the target is young and

small, it probably has not earned any profit. It then becomes difficult to assign a premium for the acquirer. The target owns innovations that the acquirer seeks to obtain. However, said technology or innovation is not proven in the market. The premium is then assigned on the believed future synergy effects the innovation is believed to create. In turn, increasing the chances of the premium being either too high or too low, benefitting either the target or the acquirer in the future. Additionally, one may question whether the move towards acquiring innovators in the early stages leads to smaller premiums. If the information between the acquirers is reasonably similar due to the near-perfect transparency (Hirt and Willmott, 2014). And the acquirers have already purchased the mature companies, thus making the demand for early-stage innovators high, is the market inefficient? The near-perfect transparency will make it easier for the digital companies to assess the price and service levels of its competitors, thus increasing the information similarities between the acquirers. Moreover, if the target is public, all willing acquirers are in possession of the target's financial statements due to regulatory requirements. Something that is not required of private companies, and represents a difference between the private and public target's information sharing. Based on this we can say that there are information differences between private and public companies or immature and mature innovators. Still, the differences between the acquirers will remain reasonably similar to when it is acquiring the mature innovators. Resulting in the the difference between acquiring private and public companies to be smaller. Making it fair to assume that the same willingness to acquire at a premium will follow when acquiring smaller companies. However, due to the small companies probably representing more immature innovations, thus increased risk of the innovation, the premiums will be relatively lower than the premiums paid for more mature innovators.

The risk that follows from acquiring startups in the early stages reminds us of the way digital companies allow projects with zero-based budgets to try out new projects. Zero-based budgeting is a way to budget so that all expenses are justified for each period (Investopedia, 2018). In turn, demanding a significant focus on the needs and costs for the upcoming period. When discussing innovative start-ups, these periods from which to budget may be milestones as the first beta, first 100 customers, 1000 customers and so on. If the acquirer applied zero-based budgeting on the recently acquired early-stage company, the acquirer reduces the risk of financial losses. This may be a too restrictive way of looking at innovation when referencing the statements of Goedhart et al. (2017) that companies should acquire companies early and develop the target's business, resulting in too hard requirements for the acquired target. However, if the integration

is handled with care, and both the acquirer and target agree on the budgeting milestones, the target will receive time and funding to develop the innovation. While, at the same time, the acquirer increases its chance to obtain a new innovation. Moreover, Li (2017) finds that digital technologies facilitate a more extensive range of business models to be adopted by the digital companies. In turn, making it easier to apply new technology to a new business model. If the innovative technology the young company is developing is in a new market, the likelihood of there not being an established business model for it is high. Thus, following Li (2017), reducing the risk of the innovation not being profitable in the future. In turn, bringing up another interesting point about the nature of acquiring early-stage companies. Due to the short period that the companies have been able to develop the innovation, it is likely the digital incumbents have acquired a technology not ready for market distribution. Instead, it is an opportunity for potential profit. Which in turn increases the risk of acquiring companies so early in its lifespan.

Acqui-hire, the means of hiring an individual or team through acquisitions, may also be relevant when discussing early acquisitions. When the digital incumbents acquire young companies, the company's technology should be in the stage of development, rather than mainstream adoption. Additionally, does innovation often occur in small companies with limited resources, making the likelihood of several small companies working on the same innovative technology slim. Indicating that the specific knowledge that one team or company has is unique. In turn, making it possible for acqui-hire. Chatterji and Patro (2014) observed how small firms in the start-up phase, with newly developed products and no proven revenue stream were acquired by the large digital companies. Moreover, did the acquires state that the human capital was the primary motive of the acquisition. This new strategy in acquiring human capital indicates two differences between digital and traditional companies. First, it expresses how time is of an essence and the time to train and develop the workforce is deemed too costly compared to acquire the needed human capital. Second, it illustrates how the mentality differs between the traditional and digital companies. Because employees in digital see an acqui-hire as a status symbol, implying their mindset is different in the digital market. Though, a crucial problem arises after an acqui-hire. Contrary to the acquisition of tangible assets, human capital can never be wholly owned, and the employees are free to walk out the next day. Ranft and Lord (2000) find the primary instruments to retain acquired human capital to be status, autonomy, and commitment. Economic incentives, however, do not have the desired retention effects on the acqui-hired employees. In turn, further strengthening how the mindset has changed in the

digital market. Also, how acquiring with the sole purpose of obtaining intangible resources, in contrast to the traditional markets, is practiced in the digital market.

The early acquisitions should lead to increased risk for the acquirers, as the technology has not been tested to the same degree as mature companies. However, if the mature innovations have already been acquired the acquirer is left with little choice given that it probably is dependent on external innovation for fulfilling the demand for innovation. Moreover, may the innovation take too long to develop. In turn, creating a gap between the pace at which the digital incumbents are acquiring, and how quickly innovations can be developed, tested, and confirmed. Early acquisitions will further lead to the target's technology to be acquired before its maturity. Therefore, the technology is probably acquired before it has been proven in the market. In turn, increasing the risk of it not becoming profitable. However, if the integration is smooth, the technology might get the required funding or expertise from the acquirer so that it may evolve at a higher pace. Further, does it lead to the target's shareholders earning a significant amount early in the company's lifetime. Although, due to the findings of Koeplin et al. (2000) and Hansen and Lott (1996), could the target's shareholder receive even higher value if they waited for acquisitions after the target turned public. Still, the benefits of the acquisition, concerning assisting the growth of the innovative technology, might lead to earlier success than the target can create on its own.

#### **4.4. Increased Incentive to Innovate**

The increased focus on innovation should not only affect the demand side but due to fundamental market dynamics, also affect the supply side of innovation. A supply which materializes through small innovative companies. In this section, we will look at how the digital competition will affect the supplier side of the market for corporate control, or rather, how the targets are affected by the digital competition.

The premise of Section 4.2 is that innovation occurs more often externally among the young and small companies than internally in the digital incumbents and that internal innovation is time-consuming and costly (Christensen et al., 2015, Goedhart et al., 2017). Additionally, is there no guarantee that internal innovation, i.e., R&D, leads to actual innovation emerging. It thus becomes apparent that innovation should be sought after by small companies. However, if we assume that there are specific innovative technologies the acquirers are interested in, there should be fierce competition among the innovators. The innovator most likely wants to see its

technology adapted en mass, and if it finds the suitable acquirer, the likelihood of mainstream adoption may rise. Thus, making it likely that the innovators will race each other in creating the most innovative and promising version of the technology. Further, is it interesting to take a look at the why behind the increased pressure on innovation. The digital companies are not only highly dependent on their customer but also obsessed with them. Fulfilling every customer need is of extreme importance, a need which customer data may offer information. Moreover, a need that circles the phrase, "the next new thing". Digital companies are driven by data and deliver highly technological products or services to its customer. The nature of technology makes it essential to ensure that a new product or service applies the technology in a better way, or delivers new and improved technology as a whole. The pressure for always being on the forefront of technological development fosters a style of always thinking about how one can improve the product or service. In turn, creating a significant demand for innovation, while also increasing the competition for innovation between the digital companies. Moreover, are certain business models centered on continuous improvement. Apple, for instance, stops delivering software updates to certain iPhone models after four to five years (Richter, 2017). A strategy which makes the usage of an iPhone reasonably difficult after said years, in turn, making an upgrade likely. Logically, this is a smart choice, as it pushes the users to buy the newer version continuously. However, new innovative features in the iPhone may also be a reason for an upgrade, in turn increasing the focus on the mentioned innovative features. Such a business model based on continuous improvements of the product may also have a downside. As the consumers adapt to this business model, their needs and preferences become reliant on continuous innovation. In turn, making it necessary for Apple, or any other digital company applying a business model based on continuous innovation, to sustain said innovation. Resulting in a fierce competition between the digital companies for innovation. Moreover, due to the already discussed need for external innovation, the small innovators will experience an increased incentive to innovate.

The increased pressure on acquisitions begins within the acquirers because of its dependency on external innovation, resulting in a significant demand for innovation to occur. Due to fundamental market dynamics should we thus see the number of innovative companies increase. Supply should meet demand and form an equilibrium. However, innovative technologies demand time not only to be developed, but also to be tested, validated, and last but not least, invented. The journey from innovative idea to technological idea is likely to require significant

amounts of time, making it likely that the supply will have difficulties to satisfy the demand. For the acquirer does this mean that the gap between the time needed to develop, and the pace at which the digital incumbents acquire, may result in acquisitions of technologies that are not as innovative as first thought. In turn, resulting in a loss for the acquirer. Nonetheless, given the increased pressure on innovation, are the digital incumbents practically required to acquire innovations even if the innovation turns out to not be sufficient. Even if the demand and supply side does not reach an equilibrium should the pressure on innovation lead to the supply side growing in size. The value capture from acquisitions that ends up in the hands of the target's shareholders should incentivize bright minds to establish start-ups to innovate and hence be acquired. In turn, resulting in a bigger pool of innovative companies to choose from for the acquirer, indicating that the premiums will go down. However, due to the longevity required to develop innovation, and that the acquirers will aim for the most promising innovations, the reduction in premiums should not be too drastic.

#### **4.5. The Search for Synergies**

The premise of the theory of market for corporate control rests upon the combined value of target and acquirer being larger than the two separately, and Hitt et al. (2001) finds synergies to be central in completing mergers. In turn, making synergies a crucial part of mergers and acquisitions. Further, as we have seen, do digital competition lead to an increase in the number of acquisitions due to the demand for innovation, leading to an increase in the number of acquirers and targets. We have discussed the value capture, but it is also necessary to look at the value creation, or rather, synergies which the acquisitions create. Moreover, we define value creation to be equal to synergies, in turn making it interesting to see what synergies are likely to be realized through acquisitions within the digital market. In this section, we will briefly discuss the importance of synergies for the market for corporate control before we take a more in-depth look at cost, revenue, and intangible synergies.

Synergy effects enable the acquirer to increase the efficiency which may reduce costs, and allow for an increase in profit. When assessing the digital companies, it may be argued that cost synergies are less critical than revenue synergies. Firstly, do we know that digitally based business models need significant smaller amounts of capital than traditional businesses (Evans, 2015). Also, digital platform businesses reduce labor and transactions costs, and an online retailer may generate three times the level of revenue per employee, compared to a traditional

retailer (Hirt and Willmott, 2014). This indicates that the digital market experiences low capital requirements for entry, but benefits from low costs due to the lower dependency of physical resources compared to traditional companies. Making it arguable that variable cost synergies are not as relevant to digital companies as they are for traditional companies. Further, do digital companies leverage network effects through the use of platforms and experience a close to zero cost when acquiring a new customer (Iansiti and Lakhani, 2017). Moreover, the platforms grow in value as the number of users increases (Katz and Shapiro, 1985). Following the low variable costs should one believe that costs are low and the margins high. However, the case of Netflix, a platform provider of video content, indicates how certain digital companies prefer growth over profit. The quote is as follows: *The long-term and fixed cost nature of our content commitments may limit our operating flexibility and could adversely affect our liquidity and results of operations* (Netflix, 2018). A quote not only indicating the focus on growth in Netflix but further indicating how platform providers increase the fixed cost to sustain growth. Additionally, digital companies might experience synergies related to reduced administrative costs. In acquisitions is the target's headquarters often sold and the company is brought into the infrastructure of the acquirer, resulting in reduced cost for the target and creating cost synergies from the acquisition. However, as previously discussed, there are clear signs indicating that many acquisitions occur early in a company's lifespan. Not only reducing the maturity of the technology at the time of the acquisition but also the size of the headquarter. Further, it is likely, due to the absence of profit in the early stages of the innovative start-up, which salaries are low, and much of the compensation stems from employees obtaining shares within the company. Hence, indicating that these mentioned cost synergies probably occur, but at a lower level than in the traditional market.

Revenue synergies may be aligned with the desired growth of the digital companies. Schweiger and Very (2003, p. 4) refer to revenue synergies as *the cross-selling of products or services through complementary (i.e., non-overlapping) sales organizations or distribution channels that serve different geographic regions, customer groups or technologies*. In simple terms, being able to sell at a higher volume as a combined unit than the two separately. If the acquired innovation is ready for mainstream distribution, the distribution network of the acquirer should result in a higher sale volume, thus realizing revenue synergies. They further find that revenue synergies may occur from an increase in the acquirer's product and service portfolio, enabling bundling and an extensive offering. Of which an example may be how Facebook applied Oculus VR

headsets in launching its VR version of Facebook (Facebook, 2018).

The digital companies are quick and data-driven and heavily reliant on data, or rather, big data. Of which the importance was proved by Henke et al. (2016) who finds that the growth in data available is growing at an exponential rate. Big data will increase the information base on which the digital companies conduct its decisions. Moreover, is it likely that the data may be applied across market positions, hence creating market power synergies. For instance, it is likely that a consumer's data is in possession of multiple companies as the consumer probably has interacted with multiple companies, leading to an increased likelihood of revenue synergies among digital companies. An assumption for revenue synergies is, however, that the complementary markets must have similar product preferences. Big data, as shown, may be applied across markets and patterns derived from consumer data in one market may indicate the consumer's preferences and actions in a different market. Furthermore, have we seen an increase in business models based on platforms and ecosystems, thus making the opportunity for applied data in new areas more substantial. Something which also follows the findings of Li (2017) that digital technologies facilitate a more extensive range of business models to be adapted. In turn, indicating that revenue synergies, even if rarely realized (Schweiger and Very, 2003). Indicating that this is something which the digital companies aim to realize through acquiring new and innovative companies.

Due to the dependence on technology, intangible assets become essential for digital companies. From Kaplan and Norton (2004) we know that human capital is an intangible resource, one which is hard to imitate and creates competitive advantages. If a digital company wants to further its innovation, such human capital becomes crucial. Which offers understanding to why a company may acquire another, irrelevant of the target's tangible resources. Further, organizational capital like culture and interpersonal relationships are unique and hard to replicate. By acquiring a company for its workforce, the acquirer may also obtain benefits from the target's organizational capital.

The synergies we have discussed are the drivers behind the acquisitions. For the acquirer, this means that it wants to obtain synergies that enable growth, and sustains the demand for innovation. It is possible that the search for realized positive synergies might result in a bidding war, leading to overvaluation and thus winner's curse. Still, the target will benefit from increased value capture as the premiums become higher. However, the acquirer's are not new to the game of acquiring young innovative companies, pointing towards the rationality of the

bids being reasonably similar to the real value of the combined companies.

#### **4.6. The Network Effects of Digital Companies**

Network effects have become crucial within digital competition as platforms have emerged. Platform business models profit from strengthening the externalities to earn a share of all transactions. An example is an advertiser-user effect, where the advertiser becomes more willing to pay if there are more users on a platform. The users, however, are more willing to use the platform if there are more users on it. For Facebook this would mean the more of the user's friends that are on the platform, the higher value would the user withdraw from the platform. For Amazon this would mean the more suppliers of goods that are delivering on the platform, the higher would the value for consumers be, and vice versa. Another example is Apple's iMessage, a messaging service restricted by the ecosystem of Apple, where a user's valuation of iMessage is positively correlated with the number users in total. Network effects have become an instrument for digital companies to increase the customers' dependency on the products, strengthening its position in certain digital markets.

We argue that one-sided network effects should be rarer than two-sided effects in the digital market. This is due to the use of business models based on platforms and benefits the digital companies receive from the two- or multi-sided effects. Benefits not created by one-sided network effects. There are numerous two-sided, or rather, multi-sided networks within the digital market. Facebook with its platform serving users, companies, developers, and advertisers. Netflix with its viewers and content distributors, and Youtube and Snapchat with its consumers, advertisers, and content creators. There are without a doubt many new digital companies that have utilized the power of network effects in creating business models. Which is logical given the fact that the value of the network increases when it matches the demand on both or all sides of the intermediary (Eisenmann et al., 2006). In turn, making it a priority to create more sides to strengthen the network effect. Such a priority should lead to a rise in platforms and ecosystems within the digital market. Platforms and ecosystems share the dependency which both creates among its users. Platforms create strong network effects, making the users dependent on its services. While ecosystems are created so that digital tools only work, or work best, with the other products from the same company. To create a platform one need a critical amount of users on both or all sides of the platform. If this amount is not sustained, the platform will not deliver at a level to be considered as valuable for the users. An ecosystem is different to

platforms in the way that it makes it possible to escape the chicken-and-egg problem. If we take Apple as an example and a consumer owns an iPhone. If the consumer later is in need of a computer, he will most likely purchase a Mac instead of another computer, due to the connectivity and compatibility advantages the iPhone shares with a Mac. The same benefits will make the consumer more likely to purchase other Apple products. This, however, demands that Apple offer additional products aligned with the consumer's needs. Platform providers should thus search for innovations that are either an improvement to the platform itself or adding a new network externality. Ecosystems providers should in turn search for innovation which may serve the next, or future need of the customer, to increase the ecosystem effect.

If a platform integrates with a new innovation, three things may happen. The innovation may be approved by the customer and used, increasing the value of the platform. Some customers may approve it, but not all, creating little to no value. Finally, the innovation may destroy value if the users find the platforms less pleasing with the innovation integrated. In turn, making it crucial for platform providers to ensure the innovation will benefit a significant amount of the platform's users. However, when assessing how digital companies try out small projects through beta-testing, it is likely the risk of integrating destructive innovation will be minimal. The same risk is not as significant for ecosystems creators, as the strength of the ecosystem will remain as strong, even if the innovation turns out to not be aligned with the consumers' preferences. The loss will be the alternative cost and potential market loss against competitors.

The biggest companies are the ones harvesting the most significant benefits of the network effects (Fjell et al., 2010). Indicating that the growth of a digital company, reliant on network effects, is correlated to its size. In turn, making the big grow bigger. Network effects are, in other words, a substantial barrier to entry, making the market position of companies inherent to said effects strong. This indicates that, over time, if we assume the network effects will continue to grow, the number of companies possessing strong network effects will be low. This should make an acquisition less enticing, as the market position of the winner is stable. Even if the platform of the incumbent is negatively perceived, the users need a significantly better alternative to switch. So, due to the network effects, a significant portion of all sides of the platform have to switch to the alternative platform, following the chicken-and-egg problem (Hagiu and Rothman, 2016).

The compatibility of the network effects of target and acquirer may also affect unique gains. Within a digital company possessing a marketplace, the supply-side will see an increase in

customers and vice versa. Thus, enabling unique gains from integration to be present. This, however, rest on the assumption that the compatibility of the network effects is significant. In a situation where the target's users do not find the acquirer's business to be of interest, unique gains from integration will be harder to achieve. Building on this may companies, of which networks effects are compatible with that of the target's, possess beneficial information. The acquirer's knowledge about how the network effects function, its strength, and weaknesses, will help the acquirer in determining the correct target valuation.

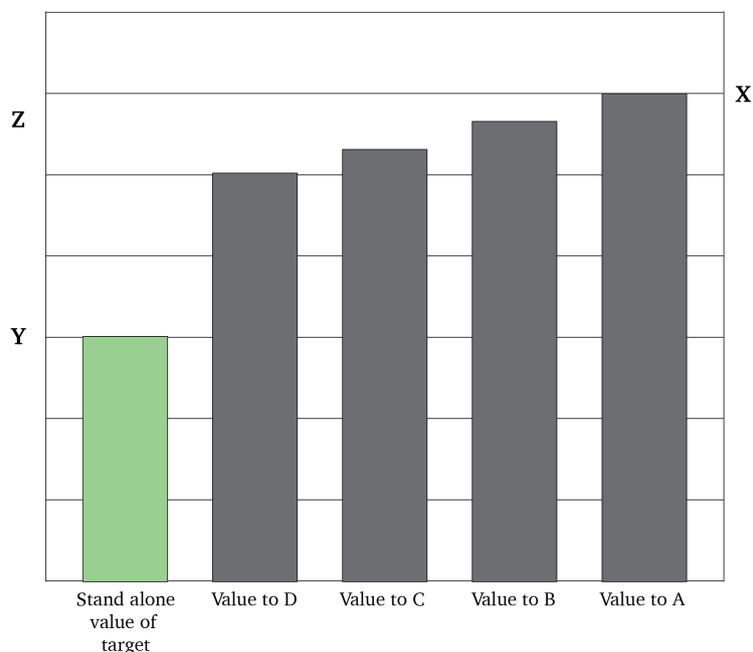
Finally, if we assume that network effects are strong within a market, for instance, the platform market, the implications for the acquirer should be a stronger bargaining position when acquiring targets. The targets need significant amounts of users on both, or all, sides of the network effect, something which takes time, good timing and a small portion of luck. Indicating that the premiums should be lower, as the best way to develop the innovation is to be brought under the wing of the acquirer. Turning acquisition into an incentive for the target that goes beyond the value capture incentive discussed in previous sections. Moreover, if the network effects are allowed to grow, and the value of the platform continues to grow for all parties included, theoretically, could we end up in a situation where a limited number of companies control the whole market.

#### **4.7. The Functionality of the Market for Corporate Control for Digital Companies**

Throughout this chapter, we have analyzed how the digital competition has affected the market for corporate control. We will in this section present two scenarios for how the functionality of the market for corporate control in the digital market may function.

The first scenario is based on the self-reinforcing cycle of acquisitions due to the dependency on external innovation and the high demand for innovation. In this scenario the bidders exceed the number of targets, making room for premiums and capturing of value for the target's shareholders. We have discussed how the high number of acquisitions will lead to an increased incentive to innovate, thus creating more targets for the acquirers. However, we deemed the time needed to develop innovative technologies to be too long for an equilibrium of supply and demand to be met. Indicating that the premiums should be lowered, but not to the point where the number of targets exceeds the acquirers and premiums being close to zero. Further, we deem synergies to be realized, even if not to a great extent, making the combined value of the target

and acquirer exceed the stand-alone value of each company. We have also described how there are unique integration benefits and how there are information differences between the digital companies. Resulting in the market for corporate control not to be well functioning.

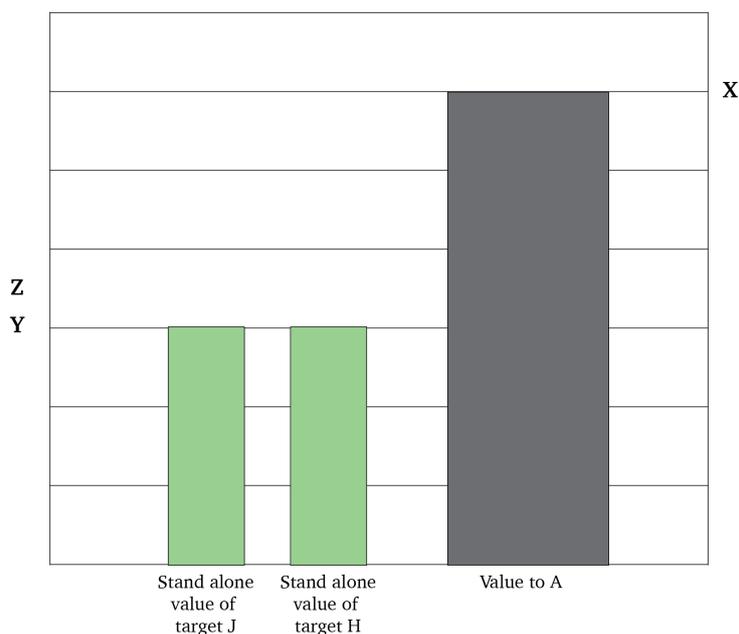


**Figure 4.1** – Digital market for corporate control when not well functioning, and  $(A+T) > A+T$

The figure displays the value the acquirers put on the combination of the target and the acquirer. The acquirers are represented as A through D. The stand-alone value of the target is represented through the green bar. The letter X represent total value creation believed to be realized from the combination. The letter Z represent the price at which the target is acquired, and Y represent the stand-alone value of the target.

Figure 4.1 illustrates how the acquisition premium of the target equals to  $(Z - Y)$ . A premium which is large, and following the findings of Andrade et al. (2001) and Hansen and Lott (1996), this value is captured in its entirety by the target's shareholder. Further, we observe more than one bidder, and the target is acquired by company A, as A has the highest valuation of the target. The acquirer receives a return equal to  $(X - Z)$  which is significantly smaller than the value captured by the target, aligning with our analysis. Finally, we observe that the different valuation of the target is not far apart. In turn, making the return to the acquirer as small as it is. A difference in valuation founded on the small differences in variety and information advantages.

The second scenario describes a situation where network effects have led to winner-take-all dynamics, resulting in companies becoming so big that the mere presence deters other bidders from entering a bidding competition for innovation. Resulting in there only being one bidder. Further, we now assume that the increased incentive to innovate has led to there being more than one target with similar technology wanted by the acquirer. Moreover, do the incentive to acquire innovation remains, and the incumbent bidder believes synergies may be realized from the acquisition, making the combined value of the either bigger than the target and acquirer alone.



**Figure 4.2** – Digital market for corporate control when not well functioning, and  $(A+T) > A+T$ , but one bidder and two targets

The figure displays the value the acquirer puts on the combination of either target and the acquirer. The acquirer is represented as A. The stand-alone value of each target is represented through the green bar. The targets are represented by letter H and J. The letter X represent total value creation believed to be realized from either combination. The letter Z represent the price at which the target is acquired, and Y represent the stand-alone value of the target.

In Figure 4.2 we see that the premium is significantly smaller, reducing the value captured by the target’s shareholders. However, the value for the acquirer (A) is still high. It believes that significant synergies may be realized from this acquisition. Resulting in most of the value being captured by the acquirer. Due to there being more than one target a reverse dynamic will occur with a bidding war between the targets. As both targets have equal stand-alone value, they will

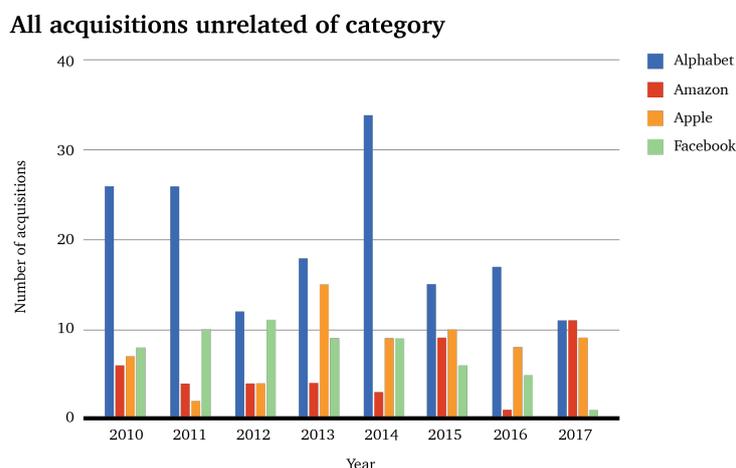
compete the acquisition price down to the price at which one of the targets drops out at a price ( $Z$ ) slightly above the targets stand-alone value. The price represents the lowest price at which one of the targets are willing to be acquired. Further, may the price be above the stand-alone value so that the shareholders of the target will receive some value from the acquisition, and not feel cheated. In turn, hopefully, lay the foundations for successful integration. When an acquirer is so strong that its mere presence deters other bidders from entry, because they know they cannot compete with the incumbent's resources, the acquirer avoids the winner's curse. In turn, ensuring that the likeliness of value creation will be higher than the likeliness of the acquisition not creating any value. Still, there might be situations where there is more than one incumbent inherent with strong network effects. If this is the case, we will end up with premiums and acquirer returns somewhat similar to that of in Figure 4.1.

## 5. A Historic View on the Market for Corporate Control for Digital Companies

This chapter will present data on acquisitions conducted by the Big Four <sup>1</sup> and explain different characteristics in the digital market for corporate control. The dataset is built on acquisition data from 2010 and throughout the financial year of 2017. The data was gathered through searches within online directories like Crunchbase and Wikipedia. From these directories did we find sources which became the basis of our dataset.

### 5.1. High Number of Acquisitions

In Chapter 4 the strategy of acquiring as a means to an edge indicates a higher rate of acquisitions to rely on external innovation to compensate for the loss of internal innovation. Figure 5.1 shows the total acquisitions conducted per year by each firm. As implied the number of acquisitions is high, even though the differences between the firms are noticeable. The average number of acquisitions per year were five for Amazon, eight for Apple, seven for Facebook and twenty for Alphabet.



**Figure 5.1** – All acquisitions unrelated of category

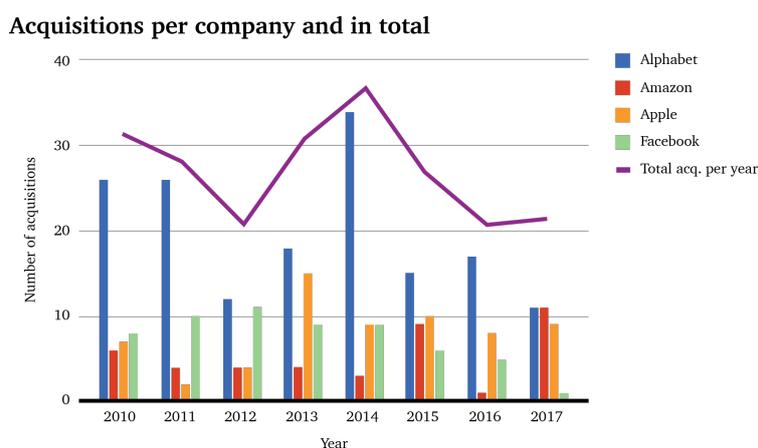
All acquisitions of Facebook, Amazon, Apple and Facebook from 2010 until 2017. All acquisitions are unrelated to category.

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<sup>1</sup>Alphabet, Amazon, Apple, and Facebook

Figure 5.1 displays a situation in which all companies acquire each year, with Alphabet being the largest. Coinciding with the findings of Coyle and Polsky (2013).

There are no clear trends in the number of acquisitions, but the average number of acquisitions per year, Alphabet (20), Amazon (5), Apple (8) and Facebook (7), indicates that the high number of acquisitions will continue. An indication further displayed in Figure 5.2, where we see the total number of acquisitions completed each year. Here we see that the number of acquisitions spiked in 2014, primarily due to the increased number of acquisitions from Alphabet.

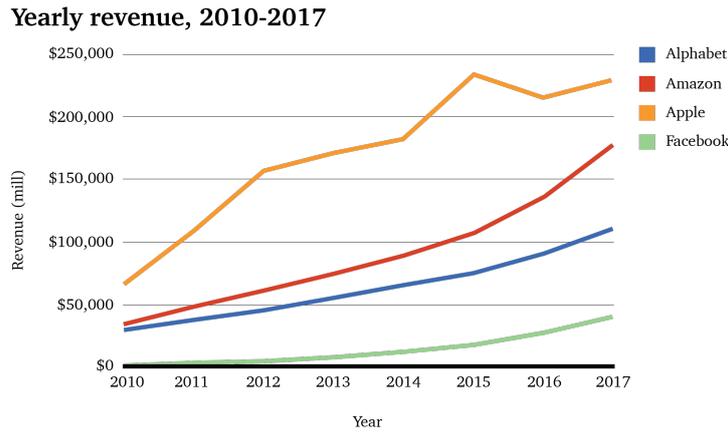


**Figure 5.2** – Acquisitions per company and year total

All acquisitions of Facebook, Amazon, Apple and Facebook from 2010 until 2017. All acquisitions are unrelated to category. Further is total acquisitions per year displayed.

## 5.2. The Big Get Bigger

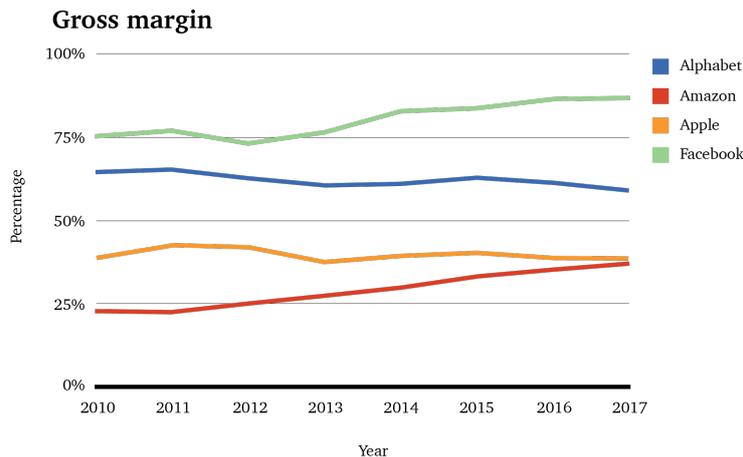
From Chapter 4 we see that the digital companies possess competitive mechanisms that allow for growth and development of advantages and abilities. Giving the companies positions as the largest and most valuable companies in the world. Forbes has an annual ranking which lists the world's most valuable brands. The 2017 ranking lists Apple as number one, Google number two, Facebook at place number four and Amazon at place number six (Forbes, 2018). As seen in Figure 5.3, has the growth in revenue been steady but increasing throughout the last couple of years. From 2015 did the companies gain substantial traction, notably Amazon, with a small exception of Apple.



**Figure 5.3** – Yearly revenue for each digital company

This figure shows the change in yearly revenue for Alphabet, Amazon, Apple, and Facebook from 2010 until 2017.

Figure 5.3 indicates that the big are getting bigger. As we can observe, the steady increase in revenue not only indicate larger cash reserves but may further imply increased market power. Either in the form of increased quantity sold or higher profitability per customer. High profitability would assume lower consumer surplus, pointing towards monopolistic traits. Thus, we can argue that they may achieve more substantial market power, and get bigger. It then becomes interesting to assess the gross profitability of the four digital companies.



**Figure 5.4** – Profitability measured in gross margin per firm

This figure shows the change in gross margin for Alphabet, Amazon, Apple, and Facebook from 2010 until 2017.

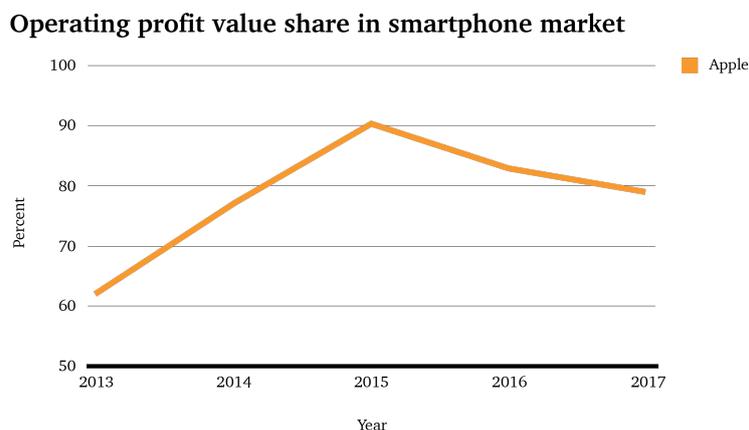
In Figure 5.4 can we draw that every firm has a substantial gross margin. Facebook and Apple have remained at a reasonably constant level, while Facebook and Amazon have increased its gross margin over the last couple of years. Combined with the increased revenue streams, this becomes indicative of the companies increasing in size. It is worth noting that even though Facebook has a very high gross margin of 87 percent in 2017, the company's revenue is the smallest of the four companies.

Not only do the companies increase the revenue streams, some even increases the gross margin. All companies further have significant market shares in each respective segment. In turn, reinforcing its dominant positions in the market. Alphabet and Facebook are often referred to as the duopoly in online advertising. According to a note to its clients from Pivotal's Brian Wieser, reported by CNBC (D'Onfro, 2017), the duo accounted for 73 percent of the US online advertising. Up from the 2015 level of a 63 percent market share. Furthermore, did Wieser estimate the growth in digital advertising in the second quarter of 2017 to be 23 percent or \$20.8 billion in advertising revenues. Of which Alphabet and Facebook were responsible for 83 percent.

When looking at the leading global social networks worldwide, based on the total number of users, there are clear indications that Facebook in particular, but also Alphabet are the dominant players. Facebook is the most extensive social network with a total number of 2.234 billion users worldwide. Youtube, a subsidiary of Alphabet, and WhatsApp, a subsidiary of Facebook, share second place with 1.5 billion users each. In fourth place is Facebook Messenger, the messaging service of Facebook, with 1.3 billion daily users (Statista, 2018b). As stated in the Chapter 3, the digital companies experience lower costs and higher margins, proven in Figure 5.3 and Figure 5.4. Facebook is the largest incumbent, dominating the social network segment worldwide while maintaining high profitability in their position.

Alphabet's market share within search engines is 90 percent (Statcounter, 2018). In turn, making it the significant largest provider in the search segment. While Amazon is the biggest e-commerce company in the US, accounting for 44 percent of all online sales in the US in 2017, and four percent of the total retail market in the US (Thomas, 2018). With its steady revenue growth and increase in gross margin, Amazon's dominance in the retail market is steadily reinforcing itself. Further, do they have an average of five acquisitions a year, among others the acquisition of Whole Foods in which their foothold the traditional retail industry became a reality.

Apple has maintained a steady market share within the smartphone market since 2010, averaging at around 18 percent (Statista, 2018a). However, it is the company's profitability within the smartphone market which is resulting in high revenue numbers. Apple does not dominate the smartphone market through market shares, but rather through the operating profit share of the market, displayed in Figure 5.5.



**Figure 5.5** – Apple's operating profit value share in smartphone market

This figure shows the operating profit value share in the smartphone for Apple from 2013 until 2017. The operating profit value share displays how much of the total profit from the smartphone market one company, in this case Apple, captures.

Apple's profits have changed over the last couple of years. However, we can observe how they dominate the market despite not owning a monopolistic position like Facebook within social media. Apple's sales numbers in units from 2017 show that they only acquired 14.7 percent of the smartphone market, compared to their primary rival Samsung who captured 21.6 percent (Jones, 2018). However, by having a substantially larger operating profit, Apple maintains control over the profitability of the market, sustaining its dominance in the smartphone market.

As seen do the four companies dominate their respective markets. Domination which may be due to network effects, of which the biggest networks capture the largest benefits (Fjell et al., 2010). For instance, Alphabet obtains 90 percent of all searches done in the world, which generates data and feedback about what is essential and what to improve, which in turn better the experience and attracts more users. These network effects will have a natural effect on their growth and lead typically to winner-takes-all situations, consequently making the big bigger. All four companies possess strong network effects, and Apple further has a well-built ecosystem. Both create dependency with consumers, further strengthening its positions, in turn making the

big, bigger.

### 5.3. Diversity Among M&A Deals

When making the dataset, we quickly realized the diversity in which markets the Big Four acquire. This led us to categorize each target given the following subcategories, which were based on the target's primary field of operations and defined as follows:

1. Search

- Companies that are developing and applying search-related technologies. Examples are visual search engines, social search, semantic search and instantaneous search.

2. IoT.

- Companies that are developing and applying internet of things technologies. Examples are home monitoring and home automation.

3. Geo.

- Companies that are developing and applying geo-location services technologies. Examples are location-based services, tracking applications, delivery services and indoor and outdoor mapping applications.

4. Assistant/AI.

- Companies that are developing and applying artificial intelligence technologies for, but not limited to, personal assistants. Examples are speech technology, facial recognition, machine learning, messaging assistant, gesture recognition technology and deep neural networks.

5. VR/AR.

- Companies that are developing and applying virtual and augmented reality technology. Examples are eye-tracking technology, surround sound technology, 3D modeling tools, and computer vision.

6. Social Network.

- Companies that are developing and applying social network technology. Examples are cross-platform game frameworks, social analytics, mobile messaging and social polling.

7. Hardware.

- Companies that are developing and applying hardware technology. Examples are server CPUs, digital displays, chip designers, photography and wireless charging.

8. Cloud.

- Companies that are developing and applying cloud technologies. Cloud computing means storing and accessing data over the internet instead of a hard drive (Griffith, 2016). Examples are file hosting and sharing services, in-browser file transfer, API management and data synchronization.

9. Software.

- Companies that are developing and applying cloud technology. Companies that have been placed in other subcategories may be defined as developing and applying the software. Hence, the companies which fall into this subcategory are companies which develop and use software, but software that is not defined by its specific technology. Examples are music streaming, internet security, advertising, video editing, education technology and digital publishing.

10. Robotics.

- Companies that are developing and applying robotics technology. Examples are satellites, robotic arms, high-altitude UAVs, mechanical design and robotic fulfillment systems.

11. E-commerce.

- Companies that are developing and applying e-commerce technology. Examples are digital retailers but also include digital coupons providers and loyalty program services.

12. Retail.

- Retail companies. Out of our four chosen acquirers, Amazon is the only one to acquire retail companies. It acquired a book printer, a publisher, DVD-by-mail and a grocery over our selected period.

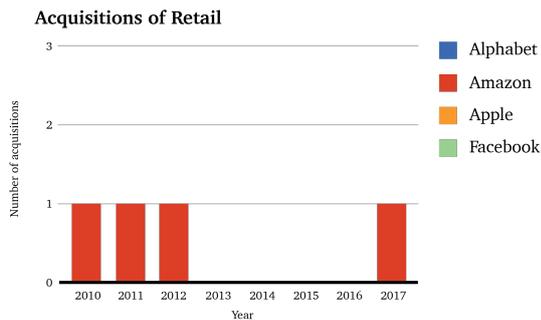
13. Mobile.

- Companies that are developing and applying technology designed for the mobile platform. Examples are mobile video, mobile applications, mobile software prototyping, mobile advertising, and smartwatches.

14. Payment-services.

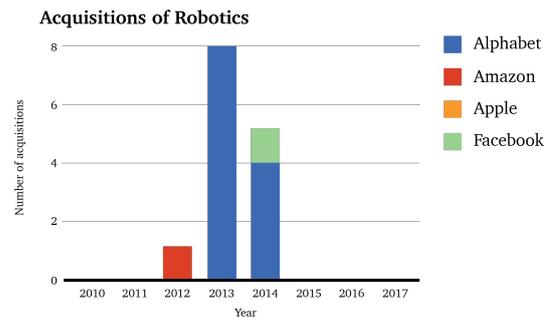
- Companies that are developing and applying payment-services technology. Examples are online payments, NFC-technology, and mobile payments.

From these subcategories, we find indications of increased variety in where the acquirers search for innovation, as highlighted in Chapter 4. Moreover, we find the variety to raise the question of whether the companies follow each other in acquiring new technology. Filtering every acquisition completed by the chosen subcategories led us to find mixed results. In many subcategories we find the frequency of acquisitions to be scattered. Here displayed through retail and robotics, Figure 5.6 and Figure 5.7 respectively.



**Figure 5.6** – Acquisitions of Retail companies

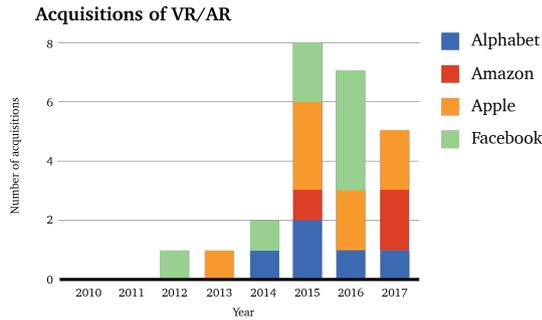
This figure displays the number of acquisitions made by Alphabet, Amazon, Apple, and Facebook from the category of Retail from 2010 until 2017.



**Figure 5.7** – Acquisitions of Robotics companies

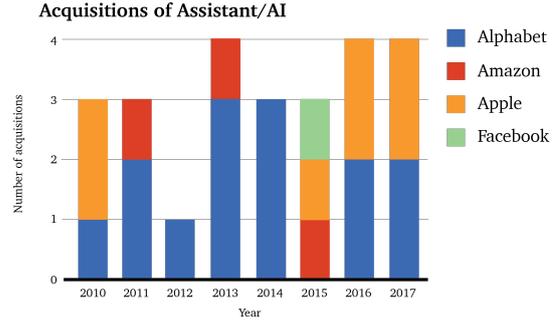
This figure displays the number of acquisitions made by Alphabet, Amazon, Apple, and Facebook from the category of Robotics from 2010 until 2017.

Although, when assessing the subcategories of VR/AR and AI/Assistant, we discover patterns indicating that the companies do follow each other. Displayed in Figure 5.8 and Figure 5.9



**Figure 5.8** – Acquisitions of VR/AR companies

This figure displays the number of acquisitions made by Alphabet, Amazon, Apple, and Facebook from the category of VR/AR from 2010 until 2017.



**Figure 5.9** – Acquisitions of Assistant/AI companies

This figure displays the number of acquisitions made by Alphabet, Amazon, Apple, and Facebook from the category of Assistant/AI from 2010 until 2017.

In Figure 5.9 we see that Alphabet and Apple are following each other in buying companies within the Assistant/AI subcategory. With both Amazon and Facebook also acquiring companies in the same subcategory, but at a lower volume. In Figure 5.8, we see a clear trend amongst all companies in acquiring VR/AR related companies. Furthermore, may a reason behind the diversity be that the digital companies are starting to saturate their markets and have to look elsewhere for further growth opportunities. Facebook has currently 2.234 billion users, and at some point, this number cannot grow any further. Making M&As in software and VR/AR an opportunity for additional value creation sources. Moreover, is Apple always trying to strengthen its ecosystem by launching new compatible products, such as the HomePod or Apple Watch. Indicating that the acquisition of Beats by Dre, a headphone manufacturer, centered on producing complementarities to its existing product line. Furthermore, have Apple purchased several companies related to geo-location technology, indicating how it aims to improve its software and hardware capabilities.

All the digital companies have substantial cash reserves, significant revenue streams and a high gross margin, seen in Figure 5.3 and Figure 5.4. Apple possesses a cash holding of \$250 billion as of Q1 2017, Alphabet with \$92 billion, Facebook with \$29 billion and Amazon with \$22 billion (Levy, 2017). It is clear that Apple tower over the others concerning cash holdings, which is interesting when considering that Alphabet is acquiring companies at a much higher rate than Apple, or any of the remaining companies. The cash holdings indicate a capability to acquire

firms as an experiment. If an acquisition fails, it does not have a too profound impact, but if it succeeds, it generates another revenue stream. So the companies try to emulate each other, resulting in equal acquisitions within the same segments.

#### **5.4. Acquisitions as a Means to an Edge**

Within digital industries have acquisitions become a crucial part of retaining the technological edge (Henningsson et al., 2016). Thus, should every new technological breakthrough result in fierce competition among the digital companies. In our dataset we find indications of this occurring in the subcategories of VR/AR and AI/assistant, displayed in Figure 5.8 and Figure 5.9. Moreover, can we assume that the virtual and augmented reality grew to a technological level of which the market deemed sufficient for mainstream functionality. Goedhart et al. (2017) argue that the small innovative companies should be acquired early and the acquirers should assist in developing the target's business, which is logical, given that internal R&D may be more cost and time consuming than the acquisition costs combined. Moreover, are the cash reserves of the four companies substantial, indicating a higher willingness to acquire as the cost is relatively small compared to the total cash reserves. The same logic may be applied to the subcategory of Assistant/AI, displayed in Figure 5.9. A consistent number of acquisitions have been conducted in the subcategory over the period. Amazon has Alexa, Apple has Siri and Alphabet has Google Assistant, and the companies want to integrate the AI in its technology to create an even better ecosystem and customer experience, while also gather consumer data. That the companies seem to mimic the others acquisitions patterns in certain markets, indicates that the fear of not be in possession of new technologies is present. A notion that may be disputed by the lack of patterns in subcategories like robotics and retail. The differentiator seems to be to what extent the targeted market delivers technology aligning with the strategy of the acquirer. For instance is it only Amazon that has publicly stated that retail is something the company holds an interest in. Finally, may the choice of innovation through acquisition result in reduced internal innovation (Hitt et al., 1996). If we assume that the technological growth continues, the competitive advantages obtained through acquisitions will decrease over time. When the next VR/AR occurs, the search for potential targets in the new category will begin. Indicating that the trends in Figure 5.8 and Figure 5.9, although not found in every subcategory, will re-emerge when the next innovation trend turns mature, and the companies deem it ready for mainstream consumers.

## 5.5. Acqui-Hire

Coyle and Polsky (2013) argues that, especially in Silicon Valley, the environment of innovation and research is so rapid and develops so fast that time is a scarce resource, and it is crucial to utilize it correctly. Thus, a tendency in the digital market is to disregard the target’s business, but make human capital the primary objective of an acquisition.

When Alphabet acquired Pie in 2016, Pie was successively shut down. Every Pie employee was transitioned directly into Alphabet. Pie originated in Southeast Asia, and the acqui-hire was a part of Alphabet’s long-term plan of expanding into this region. Alphabet acquired a complete team, i.e., intangible resources, with specific knowledge about a market they deemed interesting. By acquiring a complete team, the likelihood of integration difficulties post-acquisition decreases and Alphabet saves time if the alternative solution was to build a new team. Likewise, Facebook acquired Branch Media in 2014, and the 3D body model firm, Body labs in 2017, while Apple acquired Init.ai. All target companies were shut down after the acquisition, and all of the target’s employees were brought into each acquiring company.

As seen through these examples, every company have conducted an acqui-hire at some stage, and even though they are in different market segments, they see acqui-hire as a necessary action instead of target hiring the employees. The common denominator seems to be to acquire a small company with a team specialized in a certain area. A characteristic also found in Section 5.4.

## 5.6. Acquisitions Early in the Life Cycle of the Target

Following the analysis in Chapter 4 and the discussion above, it becomes apparent that the acquisitions seem to be targeted towards small, and thus very likely, young companies. Resulting in a situation where the companies are acquired before the business models, and other assets are properly evolved. From assessing the VR/AR subcategory, we present Table 5.1.

Company	Number of acquisitions	Avg lifespan before acquisitions	Youngest	Oldest
Alphabet	5	2	1	7
Apple	8	9	1	26
Amazon	3	4.7	4	5
Facebook	8	3.9	1	7

**Table 5.1** – Average lifespan before acquisition for VR/AR

In Table 5.1 one can detect a trend which confirms our assumption. The targeted companies are often at the beginning of their life cycle when acquired. The average lifespan of the target company is two years in the acquisition portfolio of Alphabet. The oldest company was seven years old and the youngest one year. Amazon had a bit higher average lifespan on its targets with 4.7 years. Apple has the highest number of AR/VR acquisitions and the highest average lifespan with nine years. This is mainly due to the acquisition of SensoMotoric Instruments which was 26 years at the time of the acquisition. When removing this, the average lifespan becomes 6.7 years. Still, they have acquired firms as young as one year of age, indicating fierce competition. Lastly, the acquisition portfolio of Facebook has an average lifespan of 3.9 years, making it the second youngest portfolio where the youngest is one year of age and the oldest seven years. We further assess the Assistant/AI subcategory of which the results are presented in Table 5.2.

Company	Number of acquisitions	Avg lifespan before acquisitions	Youngest	Oldest
Alphabet	14	3.9	1	7
Apple	10	4.2	2	11
Amazon	3	7.7	5	12
Facebook	8	3.3	2	4

**Table 5.2** – Average lifespan before acquisition for Assistant/AI

Similar to Figure 5.1 do Figure 5.2 display a low average lifespan before being acquired. Looking at Alphabet with a total of 14 acquisitions, an average lifespan of 3.9 years consisting of the youngest firm at one year of age and the oldest seven years old, indicating a high frequency in the acquisitions as a result of the competition in the market. Apple has a slightly higher average lifespan in their portfolio at 4.2 years. The oldest firm is eleven years, but the youngest is two years. Still a strong indication of how the AI market is just as fierce as the VR/AR market. Amazon and Facebook have fewer acquisitions in the AI market compared to the two others. Amazon has the highest average of the companies with the oldest at 12 years of age, and the youngest at five years, resulting in an average lifespan before acquisition at 7.7 years. Facebook, on the other hand, has the lowest average lifespan on 3.3 years, due to the oldest being four years and the youngest two years. The AI market segment confirms the findings in the VR/AR segment of how new digital technologies attracts strong competition in the market for corporate control.

The young age of the companies acquired indicates that the digital technology, or human capital, is the aim for the acquirers. Even if possible synergies are probably assessed, a company that is one to two years of age probably lacks the maturity for such synergies to be correctly determined. Again strengthening the notion of acquisitions as a means to a technological edge.

## 6. Predictions

In this chapter we will, based on the implications digital competition has on the market for corporate control, look forward and argue for three predictions on the future of the market for corporate control and digital competition.

### 6.1. The New Era of Conglomerates

The history of the corporate form of the conglomerate in the US stretches back to the 1950's, in the wake of the Celler-Kefauver Act of 1950 (Davis and Tinsley, 1994). The act made it almost impossible to conduct horizontal acquisitions due to the thinking of antitrust laws at the time. The same applied to vertical acquisitions and mergers. Thus making growth through acquisitions difficult unless one was willing to diversify and expand into different market segments. Resulting in the large firms expanding into different markets and the era of conglomerates progressed until its height in the 1980's. Porter (1987) further find the most common growth strategy for conglomerates is through acquisitions. At the same time as the conglomerates reached its peak, the same antitrust laws, which benefited this corporate form, was gradually withdrawn (Bhagat et al., 1990). Additionally, were the acts placed to protect the large companies from hostile takeovers (Davis and Stout, 1992). At the peak of the conglomerate model, its business structure was flawed to such a degree that they were undervalued and received punishment in share price drops after acquisitions of unrelated firms (Morck et al., 1989). One reason for the undervaluation was the conglomeratic discount, referring to the risk diversification of conglomerates. Due to the diversified nature of the conglomerates, the discount emerged as the more profitable sections of the corporation had to compensate for the weaker parts (Berger, 1995). The critiques stated that the different parts of the corporation were valued more separately than together, resulting in an undervaluation of the company. During the 1990's the corporate form had changed, and the era of the conglomerates had come to an end (Davis and Tinsley, 1994).

When we look at the history of M&A deals conducted by our sample, we see a wide variety of the acquired companies, accompanied by tremendous growth and expansion. Alphabet started out as a search engine, but now has ties to multiple industries like robotics, VR/AR, and artificial intelligence. Amazon began as a bookstore, but now runs the most significant online

retail store in the US and maintains the leading position in the smart speaker market. If we set the average number of acquisitions per company up against the variety of targets, we see clear indications of the current growth and expansion trend to continue. Which in turn is indicating that the digital incumbents will be assuming a conglomerate form, a form which the Big Four have already started adopting. Alphabet with subsidiaries like Google X, YouTube and Android Inc. Apple with Beats Electronics and FileMaker Inc. Amazon with Audible and Whole Foods Market, and Facebook with Oculus VR, WhatsApp Inc, and Atlas Solutions. We argue that the number of subsidiaries and the industry variety among them will continue to grow, making the Big Four obtain ownership in several companies in traditional industries. Examples may be banking, transportation, and retail. All industries that have experienced increased innovation occurring; banking with financial technology (FinTech), transportation with autonomous vehicles and retail through online retail. The premise of this potential growth into said markets is based on the need for innovation across all sectors and the need for growth among the four digital incumbents.

History has shown the corporate form of conglomerates to eventually collapse, predominantly ending in dismantling and the downfall of the conglomerate company. (Clough, 2018). As seen with the Big Four, conglomerates have all started out excelling in its area of expertise, generating excess cash flows which enable acquisitions from relatable businesses and market segments. Ultimately, the acquirers target companies farther afield from its core business, resulting in large conglomerates spanning over different market segments, up until they get too big to be sustainable. Which begs the question, what is different this time around with the Big Four? At the beginning of the first conglomerate development in the US, the ground pillars which enabled such corporate structures was the different antitrust acts and laws protecting against hostile takeovers. However, these accelerators are not present in today's market. So, if the market structure has changed, are there any fundamental differences between today's incumbents and the ones of the past? What differs from earlier conglomerates is today's reliance on information and data about the customers and trends. By supervising and monitoring the moves of the consumers and thus collecting massive data structures. The companies can analyze the data to easier detect tendencies and movements in the market. Further, are the digital companies more capable of navigating the market than other conglomerates, which results in flexibility and ability to react faster than before, making it easier to maintain the position of a market incumbent. However, this raises the question whether big data and artificial intelligence

are enough not to stumble as their conglomerate predecessors have all done. One could still argue that the conglomerate discount is just as relevant today as it was in the 1980's. That eventually the shareholders find the latest expansion unnecessary and the stock prices fall as a result. However, to what capacity could digital capabilities counteract these assumptions? An argument can be made that the interoperability between the different operations in the digital company may serve as a counteract. The effectivity in relaying information from different segments and departments to employ the data gathered in the best way possible is necessary to maintain the edge they so far have utilized to obtain the market position.

The digital and traditional market will be dominated to a higher degree by the Big Four if the current growth trajectory continues and they all develop conglomerate corporate forms. Consequently, will this lead to lower premiums paid by the incumbents in the market for corporate control as the competition do not see a realistic way of winning a bidding war. Furthermore, are the costs related to due diligence and the subsequent negotiations a significant deterrent from participating in a bidding round one may not deem possible to win.

#### 6.1.1 Heterogeneity or Homogeneity of the Conglomerates

The prediction about the incumbents becoming conglomerates will lead to further development of the business structures and different market segments of which they are involved. A conglomeratic development involves a certain degree of imitation as one enters other markets in which one has not operated in before. If the other incumbents are expanding in the same directions, something Figure 5.8 and Figure 5.9 indicates, they end up competing with each other in several markets. Resulting in a higher degree of homogeneity, even if the markets they started in are heterogeneous to each other. As the digital companies compete in the same segments, the operations become more alike. However, even if the companies are similar regarding the market segments they expand to, there are several markets that only a few have expanded into. In turn, indicating that the heterogeneity of the companies will grow. Additionally, as the variety of innovations acquired from different markets grow, the companies develop a more complex corporate structure. Even if they follow each other in acquiring similar innovations, the complexity of the companies as a whole indicates a firm heterogeneity.

Consequently, the market for corporate control may evolve into two different formats. In the case of greater homogeneity, the market for corporate control will have several large incumbents that are more alike. Thus, creating fewer unique integration synergies and the valuation of

the target firm is more similar between the acquirers, similar to Figure 2.4. However, due to the increasing complexity, we find the large conglomerate companies to most likely become heterogeneous and hence end up in a situation for the market for corporate control similar to that of Figure 4.1.

## **6.2. Future Innovation by the Incumbents**

Chapter 4 discussed the high premiums incumbents had to pay for any acquisition as a means to an edge or acqui-hire. We find it unlikely that the Big Four will accept the premiums to rise above a certain level. They will instead have a threshold of what they deem to be acceptable. Internal innovation is too costly and time demanding for the current demand for innovation in the market, resulting in innovation through acquisitions. Thus, to both reduce the dependency of acquisitions as a means to an edge, and to decrease the premiums paid, the digital incumbents must find other options. Accordingly, we envision a future where the digital incumbents invest directly in innovation. A vision we believe to come true as long as the acquisition premiums in the incubator are lower than in the market for corporate control. To focus on smaller premiums at an earlier stage in a innovators life, the digital companies have to acquire and reinforce incubators, enabling a smaller position in new and innovative companies. All four incumbents have already invested to some degree in incubators (Hein, 2016, Mannes, 2016, Bergen, 2016, Marinova, 2017). However, we argue that the importance of this strategy will increase in the near future.

By creating and building business incubators, the incumbents will gain access to several startups in the early-stages, subsequently attain ownership in several potential innovative small firms. The downside of such a venture is the need to invest in several uncertain seeds, instead of acquiring a more proven technology. By doing so, the innovation success per firm declines. However, the premiums at which the ownership is acquired is significantly smaller. If proven effective, the incubator will provide enough innovative solutions for the incumbent to avoid acquiring external innovation in the digital segment of the market for corporate control. A reason the incubators are capable of providing enough innovation compared to acquisitions is the embedded network effects in startup environments. These incubators accommodate several entrepreneurs to share ideas and draw off each other's knowledge. Additionally, have these incubators an extensive network of alumni companies who gives essential advice in lack of in-house expertise. The interpersonal synergies created by such incubators acts as a new form of

R&D for the incumbents, who previously had to look outwards for innovation, but now owns an innovation hub which enables both internal and external innovation.

### **6.3. Changes in the Market for Corporate Control in the Energy Market**

There are clear signs of general digitization in the society. Apple has digitized our wrist watches, Amazon has digitized the grocery stores with the Amazon Go and meetings, and interviews are performed via digital web operations. Furthermore, have mobile applications made everyday tasks like ordering taxis or reservations much simpler. We will in this section highlight how a traditional market is affected by the digitization and the digital companies' growth. Numerous markets may be analyzed, but we will focus on the energy market.

The common denominator for digital technologies is their demand for high quantities of energy to run their operations. Data centers already account for 3 percent of the global electricity consumption (Bawden, 2016). Also, by 2020 could the information and communications technology (ICT) market be responsible for 3.5 percent of the global emissions (Lime, 2017). The operations by the Big Four are energy-intensive, especially with regards to the digital infrastructure of data centers, cloud computing, and computer networks. Facing this need for energy, have the Big Four all stated their intention to be entirely powered by renewable energy eventually (Hook, 2018). To meet these promises, the incumbents have all invested heavily in renewable energy sources. Alphabet has, for instance, through its latest acquisitions become the company with the largest renewable energy purchases in the US (Hook, 2018).

In addition to the broader need for energy sources in the digital market, is the energy market as a whole experiencing digitization and digital innovations. One innovation is smarter grids through that offer surveillance, control, and flexibility. Local power suppliers, by personal windmills or solar panels, will be attached to the grid and make the network complex and challenging to manage. Sudden changes in local power demand and supply are reasons to create an intelligent network which utilizes digital communications and monitoring programs to create a fluent distribution of energy, no matter the activity level. The possibility of using advanced IT systems to control these grids will open new business opportunities for the digital market.

Countries have through the United Nations sustainable goals agreed to minimize the carbon emission footprints and to switch focus from energy sources reliant on fossil fuels to renewable energy (Nations, 2018). By doing so, the larger part of the energy market is affected and opens

up for a new market for renewable energy firms and technologies. Seen together with the private sector that consumes almost half of the world's electricity, and has pledged to increase the consumption of renewable energy, significant growth in the renewable market is likely (RE100, 2018). Consequently, due to the need for better grids to handle the distribution and expansion of energy and also the global change in mentality towards renewable energy, as the traditional market of energy is becoming more digital. The Big Four are all interested and have invested heavily in the energy market, hence creating incentives to innovate the production and distribution solutions. From Figure 3.1, a consequence of innovation in the market, will be disruption of the existing incumbents and a new normal. Apple has proven earlier the capabilities to innovate with the iPod, iPhone, and iPad. Alphabet has likewise proven capabilities in innovation by creating the largest mobile phone software in the world in Android. If the Big Four are willing to venture full scale into the energy market, the market for corporate control in the energy industry should change.

A result of the digital competition was a change in the market for corporate control in the digital market, shown in Chapter 5. There are strong indications that the same mechanisms will show themselves in the energy market. As the large incumbents exploit the growing digital energy market, by innovating both externally and internally and expanding itself within the energy market, smaller firms and startups may see the potential for innovation. By creating complementary solutions to the new normal in the market are there several opportunities to create innovative products and services, even disruptive ones. If the market evolves in such a fashion, competition between the incumbents and the new entrants will arise. Resulting in several of the same market functions as seen in the digital market. Firstly, due to the competition in a new market, a lack of supply of human capital within competence and knowledge of the newfound capabilities and technical aspects will arise, resulting in an even harder competition over the short term. To accommodate this development the incumbents and entrants should acquire the smaller firms to obtain their human capital and create a competitive edge. Secondly, the new normal in the energy market will put the existing energy incumbents under pressure to adapt to the change or fall behind, as shown in Figure 3.1. Under such circumstances are acquisitions as a means to an edge a great instrument to adapt to the development and obtain critical technological tools to do so. As the large digital companies enter the energy market with vast cash reserves and a history of acquiring firms to establish a foothold, as seen in the acquisition of Whole Foods by Amazon, the competition of the smaller firms intensifies. Due

to the ability of the Big Four to innovate and the financial muscles to establish themselves in a new market. The energy market, however, is not a new market, as they have invested in self-reliance and renewable power for over a decade.

The energy market stands in front of a shift following the advancements in the digital development. We find it likely that the massive digital companies will utilize the competitive advantages they might have in the digital market to establish themselves. As a result of the digitization, there will be a new normal in the market, through local suppliers and a smart grid system. Following the higher demand for electricity, particularly renewable, we observe an expansion of the energy market. Consequently, will the competition lead to a large number of acquisitions to either adapt to the changes or to obtain an edge. Finally, we find that wherever digital companies aims its acquisitions, digital competition will follow. Thus resulting in scenarios for the market for corporate control similar to which have been displayed in this thesis.

## 7. Conclusion

The findings of this paper suggest the digital competition to have an impact on the market for corporate control, thus deviating from the functionalities of the market for corporate control in traditional markets.

Because of the self-reinforcing effect of acquisitions, we find probable cause of a higher number of acquisitions. The pressure to innovate, due to the fierce competition between the digital companies, makes the acquisition a necessity in obtaining innovative technology and solutions. This, in turn, raises the premiums, from which the target shareholder capture the significant part. Further, acquisitions take place in the earlier part of a target's lifecycle, a natural consequence of the fierce competition on innovation. In addition, to obtain the innovation, it may be a precautionary instrument against disruptive innovation, as the acquirer targets the disruptive innovation. Acqui-hire is another reason to acquire of a nascent firm to attain human capital, of which results in indications for lower premiums paid per acquired firm. A consequence of the fierce competition and the following acquisition strategies should be increased incentives to innovate. A startup experience increased likeliness to be acquired at a high premium, and possibly develop disruptive innovations. Moreover, synergies attained through acquisitions have changed due to the differences in nature of traditional and digital companies. The variable cost synergies are reduced, due to the low variable costs of digital companies. Revenue synergies are not reduced but instead increased in most instances. Furthermore, network effects are a source of growth for digital platforms and represent a high barrier to entry. Network effects further lead to winner-take-all dynamics, implying that a few large companies will gain the most significant returns. In turn, retaining strong bargaining positions in the market for corporate control.

The market for corporate control for digital companies is deemed not to be well functioning. As a result of the fierce competition, the premiums at which the innovative companies are acquired will be high. Further, there may be situations where an acquirer is so strong that it deters others from bidding. Due to the increased incentive to innovate, the single acquirer should be in a position with more than one target. Resulting in the value created from the acquisition to be primarily captured by the acquirer.

From the analysis of the acquisition history of the Big Four, we find the number of acquisitions to be high. The notion of external innovation as a means to an end is indicated by the high number of yearly acquisitions within several categories. The average number of acquisitions by the Big Four stays at 40 acquisitions a year, but the number is somewhat misleading as Alphabet conducts nearly half of the acquisitions. Further, we have observed the big getting bigger. The revenue streams of the Big Four have increased steadily, in addition to the profitability increasing or maintaining at a high level, although with a small dip in Alphabet's gross margin. In combination with high revenue streams and gross margins, the companies dominate each own markets. One key mechanism behind the strong positions in the market and the steady growth is the network effects and the vast ecosystems. Furthermore, when discussing acquisitions as a means to an end, we looked at the VR/AR and Assistant/AI segment and observed an apparent tendency of the Big Four to follow each other in maintaining competitiveness in these particular markets. The acquisitions were aimed at obtaining necessary technological innovations to attain competitive advantages.

Saturation within the markets of which the Big Four are present may lead to the companies expanding elsewhere to attain continued growth. A growth which is enabled through significant cash flows in all of the Big Four, most significantly in Apple. Further, several acquisitions were meant to complement existing operations. Also, the acquisitions were mostly of nascent companies, exemplified through the acquisition history of the VR/AR and Assistant/AI segment.

Based on the theories, analysis, and data we created three predictions for digital competition in the market for corporate control. The first prediction argues how the new era of conglomerates has arrived. Contrary to the earlier conglomerates, the digital incumbents today rely on the interoperability of data and intelligence, which might help avoid the fall of previous conglomerates. Additionally, the incumbents will become more heterogeneous because of the complexity of the companies, but simultaneously be more homogeneous in certain market segments as they acquire similar targets, creating fewer unique integration synergies. The second prediction states that the incumbents might want to lower the premiums paid in the market for corporate control by investing in incubators, thus attaining potential innovations through acceleration programs in the early stages of the start-up. This might replace some of the internal R&D as the dependency on external innovation has impaired the internal innovation. The third prediction argues how the incumbents will change the market for corporate control in the energy industry. The energy market will gradually become more digital, while the global

mentality towards renewable energy has changed over the last decade. The digital incumbents are interested in reliable and efficient energy supply and have invested in own projects to be entirely powered by renewable energy. As a consequence, the same mechanisms as observed in the digital market will take place in the energy market. Resulting in a new normal in the market where acqui-hire and acquisitions as a means to an edge are utilized.

Finally, this thesis contains assumptions and subjects relevant for future research. Examples may be whether the acquisitions strategy of innovation through acquisition results in more innovations than R&D, or which strategy results in the most impactful innovations. Further, how does the conglomerization of the digital giants affect the traditional market? Also, how does the high number of acquisitions affect integration? Finally, would it be interesting to conduct a qualitative study on the effects of the realized synergies when acquiring for innovation within the digital market for corporate control.

## Appendix

**Table A1** – Acquisitions by Amazon 2010-2017

Acquisition Date	Acquired Company	Business	Sub-Category
2/3/2010	Touchco	Touch-screen technology	Hardware
6/30/2010	Woot	Internet retail of electronics	E-commerce
9/8/2010	Amie Street	Indie online music store	E-commerce
10/4/2010	BuyVIP	Members-only retail club	E-commerce
11/8/2010	Quidsi	Selling baby-products	E-commerce
11/8/2010	Toby Press	Book Printer	Retail
1/20/2011	LoveFilm	DVD-by-mail and streaming video	Retail
7/4/2011	Book Depository	E-commerce	E-commerce
7/28/2011	Pushbutton	Digital Agency	Software
11/9/2011	Yap	Multimodal speech recognition	Assistant/AI
2/2/2012	Teachstreet	Online marketplace	Software
3/19/2012	Kiva Systems	Robotic fulfillment systems	Robotics
6/4/2012	Avalon Books	Publishing imprint	Retail
10/1/2012	Evi	Knowledge base and semantic search	Search
1/24/2013	IVONA Software	Voice technology	Assistant/AI
3/28/2013	Goodreads	Social readings site	Social Network
5/13/2013	Liquavista	Digital displays	Hardware
10/1/2013	TenMarks Education Inc.	Personalized online math practice	Software
2/5/2014	Double Helix Games	Gaming studio	Software
4/10/2014	ComiXology	Digital versions of comics	E-commerce
8/25/2014	Twitch	Social gaming site	Social network
1/22/2015	Annapurna Labs	Chip designer	Hardware
2/12/2015	NICE	Computing software	Software
3/13/2015	2lemetry	Internet of Things	IoT
4/10/2015	Shoefitr	3D shoe-fitting technology	VR/AR
4/29/2015	ClusterK	Cloud technology	Cloud
8/16/2015	Curse, Inc.	In-game chat, databases for videogames	Social Network
9/25/2015	Safaba Translation Systems	Automated text translation software	Assistant/AI
10/23/2015	Elemental Technologies	Video processing	Software
11/1/2015	Biba Systems	Video messaging apps	Software
7/14/2016	Cloud9 IDE	Serverless architectures	Hardware
1/9/2017	Harvest.ie	AI security	Software
2/15/2017	Do.com	Software for meetings	Software

3/6/2017	Thinkbox Software	Media design and content creation	Software
3/28/2017	Souq.com	E-commerce marketplace	E-commerce
6/16/2017	Whole Foods Market	Grocery	Retail
7/10/2017	GameSparks	Cloud development	Cloud
7/20/2017	Graphiq	Visualisations of complex data	Software
9/6/2017	Wing.ae	Marketplace from Dubai	E-commerce
10/3/2017	Body Labs	3D body scanning	VR/AR
11/27/2017	Goo Technologies	3d modelling tool	VR/AR
12/21/2017	Blink Home	Home security video	IoT

**Table A2** – Acquisitions by Apple 2010-2017

Acquisition Date	Acquired Company	Business	Sub-Category
1/5/2010	Quattro Wireless	Mobile Advertising	Mobile
4/27/2010	Siri	Voice control software	Assistant/AI
4/27/2010	Intrinsity	Semiconductors	Hardware
5/10/2010	Gipsy Moth Studios	Application locatization	Geo
6/14/2010	Poly9	Web-based mapping	Geo
9/14/2010	IMSense	HDR-photography	Hardware
9/20/2010	Polar Rose	Facial Recognition	Assistant/AI
8/1/2011	C3 Technologies	3D mapping	Geo
12/20/2011	Anobit	Flash memory	Hardware
2/23/2012	Chomp	App search engine	Search
6/2/2012	Rematica	Audio	Software
6/27/2012	AuthenTec	PC and mobile security products	Software
9/27/2012	Particle	HTML5 Web app firm	Software
1/1/2013	Novauris Technologies	Speech recognition	Assistant/AI
1/1/2013	Ottocat	Search engine	Search
3/23/2013	WifiSlam	Indoor location	Geo
7/19/2013	Locationary	Maps	Geo
7/19/2013	HopStop.com	Maps	Geo
8/1/2013	Passif Semiconductor	Semiconductors	Hardware
8/13/2013	Matcha	Media discovery app	Software
8/22/2013	Embark	Maps	Geo
8/28/2013	AlgoTrim	Mobile data compression	Geo
10/3/2013	Cue	Personal assistant	Assistant/AI
11/24/2013	PrimeSense	Structured-light 3D scanners	VR/AR
12/1/2013	Acunu	Database analytics	Cloud
12/2/2013	Topsy	Analytics	Software
12/23/2013	Catch.com	Software	Assistant/AI

12/23/2013	BroadMap	Maps	Geo
1/1/2014	Dryft	On-screen keyboard	Mobile
1/4/2014	SnappyLabs	Photography software	Hardware
2/21/2014	Burstly	Software testing	Software
5/2/2014	LuxVue Technology	MicroLED displays	Hardware
6/6/2014	Spotsetter	Social search engine	Search
6/29/2014	Swell	Music streaming	Software
6/29/2014	BookLamp	Book Analytics	Software
8/1/2014	Beats Electronics	Headphones, music streaming	Hardware
9/23/2014	Prss	Digital magazine	Software
1/1/2015	Camel Audio	Audio plug-ins and sound libraries	Software
1/21/2015	Semetric	Music Analytics	Software
3/24/2015	FoundationDB	Database	Mobile
4/1/2015	Coherent Navigation	GPS	Geo
4/14/2015	LinX	Camera	Hardware
5/1/2015	Metaio	Augmented reality	VR/AR
9/1/2015	VocalIQ	Speech technology	Assistant/AI
9/1/2015	Mapsense	Mapping visualization and data collection	Geo
9/1/2015	Perceptio	Machine learning, image recognition	VR/AR
11/1/2015	Faceshift	Realtime motion capture	VR/AR
1/7/2016	Emotient	Emotion recognition	Software
1/28/2016	LearnSprout	Education technology	Software
1/29/2016	Flyby Media	Augmented Reality	VR/AR
2/3/2016	LegbaCore	Platform Security	Software
8/5/2016	Turi	Machine Learning	Assistant/AI
8/22/2016	Gliimpse	Personal health info collection	Software
9/22/2016	Tuplejump	Machine learning	Assistant/AI
12/1/2016	Indoor.io	Indoor mapping and navigation	Geo
3/23/2017	Workflow	Automation and scripting app	Mobile
5/9/2017	Beddit	Sleep tracking hardware	Mobile
5/13/2017	Lattice Data	Artificial intelligence	Assistant/AI
7/16/2017	SensoMotoric Instruments	Eye tracking hardware and software	VR/AR
9/22/2017	VRvana	Augmented reality head-mounted display	VR/AR
9/29/2017	Regaind	Computer vision	Software
10/1/2017	Init.ai	Messaging assistant	Assistant/AI
10/1/2017	PowerbyProxi	Wireless charging	Hardware
12/11/2017	Shazam	Musical and image recognition	Software

**Table A3** – Acquisitions by Facebook 2010-2017

Acquisition Date	Acquired Company	Business	Sub-Category
2/19/2010	Octazen	Contact importer	Social Network
3/2/2010	Divvyshot	Photo management	Software
5/13/2010	Friendster patents	Intellectual property/patents	Social Network
5/26/2010	ShareGrove	Private conversations/forums	Social Network
6/8/2010	Nextstop	Travel recommendations	Software
8/15/2010	Chai Labs	Internet applications	Software
8/20/2010	Hot Potato	Check-ins/status updates	Geo
10/29/2010	Drop.io	File hosting and sharing	Cloud
1/25/2011	Rel8tion	Mobile advertising	Mobile
3/2/2011	Beluga	Group messaging	Social Network
3/20/2011	Snaptu	Mobile app developer	Mobile
3/24/2011	RecRec	Computer Vision	Software
4/27/2011	DayTum	Information Graphics	Software
6/9/2011	MailRank	Email prioritization	Software
6/9/2011	Sofa	Software design	Software
8/2/2011	Push Pop Press	Digital publishing	Software
10/8/2011	Strobe	HTML5 mobile apps	Mobile
10/10/2011	Friend.ly	Social Q&A service app	Software
2/20/2012	Caffeinated Mind	In-browser file transfer	Cloud
4/9/2012	Instagram	Photo sharing	Social Network
4/13/2012	Tagtile	Customer loyalty app	Software
5/5/2012	Glancee	Social discovery platform	Social Network
5/15/2012	Lightbox.com	Photo sharing	Social Network
6/18/2012	Face.com	Face recognition platform	VR/AR
7/14/2012	Spool	Mobile bookmarking and sharing content	Mobile
7/20/2012	Acrylic Software	RSS app Pulp and database app Wallet	Software
8/24/2012	Threadsy	Social aggregator	Social Network
12/2/2012	Gowalla	Location based service	Geo
2/28/2013	Atlas Solutions	Atlas advertiser suite	Software
3/1/2013	Osmeta	Mobile software	Mobile
3/14/2013	Hot Studio	Design agency	Software
4/23/2013	Spaceport	Cross-platform game framework	Social Network
4/25/2013	Parse	Mobile app backends	Mobile
7/18/2013	Monoidics	Automation verification software	Software
8/12/2013	Jibbigo	Speech translation app	Assistant/AI
10/13/2013	Onavo	Mobile analytics	Mobile
12/17/2013	SportStream	Sports conversation analytics	Software
1/8/2014	Little Eye Labs	Performance analysis and monitoring tools	Mobile

1/13/2014	Branch	Web conversation platform	Software
2/19/2014	WhatsApp	Mobile instant messaging	Social Network
3/25/2014	Oculus VR	Virtual reality technology	VR/AR
3/27/2014	Ascenta	High-altitude UAVs	Robotics
4/24/2014	ProtoGeo Oy	Fitness tracking app Moves	Geo
8/7/2014	PrivateCore	Secure server technology	Software
8/14/2014	LiveRail	Publisher Monetization Platform	Software
8/26/2014	WaveGroup Sound	Sound studio	Software
1/6/2015	Wit.ai	Speech recognition	Assistant/AI
1/8/2015	Quickfire Networks	Video compression	Software
3/14/2015	TheFind, Inc.	E-commerce	E-commerce
5/26/2015	Surreal Vision	Computer Vision, augmented Reality	VR/AR
8/16/2015	Pebbles	Computer Vision, augmented Reality	VR/AR
10/3/2015	Endaga	Rural communications	Software
3/9/2016	MSQRD	Visual effects	VR/AR
5/23/2016	Two Big Ears	Spatial Studio	VR/AR
10/10/2016	Infiniled	Oculus VR	VR/AR
11/11/2016	CrowdTagnle	Publisher Analytics	Software
11/16/2016	Faciometrics	Computer vision, machine learning	VR/AR
8/31/2017	Ozlo	Artificial intelligence	Assistant/AI

**Table A4** – Acquisitions by Alphabet 2010-2017

Acquisition Date	Acquired Company	Business	Sub-Category
2/12/2010	Aardvark	Social search	Search
2/17/2010	reMail	Email search	Search
3/1/2010	Picnik	Photo editing	Software
3/5/2010	DocVerse	Microsoft Office file sharing	Software
4/2/2010	Episodic	Online video platform	Software
4/12/2010	PlinkArt	Visual search engine	Search
4/20/2010	Agnilux	Server CPUs	Hardware
4/27/2010	LabPixies	Gadgets	Hardware
4/30/2010	BumpTop	Desktop environment	Mobile
5/18/2010	Global IP Solutions	Video and audio compression	Software
5/20/2010	Simplify Media	Music streaming	Software
5/21/2010	Ruba.com	Travel	Geo
6/3/2010	Invite Media	Advertising	Software
6/16/2010	Metaweb	Semantic search	Search
7/1/2010	Zetawire	Mobile payment NFC	Payment-services
7/4/2010	Instantiations	Java/Eclipse/dev-tools	Software

7/5/2010	Slide.com	Social gaming	Social Network
7/10/2010	Jambool	Social gold payment	Social Network
7/15/2010	Like.com	Visual search engine	Search
7/30/2010	Angstro	Social networking site	Social Network
7/30/2010	SocialDeck, Inc.	Social gaming	Social Network
8/13/2010	Quicksee	Online video	Software
8/28/2010	Plannr	Schedule management	Social Network
9/1/2010	Blindtype	Touchtyping	Mobile
12/3/2010	Phonetic Arts	Speech synthesis	Assistant/AI
12/3/2010	Widvine technologies	Digital rights management	Software
1/13/2011	eBook Technologies	E-book	E-commerce
1/25/2011	SayNow	Voice recognition	Assistant/AI
3/1/2011	Zynamics	Security	Software
3/7/2011	BeatThatQoute.com	Price comparison service	E-commerce
3/7/2011	Next New Networks	Online video	Software
3/16/2011	Green Parrot Pictures	Digital video	Software
4/8/2011	PushLife	Service provider	Hardware
4/12/2011	ITA Software	Travel Technology	Geo
4/26/2011	TalkBin	Mobile software	Mobile
5/23/2011	SparkBuy	Product search	Search
6/3/2011	PostRank	Social media analytics	Social Network
6/9/2011	Admeld	Online advertising	Software
6/18/2011	SageTV	Media center	Software
7/8/2011	PunchD	Loyalty program	E-commerce
7/21/2011	Fridge	Social Groups	Social Network
7/23/2011	PittPatt	Facial recognition system	Assistant/AI
8/1/2011	Dealmap	One deal a day service	E-commerce
8/15/2011	Motorola Mobility	Mobile device manufacturer	Hardware
9/7/2011	Zave Networks	Digital coupons	E-commerce
9/8/2011	Zagat	Restaurant review	Software
9/19/2011	DailyDeal	One deal a day service	E-commerce
10/11/2011	SocialGrapple	Social media analytics	Social Network
11/10/2011	Apture	Instantaneous search	Search
11/14/2011	Katango	Social circle organization	Social Network
12/9/2011	RightsFlow	Music rights management	Software
12/13/2011	Clever Sense	Local recommendations app	Geo
3/16/2012	Milk, Inc.	Software company	Software
4/2/2012	TxVia	Online Payments	Payment-services
6/1/2012	WIMM Labs	Android-powered smart watches	Mobile
6/4/2012	Meebo	Social Networking	Social Network

6/5/2012	QuickOffice	Mobile Office Suite	Mobile
6/20/2012	Sparrow	Mobile Apps	Mobile
8/1/2012	Wildfire Interactive	Social media marketing	Social Network
9/7/2012	VirusTotal.com	Security	Software
9/17/2012	Nik Software, Inc.	Photography	Hardware
10/1/2012	Viewdle	Facial recognition system	Assistant/AI
11/28/2012	Incentive Targeting, Inc.	Digital coupons	E-commerce
11/30/2012	BufferBox	Package delivery	Geo
2/6/2013	Channel Intelligence	Product e-commerce	E-commerce
3/12/2013	DNNresearch, Inc.	Deep neural networks	Assistant/AI
3/15/2013	Talaria Technologies	Cloud computing	Cloud
4/12/2013	Behavio	Social prediction	Social Network
4/23/2013	Wavii	Natural language processing	Assistant/AI
5/23/2013	Makani Power	Airborne wind turbines	Robotics
6/11/2013	Waze	GPS navigation software	Geo
9/16/2013	Bump	Mobile software	Mobile
10/2/2013	Flutter	Gesture recognition technology	Assistant/AI
10/22/2013	FlexyCore	DroidBooster app for Android	Mobile
12/3/2013	SCHAFT, Inc.	Robotics, humanoid robots	Robotics
12/3/2013	Industrial Perception	Robotics, computer vision	Robotics
12/4/2013	Redwood Robotics	Robotic arms	Robotics
12/5/2013	Meka Robotics	Robotics	Robotics
12/6/2013	Holomni	Robotic Wheels	Robotics
12/7/2013	Bot & Dolly	Robotic cameras	Robotics
12/8/2013	Autofuss	Ads and design	Hardware
12/10/2013	Boston Dynamics	Robotics	Robotics
1/4/2014	Bitspin	Timely app for Android	Mobile
1/13/2014	Nest Labs	Home Automation	IoT
1/15/2014	DeepMind Technologies	Artificial Intelligence	Assistant/AI
1/26/2014	SlickLogin	Internet Security	Software
2/21/2014	Spider.io	Anti-click fraud	Software
3/12/2014	GreenThrottle	Gadgets	Mobile
4/14/2014	Titan Aerospace	High-altitude UAVs	Robotics
5/2/2014	Rangespan	E-commerce	E-commerce
5/6/2014	Adometry	Online advertising attribution	Software
5/7/2014	Stackdriver	Cloud computing	Cloud
5/7/2014	MyEnergy	Online energy usage monitoring	IoT
5/7/2014	Appetas	Restaurant website creation	Software
5/16/2014	Quest Visual	Augmented Reality	VR/AR
5/19/2014	Divide	Mobile device management	Mobile

6/10/2014	Skybox Imaging	Satellite	Robotics
6/19/2014	Alpentel Technologies	Wireless	Search
6/19/2014	mDialog	Online advertising	Software
6/20/2014	Dropcam	Home monitoring	IoT
6/25/2014	Appurify	Automated application testing	Mobile
7/1/2014	Songza	Music streaming	Software
7/23/2014	drawElements	Graphics compatibility testing	Software
8/6/2014	Director	Mobile video	Mobile
8/6/2014	Emu	IM client	Software
8/17/2014	Jetpac	Artificial intelligence, image recognition	Assistant/AI
8/23/2014	Gecko Design	Mechanical design	Robotics
8/26/2014	Zync Render	Cloud-based visual effects software	Cloud
9/10/2014	Lift Labs	Liftware	Robotics
9/11/2014	Polar	Social polling	social Network
10/21/2014	Firebase	Data synchronization	Cloud
10/23/2014	Dark Blue Labs	Artificial intelligence	Assistant/AI
10/24/2014	Revolv	Home automation	IoT
11/19/2014	RelativeWave	Mobile Software Prototyping	Mobile
12/17/2014	Vidmaker	Video editing	Software
2/4/2015	Launchpad Toys	Child-friendly apps	Software
2/8/2015	Odysee	Multimedia sharing and storage	Software
2/23/2015	Softcard	Mobile Payments	Payment-services
2/24/2015	Red Hot Labs	App advertising and discovery	Search
4/16/2015	Skillman &Hackett	Virtual reality software	VR/AR
4/16/2015	Thrive Audio	Surround sound technology	VR/AR
5/4/2015	Timeful	Mobile software	Mobile
5/28/2015	Pulse.io	Mobile App Optimizer	Mobile
7/18/2015	Agawi	Mobile application streaming	Mobile
7/21/2015	Pixate	Mobile software prototyping	Mobile
9/21/2015	Oyster	E-book subscriptions	E-commerce
9/30/2015	Jibe Mobile	Rich communication services	Mobile
10/17/2015	Digisfera	360-degree photography	Geo
11/11/2015	Bebop	Cloud software	Cloud
11/11/2015	Fly Labs	Video editing	Software
2/12/2015	BandPage	Platform for musicians	Software
2/18/2016	Pie	Enterprise communications	Software
5/2/2016	Synergyse	Interactive tutorials	Software
6/22/2016	Webpass	Internet service provider	Hardware
7/6/2016	Moodstocks	Image recognition	Assistant/AI
7/8/2016	Anvato	Cloud-based video services	Cloud

7/12/2016	Kifi	Link management	Software
7/26/2016	LaunchKit	Mobile tool maker	Mobile
8/8/2016	Orbitera	Cloud software	Cloud
9/8/2016	Apigee	API Management and predictive analytics	Cloud
9/15/2016	Urban Engines	Location-based analytics	Geo
9/19/2016	API.AI	Natural language processing	Assistant/AI
10/11/2016	Famebit	Branded content	Software
10/24/2016	Eyefluence	Eye tracking, virtual reality	VR/AR
11/5/2016	LeapDroid	Android Emulator	Mobile
11/21/2016	Qwikilabs	Cloud based hands-on training platform	Cloud
12/13/2016	Cronologics	Smartwatches	Mobile
1/1/2017	Limes Audio	Voice communication	Software
1/19/2017	Fabric	Crash Analytics	Cloud
3/8/2017	Kaggle	Data science	Cloud
3/9/2017	AppBridge	Productivity suite	Software
5/10/2017	Owlchemy Labs	Virtual reality software	VR/AR
7/12/2017	Halli Labs	Artificial intelligence	Assistant/AI
8/16/2017	AIMatter	Artificial intelligence	Assistant/AI
9/21/2017	HTC	Intellectual property licenses	Mobile
9/26/2017	Bitium	Single sign-on and identity management	Cloud
10/9/2017	Relay Media	AMP Converter	Hardware
10/11/2017	60db	Podcasts	Software

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