

DEPARTMENT OF BUSINESS & MANAGEMENT

Chair of Corporate Strategies

**FROM PRODUCT INNOVATIONS TO STRATEGY
INNOVATIONS – THE CASE OF THE SMARTPHONE
INDUSTRY**

Executive Summary

SUPERVISOR

Prof. Richard Priem

CANDIDATE

Giuseppe Grandinetti

ID: 643891

COSUPERVISOR

Prof. Francesco Rullani

Academic Year 2012/2013

LIST OF CONTENTS

INTRODUCTION.....ERRORE. IL SEGNALIBRO NON È DEFINITO.

CHAPTER 1 – OVERVIEW OF THE SMARTPHONE INDUSTRY

.....ERRORE. IL SEGNALIBRO NON È DEFINITO.

1.1 SMARTPHONES AS THE NATURAL EVOLUTION OF MOBILE PHONES AND PDAS..... **ERRORE. IL SEGNALIBRO NON È DEFINITO.**

1.2 A NEW INDUSTRY SCENARIO **ERRORE. IL SEGNALIBRO NON È DEFINITO.**

1.3 CURRENT SITUATION **ERRORE. IL SEGNALIBRO NON È DEFINITO.**

*1.3.1 Smartphone Penetration **Errore. Il segnalibro non è definito.***

*1.3.2 Platforms and Device Makers..... **Errore. Il segnalibro non è definito.***

1.4 PLATFORM EVOLUTION **ERRORE. IL SEGNALIBRO NON È DEFINITO.**

*1.4.1 From Legacy Platforms To Next-Generation Platforms.....**Errore. Il segnalibro non è definito.***

*1.4.2 Communication Platforms, Software Platforms, Application Platforms
..... **Errore. Il segnalibro non è definito.***

1.5 THE BIRTH OF THE APP ECONOMY... **ERRORE. IL SEGNALIBRO NON È DEFINITO.**

CHAPTER 2 – THE IPHONE: A BREAKTHROUGH INNOVATION

.....ERRORE. IL SEGNALIBRO NON È DEFINITO.

2.1 CHRISTENSEN’S THEORY: DISRUPTIVE INNOVATIONS AND TECHNOLOGICAL TRAJECTORIES **ERRORE. IL SEGNALIBRO NON È DEFINITO.**

- 2.1.1 *The Author's Dilemma*..... **Errore. Il segnalibro non è definito.**
- 2.1.2 *Ben Thompson's Critic*..... **Errore. Il segnalibro non è definito.**
- 2.2 USABILITY TRAJECTORY: THE ATTRIBUTE ON WHICH THE TRUE INNOVATION LIES**ERRORE. IL SEGNALIBRO NON È DEFINITO.**
- 2.2.1 *The Revolutionary User Interface, the Multi-Touch*.....**Errore. Il segnalibro non è definito.**
- 2.2.2 *The Operating System and the Apple Integrated Approach*.....**Errore. Il segnalibro non è definito.**
- 2.3 THE IPHONE: THE *CONPOSITIO DESIDERATA***ERRORE. IL SEGNALIBRO NON È DEFINITO.**

CHAPTER 3 – FROM AN INNOVATIVE PRODUCT TO AN INNOVATIVE STRATEGY.ERRORE. IL SEGNALIBRO NON È DEFINITO.

- 3.1 THE APPLICATION ECOSYSTEM: THE VIRTUOUS CYCLE **ERRORE. IL SEGNALIBRO NON È DEFINITO.**
- 3.2 THE PLATFORM-BASED OPEN INNOVATION BUSINESS MODEL: THE BRIDGE BETWEEN VALUE CREATION AND VALUE CAPTURE **ERRORE. IL SEGNALIBRO NON È DEFINITO.**
- 3.2.1 *The Platform* **Errore. Il segnalibro non è definito.**
- 3.2.2 *The Open Innovation Paradigm*.... **Errore. Il segnalibro non è definito.**
- 3.2.3 *The Business Model* **Errore. Il segnalibro non è definito.**
- 3.2.4 *The Platform-Based Open Innovation Business Model***Errore. Il segnalibro non è definito.**
- 3.2.5 *Case Study: the IOS Platform-Based Open Innovation Business Model*..... **Errore. Il segnalibro non è definito.**

3.3 HOW TO BUILD A PLATFORM LEADERSHIP**ERRORE. IL SEGNALIBRO NON È DEFINITO.**

3.3.1 *The Platform Leader* **Errore. Il segnalibro non è definito.**

3.3.2 *The Four Levers of Platform Leadership*..... **Errore. Il segnalibro non è definito.**

3.3.3 *The Apple’s Platform Leadership* . **Errore. Il segnalibro non è definito.**

CHAPTER 4 – THE PLAYERS’ DIFFERENT APPROACH IN FACING THE INDUSTRY REVOLUTION..... **ERRORE. IL SEGNALIBRO NON È DEFINITO.**

4.1 THE NEW COMPETITIVE LANDSCAPE **ERRORE. IL SEGNALIBRO NON È DEFINITO.**

4.1.1 *The “Follower’s Dilemma”* **Errore. Il segnalibro non è definito.**

4.2 GOOGLE AND THE ANDROID OS **ERRORE. IL SEGNALIBRO NON È DEFINITO.**

4.2.1 *History Background*..... **Errore. Il segnalibro non è definito.**

4.2.2 *Google’s Reasons for Entering the Smartphone Industry: “Why”*
..... **Errore. Il segnalibro non è definito.**

4.2.3 *Google’s Strategic Approach to Enter the Smartphone Industry: “How”*
..... **Errore. Il segnalibro non è definito.**

4.3 MICROSOFT AND THE WINDOWS PHONE OS**ERRORE. IL SEGNALIBRO NON È DEFINITO.**

4.3.1 *History Background*..... **Errore. Il segnalibro non è definito.**

4.3.2 *Microsoft’s Reasons for Entering the Smartphone Industry: “Why”*
..... **Errore. Il segnalibro non è definito.**

4.3.3 Microsoft's Strategic Approach to Enter the Smartphone Market: "How"	<i>Errore. Il segnalibro non è definito.</i>
4.4 BLACKBERRY, THE CASE OF A FALLEN GIANT	ERRORE. IL SEGNALIBRO NON È DEFINITO.
4.4.1 History Background	<i>Errore. Il segnalibro non è definito.</i>
4.4.2 A Series of Unhappy Management Decisions	<i>Errore. Il segnalibro non è definito.</i>
4.4.3 Blackberry and The Innovator's Dilemma...	<i>Errore. Il segnalibro non è definito.</i>
4.4.4 Blackberry's High Adjustment Costs	<i>Errore. Il segnalibro non è definito.</i>
4.5 NOKIA	ERRORE. IL SEGNALIBRO NON È DEFINITO.
4.5.1 History Background	<i>Errore. Il segnalibro non è definito.</i>
4.5.2 The Story of Symbian	<i>Errore. Il segnalibro non è definito.</i>
4.5.3 Overview of Nokia's Experience...	<i>Errore. Il segnalibro non è definito.</i>
4.6 SAMSUNG	ERRORE. IL SEGNALIBRO NON È DEFINITO.
4.6.1 History Background	<i>Errore. Il segnalibro non è definito.</i>
4.6.2 The "Fast Follower" Strategy	<i>Errore. Il segnalibro non è definito.</i>
4.6.3 Samsung's Organizational Structure	<i>Errore. Il segnalibro non è definito.</i>
4.6.4 Overview of Samsung's Experience	<i>Errore. Il segnalibro non è definito.</i>
4.7 COMPETITION OUTLOOK..	ERRORE. IL SEGNALIBRO NON È DEFINITO.

CHAPTER 5 – CONCLUSIONS..... ERRORE. IL SEGNALIBRO NON È DEFINITO.

REFERENCES..... ERRORE. IL SEGNALIBRO NON È DEFINITO.

EXECUTIVE SUMMARY

Strategy and an innovative mentality are vital to the sustainability and performance of today's businesses. The world is moving very fast and businesses that do not act adequately cannot survive, and it is true for both established international firms and for smaller companies with the intent to grow.

Whenever a business organization is settled, it employs a particular business model, which defines the framework by which the enterprise delivers value to customers, induces customers to pay for that value, and converts those payments into profits.

Today more than ever, without a right-developed business model, innovators will fail to adequately either deliver or capture value from their innovations. It is particularly evident in today's Internet companies, which must conceive novel revenue streams methods for many services that nowadays customers expect to be free. This means that a tight correlation between innovation and strategy is crucial.

Nowadays, corporations must develop the right business strategies around their innovations in order transform them into tools to achieve success and a sustainable competitive advantage. Successful value creation through innovation requires organizations to search for unexploited markets, consumer insights or new business platforms. For this kind of activities, innovation is simply not enough. That is why strategy and innovation should be combined together in a virtuous connection in order to lead organizations to achieve growth, profitability and sustainability.

The topic of this work is to give a tangible example of the strong relationship between strategy and innovation and to show the "*disruptive*" impact that could generate from it.

The study presents the specific case of the mobile phone industry and the profound revolution that occurred after the introduction of the first iPhone in the market. It demonstrates that the iPhone introduced a new concept of "smartphone" that, since the product launch in 2007, became the benchmark for the whole industry from that moment on.

Leveraging on this fantastic product, Apple was able to build, with the introduction of the App store in 2008, an innovative strategy that, based on the creation of a new self-reinforcing ecosystem, reshaped the paradigms of the industry.

In 2006, 64 million smartphones¹ were sold around the world. In 2013, more than 1 billion “new generation smartphones” have been sold surpassing sales of feature phones².

Apple’s innovations have radically transformed the way people use or even consider mobile phones and smartphones. From low-functioning devices, they became companions that many people feel they cannot live without.

The release of the App Store in 2008, gave birth to what today is called the “App Economy”, a dynamic and expanding sector that had a tremendous economic impact in the whole world economy. Mobile devices, apps and wireless connectivity are driving the current wave of innovation in ICT (Information and Communications Technology) and are fostering productivity, growth and jobs.

This work presents the iPhone case as the master evidence that, today, conceiving innovative technologies and products is not enough anymore. What determines success today is how effective you are in building a powerful ecosystem around a key innovation and in controlling the bottlenecks of this ecosystem architecture.

The **first chapter** provides an overall picture of the mobile phone industry illustrating how it was structured until the introduction of the first iPhone and how it changed after it.

The work starts describing the smartphone’s history, presenting it as the natural evolution of mobile phones and PDAs.

Apple, with its iPhone, completely reshaped the smartphone category, where mobile telephony, the internet and personal computing merged, substantially for the first time, into a single device. This new situation forced different industries, with their different industry architectures and their different players, to converge.

The first chapter shows that all the previous main players of the industry (such as Nokia, Motorola, BlackBerry) have been completely downsized and practically blew up by a new way of entrants (Apple, Google, Microsoft) with different competences and historical backgrounds.

¹ Source: www.canalys.com (Canalys - Press Release, 2007)

² Source: www.idc.com (IDC - Press Release, 2014)

The current smartphone industry scenario is analyzed in depth, first describing the smartphone penetration within the mobile phone industry since 2006 and then the actual smartphone industry structure, which can be essentially divided into operating system and device makers. According to this distinction, the current main players in both these two sectors of the “new smartphone industry” are presented.

At the end of the first chapter it is illustrated the evolution of the mobile platforms and it is showed how the mobile *application platform* introduced by Apple with its App Store in 2008, gave birth to the App Economy.

The App Economy had a tremendous impact that can be measured in a number of ways, such as number of jobs created, contribution to GDP, efficiency gains through the use of mobile apps, etc. Nevertheless, the App Economy had also a profound impact in the way people use mobile phones. All of this is contributing to the disruption of traditional business models in many sectors, increasing competition and paving the way for new market entrants.

The iPhone was unquestionably an innovative product, but could it be labeled as “*disruptive*”, according to the innovation theories of the Harvard Professor Clayton Christensen? In order to answer this question, the **second chapter** firstly describes Christensen’s theories on *disruptive innovations* stated in its famous book “The Innovator’s Dilemma”.

Christensen clearly states, “*The technological changes that damage established companies are usually not radically new or difficult from a technological point of view. They do, however, have two important characteristics: First, they typically present a different package of performance attributes – ones that, at least at the outset, are not valued by existing customers. Second, the performance attributes that existing customers do value improve at a such rapid rate that the new technology can later invade those of the established market*”.³

My work illustrates the innovations the iPhone brought into the mobile industry and it demonstrates that the iPhone perfectly complies with those main characteristics defined by Christensen. Apple, in fact, decided not to innovate on

³ Bower, J. L., & Christensen, C. (1995, January-February). Disruptive Technologies: Catching the Wave. *Harvard Business Review*. p. 44

those “*performance trajectories*” on which its competitors were focused at that time.

Thanks to a feature-by-feature comparison, it is highlighted that the iPhone lacked many of the features considered most important for smartphones and thus Apple was not “building a better phone” according to the parameters of that time. The iPhone, instead, presented a completely different package of performance attributes deriving from the company’s focus on what is called “*usability trajectory*”, which encompassed the creation of the hardware, software and the architecture of the App Store.

It is illustrated the multi-touch history, evidencing that, even if the multi-touch technology could be dated back to 1982, Apple in 2007 was able to patent several important “*usability innovations*” that continue to be crucial for the current company’s success.

It is also underlined that the “*usability trajectory*” has been strictly followed by Apple also for the creation of iOS, the operating system of the iPhone. For the first time, in fact, a “mobile phone” was able to offer real desktop applications and enjoyable services. The other companies of the industry were not able to provide similar services because their applications were not sufficiently “usable”.

Finally, “usability” was also the crucial performance attribute upon which Apple created its App Store. Downloading third party apps in a smartphone, in fact, was not a novel thing at all. Nonetheless, Apple was able to create a system for developing, searching and downloading apps so astonishingly “usable” that let people feel as it was a brand new concept. It was the birth of a new business model and the birth of the App Ecosystem.

Summing up, the second chapter demonstrates that Apple, following the “*usability trajectory*” for the creation of the hardware, the operating system and the App Store, gave birth to the iPhone, a *disruptive innovation* able to narrow the boundaries between product innovation and strategy innovation.

The birth of the iPhone was able to reshape the paradigms of an entire industry, creating new standards for hardware design, software capabilities and business models.

According to Argyres, Bigelow and Nickerson's theories, the second chapter also demonstrates that the iPhone became the "*conpositio desiderata*" of the smartphone industry, able to create new standards for hardware design, software capabilities and business models. The iPhone's "*usability innovations*" in fact, perfectly met the principal "latent" need of the smartphone and non-smartphone users at that time: the true usability of all the features of a smartphone. Smartphones, in fact, were already in the market before 2007, but people did not recognize the potentials of the product until the iPhone opened up their eyes. As Steve Jobs stated in an interview in 1985⁴, "*A lot of times, people don't know what they want until you show it to them.*"

In the **third chapter**, the study focuses on the Apple's ability to leverage on an innovative product to build an innovative strategy.

With the introduction of the first master example of an *application platform* in the mobile scenario, Apple introduced a system where not only users interact with other users, or developers with other developers, but where the strongest interaction occurs between users and developers, two players that barely got in touch in the former mobile platforms. The central point of this kind of platform is that it creates a new ecosystem of consumers, enterprises, developers and businesses investing in or supporting the ecosystem. The main driver of this new ecosystem is, indeed, the users-developers interaction. This relation creates the strong network effects necessary for the success of the platform. From the end-user perspective, each new application adds value to the platform and, from the application developer perspective, each new user adds value to the platform. When the number of developers, apps and users reach a critical mass, a virtuous cycle begins, letting the platform start to grow exponentially.

The study shows how Apple, perfectly following, consciously or unconsciously, strategy and innovation literature on platforms and industry architectures, has been able to introduce in the industry a new business model paradigm that led the company to its current success. The attention is stressed on the App Store,

⁴ Steve Jobs. (1985). Extract from the interview *Playboy Interview With Steve Jobs*. Retrieved from <http://www.scribd.com/doc/43945579/Playboy-Interview-With-Steve-Jobs>

depicted as the bridge that Apple created to connect its innovative product to its innovative strategy.

The birth of the App Store is the crucial momentum in which Apple created the other fundamental part of its disruptive innovation: the new business model that marked the birth of the Application Ecosystem. This is absolutely in line with the concept that pushed Raynor and Christensen to replace the term *disruptive technology* with *disruptive innovation* in their work “*The Innovator’s Solution*”⁵. They recognized that few technologies are intrinsically disruptive or sustaining in character while, indeed, it is the *business model* that the technology enables that creates the disruptive impact.

The third chapter demonstrates, following the framework drawn by Michael Seminer in 2009⁶, that Apple introduced a “*platform-based open innovation business model*”, able to link the gap between outside value creation and value capture. This new business model is based on building an ecosystem of interdependent actors and controlling the bottlenecks of the new architecture. It enabled Apple to reach what Professor Michael G. Jacobides calls “*architectural advantage*”,⁷ which is “*the ability to control an industry without even owning it*”. Apple introduced, in the mobile phone industry, a new way of thinking about competition: firms do not only compete in a sector anymore, they compete to shape the structure of the sector.

At the end of the third chapter, the iPhone case is also depicted as a master example of “*how to build a platform leadership*”. In the studies of Cusumano and Gawer^{8 9}, the two authors present four levers that a platform should accurately manage in order to become a platform leader. Apple, again, demonstrates to have followed the authors’ advices in an extremely concrete and practical manner.

⁵ Christensen, C., & Raynor, M. E. (2003). *The Innovator's Solution: Creating and Sustaining Successful Growth*. Harvard Business Press.

⁶ Seminer, M. (2009). *Platform-based Open Innovation Business Models: Bridging the gap between value creation and value capture*. MSc Dissertation Series.

⁷ Jacobides, M. G. (2008). *Creating and Capturing Value: From Innovation to Architectural Advantage*. LBS Business Insight.

⁸ Cusumano, M. A., & Gawer, A. (2002). *The Elements of Platform Leadership*. MIT Sloan Management Review.

⁹ Cusumano, M. A., & Gawer, A. (2002). *Platform Leadership: How Intel, Microsoft, and Cisco Drive Industry Innovation*. Harvard Business School Press.

In the **fourth chapter**, the study illustrates that IOS was so successful in setting a benchmark that all the new platforms that came after the original iPhone attempted to copy Apple's application platform recipe. Some of them succeeded, others not.

According to Argyres, Bigelow and Nickerson, when a "*conpositio desiderata*" shakes an industry, a "*follower's dilemma*" arises for the other competitors. Following this theory, the work illustrates the different strategic reactions pursued by the different industry players and the related results.

The competitors' analysis could be examined in two parts. The first part shows the strategic reasons that pushed Google and Windows to enter the smartphone industry and the different strategic approaches that they pursued. The second part analyzes the reaction of the incumbents, putting particular attention on BlackBerry in quality of integrated firm (both OS and device maker), and giving an overall picture of two device makers' reactions, Samsung and Nokia.

The picture that comes out from the analysis is that the different strategies and business models used by the industry players reflect their diverse historical core competencies and backgrounds. Google and Windows entered the market leveraging on their know-how coming from the PC and the internet world. BlackBerry and Nokia struggled to switch from its previous mobile phone and PDA experiences, no longer sufficient to keep them competitive in the new scenario. The handset maker Samsung built its "fast follower" strategy upon a powerful and unique organizational structure.

The last part of the fourth chapter gives a look on the possible near future of the mobile market, which is presumed to continue to evolve in the coming years. Both the platform landscape and the handset market are going to become more complex in the close future, as a result of smartphone and tablet hardware commoditization and market dynamics evolution. Emerging countries, with their diverse customer needs and different country structures are becoming the next crucial mobile battlefields, which could lead to new outcomes in the industry and to major changes of the global competition landscape.

The ultimate evidence that arises from this work is that today's entrepreneurs should completely fuse strategy and innovative mentality to create a truly "*disruptive*" innovative product.

There must be innovation in strategy, as well as strategy in innovation.

The specific case of the "*platform-based open innovation business model*" that Apple introduced in the smartphone industry, demonstrates that today more than ever companies cannot rely entirely on their own research to create and deliver value for customers. Those developments require firms to allow a more fluid interaction between external and internal innovations activities letting ideas, people and resources flow in, around and out the organization. In line with this, business models need to be re-evaluated, reconsidering not only the way to address customer needs, but also new ways to capture value from new products and services.

In this new business context, a company should "*insights on the advantages of modular design, the importance of architectural innovation, and the need to exercise a form of control over complementary products, services and components, while reaping the benefits from a strategy aimed at fostering network effects*"¹⁰.

Successful companies have understood that the greatest part of value redistribution in today's economy comes from re-defining sectors and find innovative business models that change the way the value is created and captured. Corporations cannot rely on the creative genius of a solitary inventor anymore. Today, innovation requires new ways of managing and orchestrating the value that a company creates: it is a new way of thinking about strategy.

REFERENCES

¹⁰ Ballon, P. (2009). *Control and Value in Mobile Communications: A Political Economy of the Reconfiguration of Business Models in the European Mobile Industry*. PhD thesis. p.112

- ABI Research. (2014). *Q4 2013 Smartphone OS Results: Is Google Losing Control of the Android Ecosystem?* Retrieved from <https://www.abiresearch.com/press/q4-2013-smartphone-os-results-is-google-losing-con>
- Android Open Source Project. (n.d.). *What is the Android Open Source Project.* Retrieved from <http://source.android.com/faqs.html#what-is-the-android-open-source-project>
- Apple Inc. (2007, January). *Steve Jobs iPhone 2007 Presentation (Full HD)*. (S. P. Jobs, Performer) Retrieved from <http://www.youtube.com/watch?v=vn4u5fqrodq>
- Apple Inc. (2013, September). *Apple - Introducing iPhone 5 (Video)*. (J. Ive, Performer) Retrieved from <http://www.youtube.com/watch?v=xNsGNIDb6xY>
- Argyres, N., Bigelow, L., & Nickerson, J. A. (2011). *Dominant Design, Conpositio Desiderata, and The Follower's Dilemma*. Washington University.
- Arthur, C. (2012). *RIM chiefs Mike Lazaridis and Jim Balsillie's best quotes*. Retrieved from <http://www.theguardian.com/technology/2012/jun/29/rim-chiefs-best-quotes>
- Ballon, P. (2009). *Control and Value in Mobile Communications: A Political Economy of the Reconfiguration of Business Models in the European Mobile Industry*. PhD thesis.
- Bellis, M. (2013). *Inventors of the Modern Computer*. Retrieved from <http://inventors.about.com/library/weekly/aa081898.htm>
- Bohn, D., & Aaron, S. (2013). *iOS: A Visual History*. Retrieved from <http://www.theverge.com/2011/12/13/2612736/ios-history-iphone-ipad>
- Bower, J. L., & Christensen, C. (1995, January-February). Disruptive Technologies: Catching the Wave. *Harvard Business Review*.
- Bowman, D. (2000). *PDA REVIEW Ericsson R380 Smartphone*. Retrieved from <http://www.geek.com/hwswrev/pda/ericr380/>

- Bradley, T. (2013). *Android Dominates Market Share, But Apple Makes All The Money*. Retrieved from <http://www.forbes.com/sites/tonybradley/2013/11/15/android-dominates-market-share-but-apple-makes-all-the-money/>
- Burrows, P. (2006). *How Apple Could Mess Up, Again*. Retrieved from <http://www.businessweek.com/stories/2006-01-09/how-apple-could-mess-up-againbusinessweek-business-news-stock-market-and-financial-advice>
- Business Insider. (2013). *Global Smartphone Market Growth Remains Robust*. Retrieved from <http://www.bullfax.com/?q=node-global-smartphone-market-growth-remains-robust>
- Buxton, B. (2013). *Multi-Touch Systems that I Have Known and Loved*. Retrieved from <http://www.billbuxton.com/multitouchOverview.html>
- Canalys - Press Release. (2007). *64 million smart phones shipped worldwide in 2006*. Retrieved from <http://www.canalys.com/newsroom/64-million-smart-phones-shipped-worldwide-2006>
- Canalys - Press Release. (2010). *Apple takes the lead in the US smart phone market with a 26% share*. Retrieved from <http://www.canalys.com/pr/2010/r20101111.html>
- Cassavoy, L. (2013). *What Is a Smartphone?* Retrieved from http://cellphones.about.com/od/glossary/g/smart_defined.htm.
- Catanzariti, R. (2010). *Capacitive vs Resistive Touchscreens*. Retrieved from http://www.goodgearguide.com.au/article/355922/capacitive_vs_resistive_touchscreens/
- Chesbrough, H. W. (2003). *Open Innovation: The new imperative for creating and profiting from technology*. Harvard Business School Press.
- Chesbrough, H. W. (2006). *Open Innovation: Researching a New Paradigm*. Oxford University Press.
- Christensen, C. (1997). *The Innovator's Dilemma*. Harvard Business School Press.
- Christensen, C., & Raynor, M. E. (2003). *The Innovator's Solution: Creating and Sustaining Successful Growth*. Harvard Business Press.
- Circletwelve Inc. (n.d.). *DiamondTouch*. Retrieved from <http://www.circletwelve.com/products/diamondtouch.html>

- Claytonchristensen.com. (2013). *Clayton Christensen Biography*. Retrieved from <http://www.claytonchristensen.com/biography/>
- Cusumano, M. A., & Gawer, A. (2002). *Platform Leadership: How Intel, Microsoft, and Cisco Drive Industry Innovation*. Harvard Business School Press.
- Cusumano, M. A., & Gawer, A. (2002). *The Elements of Platform Leadership*. MIT Sloan Management Review.
- Eha, B. P. (2013). *How Apple's App Store Changed Business at Its Core*. Retrieved from <http://www.entrepreneur.com/article/227413>
- Evans, B. (2012). *What Does Google Need from Android?* Retrieved from ben-evans.com
- Financial Times. (2013). Retrieved from <http://im.ft-static.com/content/images/67c810a4-ae5b-11e2-bdfd-00144feabdc0.pdf>
- Fogg, I. (2012). *Five years of iPhone disruption*. Retrieved from [Http://www.screendigest.com/news/2012_07_five_years_of_iphone_disruption_both_gruber_and_christensen_are_wrong/view.html](http://www.screendigest.com/news/2012_07_five_years_of_iphone_disruption_both_gruber_and_christensen_are_wrong/view.html)
- Forbes.com LLC. (2013). *The World's Most Valuable Brands*. Retrieved from <http://www.forbes.com/powerful-brands/list/>
- Ford, D. (2013). *Semiconductor Sales Recover in 2013; Micron Surges to Fourth Place in Global Chip Market* . Retrieved from <http://www.isuppli.com/Semiconductor-Value-Chain/News/Pages/Semiconductor-Sales-Recover-in-2013-;-Micron-Surges-to-Fourth-Place-in-Global-Chip-Market.aspx>
- Gartner - Press Release. (2006). *Gartner Says Worldwide Mobile Phone Sales Grew 21.5 percent in the Third Quarter of 2006*. Retrieved from <http://www.gartner.com/newsroom/id/498690>
- Gartner - Press Release. (2013). *Gartner Says Smartphone Sales Accounted for 55 Percent of Overall Mobile Phone Sales in Third Quarter of 2013*. Retrieved from <http://www.gartner.com/newsroom/id/2623415>
- Gartner Press Release. (2013). *Gartner Says Asia/Pacific Led Worldwide Mobile Phone Sales to Growth in First Quarter of 2013*. Retrieved from <http://www.gartner.com/newsroom/id/2482816>

- Google Inc. (n.d.). *The Company*. Retrieved from <http://www.google.com/about/company/>
- GSM Arena. (2005). *HP iPAQ h6315*. Retrieved from http://www.gsmarena.com/hp_ipaq_h6315-1309.php
- GSM Arena. (n.d.). *Neonode N1m*. Retrieved from http://www.gsmarena.com/neonode_n1m-1137.php
- IDC - Press Release. (2014). *Worldwide Smartphone Shipments Top One Billion Units for the First Time, According to IDC*. Retrieved from <http://www.idc.com/getdoc.jsp?containerId=prUS24645514>
- Ingraham, N. (2013). *Apple announces 1 million apps in the App Store, more than 1 billion songs played on iTunes radio*. Retrieved from <http://www.theverge.com/2013/10/22/4866302/apple-announces-1-million-apps-in-the-app-store>
- Isaacson, W. (2011). *Steve Jobs - by Walter Isaacson*. Simon & Schuster.
- Jacobides, M. G. (2008). *Creating and Capturing Value: From Innovation to Architectural Advantage*. LBS Business Insight.
- Jaruzelski, B., Loehr, J., & Holman, R. (2012). *The Global Innovation 1000: Making Ideas Work*. Retrieved from <http://www.strategy-business.com/article/00140?pg=all>
- Jobs, S. P. (1985). Playboy Interview With Steve Jobs. (Playboy, Interviewer) Retrieved from <http://www.scribd.com/doc/43945579/Playboy-Interview-With-Steve-Jobs>
- Jobs, S. P., Forstall, S., Christie, G., Lemay, S. O., Herz, S., van Os, M., . . . Westerman, W. C. (2008). *Brevetto n. US7479949 B2*.
- Kovach, S. (2011). *All The Smartphone Features You Love So Much And Who Had Them First Read*. Retrieved from <http://www.businessinsider.com/smartphone-firsts-2011-8?op=1>
- Lee, S., Buxton, W., & Smith, K. (1985). *A MULTI-TOUCH THREE DIMENSIONAL TOUCH - SENSITIVE TABLET*. Retrieved from <http://www.billbuxton.com/leebuxtonsmith.pdf>

- Lee, T. B. (2012). *If Android is a “stolen product,” then so was the iPhone*. Retrieved from <http://arstechnica.com/tech-policy/2012/02/if-android-is-a-stolen-product-then-so-was-the-iphone/>
- McCracken, H. (2013). *The Inside Story of the Collapse of BlackBerry*. Retrieved from <http://techland.time.com/2013/09/29/the-inside-story-of-the-collapse-of-blackberry/>
- McGregor, J. (2007). *Clayton Christensen's Innovation Brain*. Retrieved from <http://www.businessweek.com/stories/2007-06-15/clayton-christensens-innovation-brainbusinessweek-business-news-stock-market-and-financial-advice>
- Mick, J. (2013). *Apple Patent on Touch Typing, Multitouch Upheld; Allows Ban on Most Androids*. Retrieved from <http://www.dailytech.com/Apple+Patent+on+Touch+Typing+Multitouch+Upheld+Allows+Ban+on+Most+Androids/article33580.htm>
- Mick, J. (2013). *The History of Normandy: How Nokia Plotted a Low-End Android Line*. Retrieved from <http://www.dailytech.com/The+History+of+Normandy+How+Nokia+Plotted+a+LowEnd+Android+Line/article33909.htm>
- Microsoft Corporation. (2013). *Strategic Rationale*. Retrieved from <http://www.microsoft.com/en-us/news/download/press/2013/strategicrationale.pdf>
- Muffatto, M., & Roveda, M. (2002). *Product Architecture and Platforms: a Conceptual*. University of Padua.
- Nisen, M. (2013). *How IBM Crushed Everyone Else In Patents For The 20th Straight Year*. Retrieved from <http://www.businessinsider.com/ibm-leads-patent-list-for-two-decades-2013-1>
- Nisen, M. (2013). *Samsung Has A Totally Different Strategy From Apple, And It's Working Great*. Retrieved from <http://www.businessinsider.com/samsung-corporate-strategy-2013-3>
- Nokia - Press Release. (1996). *Nokia Unveils Worlds First All-In-One Communicator For The Americas*. Retrieved from

- <http://press.nokia.com/1996/09/19/nokia-unveils-world%C2%92s-first-all-in-one-communicator-for-the-americas/>
- Osterwalder, A., & Pigneur, Y. (2010). *“Business Model Generation”*. John Wiley & Sons Inc.
- Perenson, M. (2008). *Google Launches Android Market*. Retrieved from http://www.techhive.com/article/152613/google_android_ships.html
- Plum Consulting and VisionMobile. (2013). *“The European App Economy, Creating Jobs and Driving Growth”*.
- Puntocellulare.it. (n.d.). *Scheda Tecnica Nokia N-Gage*. Retrieved from http://www.puntocellulare.it/schede-cellulari/nokia/nokia_ngageqd.html
- Reimer, J. (2007). *A day on the Surface: a hands-on look at Microsoft’s new computing platform*. Retrieved from <http://arstechnica.com/information-technology/2007/09/surface/>
- Ricker, T. (2008). *Jobs: App Store launching with 500 iPhone applications, 25% free*. Retrieved from <http://www.engadget.com/2008/07/10/jobs-app-store-launching-with-500-iphone-applications-25-free/>
- Root, A. (2012). *Open Innovation: Creating Through Community Creation*. Retrieved from <http://www.crowdsourcing.org/editorial/open-innovation-creating-through-community-creation/16499>
- Segan, S. (2010). *Kyocera Launches First Smartphone In Years*. Retrieved from <http://www.pcmag.com/article2/0,2817,2361664,00.asp>
- Seminer, M. (2009). *Platform-based Open Innovation Business Models: Bridging the gap between value creation and value capture*. MSc Dissertation Series.
- Silcoff, S., Mcnish , J., & Ladurantaye, S. (2013). *Inside the fall of BlackBerry: How the smartphone inventor failed to adapt.”* . The Globe and Mail. Retrieved from <http://www.theglobeandmail.com/report-on-business>
- Statista Inc. (2013). *Global market share held by Nokia smartphones from 1st quarter 2007 to 2nd quarter 2013*. Retrieved from <http://www.statista.com/statistics/263438/market-share-held-by-nokia-smartphones-since-2007/>

- Synaptics Inc. (2006). *Synaptics and Pilotfish Collaborate to Develop Next Generation Mobile Phone Concept*. Retrieved from <http://www.synaptics.com/about/press/press-releases/synaptics-and-pilotfish-collaborate-develop-next-generation-mobile-phone>
- Tech Crunch. (2013). *Windows Phone Store raggiunge 190.000 app disponibili e 10 milioni di transazioni al giorno*. Retrieved from <http://www.windowsphoneitaly.com/news/varie/8476-windows-phone-store-raggiunge-190000-app-disponibili-e-10-milioni-di-transazioni-al-giorno.html>
- Temple, S. (May 2007). *Temple, Stephen. "Vintage Mobiles: LG Prada – First mobile with a capacitive touchscreen*. Retrieved from <http://www.gsmhistory.com/vintage-mobiles/#prada>
- Thompson, B. (2010). *Apple and the Innovator's Dilemma*. Retrieved from <http://stratechery.com/2010/apple-innovators-dilemma/>
- Thompson, B. (2013). *What Clayton Christensen Got Wrong*. Retrieved from http://stratechery.com/2013/clayton-christensen-got-wrong/#identifier_0_539
- VisionMobile Ltd. . (2013). *Developer Economics Q3 2013*.
- VisionMobile Ltd. (2011). *Mobile Platforms: The Clash of Ecosystems*.
- Warren, C. (2013). *Google Play Hits 1 Million Apps*. Retrieved from <http://mashable.com/2013/07/24/google-play-1-million/>
- Weisenthal, J. (2007). *LG Accuses Apple Of Ripping Off iPhone Design*. Retrieved from <http://www.techdirt.com/articles/20070213/062953.shtml>
- Wikimedia Commons. (2013, November). *File:World Wide Smartphone Sales Share.png*. Retrieved from http://en.wikipedia.org/wiki/File:World_Wide_Smartphone_Sales_Share.png
- Wilson, A. D. (2004). *TouchLight: An Imaging Touch Screen and Display for Gesture-Based Interaction*. Retrieved from <http://research.microsoft.com/en-us/um/people/awilson/publications/WilsonICMI2004/WilsonICMI2004.html>

- Wilson, M. (2008). *T-Mobile G1: Full Details of the HTC Dream Android Phone*. Retrieved from <http://gizmodo.com/5053264/t+mobile-g1-full-details-of-the-htc-dream-android-phone>
- Wu, M., & Balakrishnan, R. (2003). *Multi-Finger And Whole Hand Gestural Interaction Techniques For Multi-User Tabletop Displays*. University of Toronto.
- Yousuf. (2013). *History Reveiw of the Smartphones Over 20 Years*. Retrieved from <http://www.techinfo2.com/smartphones-history-reveiw-over-20-years.html>