

# Master's Thesis

Submitted to:  
Reykjavik University  
School of Business

International Business  
Applying Reconstructuralist Models  
in the Cloud IaaS Market  
A Case Study of GreenQloud

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Reykjavik, May 22<sup>st</sup> 2014



## Declaration of Work integrity

This work has not previously been accepted in substance for any degree and is not being currently submitted in candidature of any degree. This thesis is the result of my own investigations, except where otherwise stated. Other sources are acknowledged by giving explicit references. A bibliography is appended.

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## Abstract

This thesis is a case study on a green cloud IaaS provider, which is competing in an increasingly competitive environment. Blue ocean strategy, which is also termed reconstructuralist strategy, and the five forces model, are explored and applied to three separate groups of customers, to go beyond accepted market boundaries, in the search for uncontested market space. Further efforts to locate a strategy within the accepted market boundaries concentrates around a unique value driver, which the case company possesses, with their green model. The research includes the identification of the competitive factors in the cloud IaaS market, as well as survey data identifying the importance of the factors, which are competed on in the market. The aim of this research is to find uncontested market space for the case company, as well as researching the need for a further improvement of their green value.

Keywords: Blue ocean strategy, Porter's Five Forces, IaaS, Cloud, Value innovation, Green



## Preface

The past few months have been a challenging, yet interesting journey. I started my thesis while still at home with my newborn, having to juggle life as a mom and as a student during the first month and a half. My family has been incredibly understanding and supportive, giving me the time I needed to write. I would like to take this opportunity to thank my fiancée and my two kids for supporting me the whole way, understanding the need for my absence during many weekends. I would also like to thank GreenQloud for allowing me to use them as a case study, and for allowing me to access their customer base for the primary data gathering.



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## Part I: Introduction

### 1.1 Background

The concept of cloud computing is gaining awareness, having been named the “next best thing” in the ICT industry. However, the essence of IaaS based cloud computing, which is infrastructure outsourcing, has been around since the 1980s, where only companies with huge budgets could afford this technology (Owens, 2010). Now smaller companies and individuals, who need unlimited storage and powerful virtual machines, have access to this emerging paradigm, creating a demand, which has seen the market grow at a tremendous rate, which is predicted to continue beyond 2017 (Marketline, 2013)

The cloud is slowly making its way into every aspect of our online lives. When we read an email, listen to music and even play a game we, most likely, are assessing data stored in the cloud. The cloud is not a physical thing. It replaces the physical infrastructure needed to run applications, through its network of servers. (Fee, 2013). There exist many different cloud definitions. The cloud paradigm, which is widely agreed upon, is that it offers its resources “as-a-service”. This as-a-service model exists in three forms, in which the workload and responsibility between the user and the vendor shift, depending on the choice of as-a-service model (Vaquero, Roderio-Merino, & Moran, 2011).

The emergence of cloud computing and its underlying technological shift, has been said to parallel the forces which were at work during the industrial revolution. Before the cloud, inefficiencies existed with the old “client server” model, which saw identical IT systems being set up by individual business, creating an inefficiency of resources. How the cloud parallels the industrial revolution, is with the concept of the factory. These factories eliminate the inefficiencies of individual business-based IT systems, and concentrate them in a factory with one purpose; to produce computational power.



## 1.2 Problem statement

Cloud computing is seen as a new paradigm, which offers network-assessable computing resources (Vaquero, et al 2011). Businesses small and large are seeing huge opportunities arise from adopting the technology (Yeboah-Boateng & Essandoh, 2013), due to its ability to greatly reduce in-house infrastructure costs (Vaquero, et al 2011). However, due to growing demand, the market is seeing an influx of IaaS service providers, which is creating a competitive market, forcing providers to find methods to compete and differentiate from competitors (Feng, et al 2014).

One of the major barriers most IaaS providers are encountering is the issue on security. Even though businesses of all sizes are seeing the potentials in the adoption of cloud computing, security remains the number one barrier in its wide spread adaption. What makes it a potential security risk is its multitenant nature. It is a combination of the blend of technology incorporated in the system, and the large number of users sharing provider's resources, which contributes to the security threat (Vaquero, et al 2011).

This is an issue, which is currently at the focus of many of the markets vendors. Larger companies, such as Microsoft, Google and Amazon Web Services are focused on improving the reliability, security, power and cost-efficiency of their clouds (Zang, et al 2010). However, they also realize that pricing is similarly creating a barrier towards its adoption, and are currently aggressively competing on the cost of their services (Linthicum, 2014).

GreenCloud are a relatively small company, compared with the giants in the market (e.g. Microsoft, Google, AWS and Rackspace). They compete on the same terms as the rest of the market, but due to their unique location in one of the most volcanically active places in the world, they are able to utilize datacenters<sup>1</sup> powered by geothermal and hydropower energy, which enables them to offer their customers cloud computing powered by green energy.

However, with the increasing pressure in the market to either lower prices (Feng, et al 2014), or increase security or other quality enhancing features (Vaquero, et al 2011), GreenCloud must decide on a strategy to keep in the game. Their options are to follow the classical strategy methods, such as the value-cost tradeoff, which was created by Porter (1980), or follow a new emerging school, made famous by the blue ocean

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<sup>1</sup> <http://www.icelanddatacenter.com>



strategy, which encourages the strategist to look beyond the accepted market and industry boundaries, creating both value for the company and customer (Kim & Mauborgne, 1999).

Literature on competitive strategy is plentiful, and some of the best strategists have good ideas on how to compete in a competitive environment (e.g. Markides, 2006; Ansoff, 1965; Barney, 1991; D'Aveni, 1994; Kim & Mauborgne, 1999; Porter M. E., 1980). Also, Literature in the field of restructualist strategy is sufficient.

There is a gap in literature on the strategies IaaS cloud providers use to create new market space, and compete in congested markets. However, research does exist which concerns pricing strategies for cloud IaaS providers (e.g. Feng, et al 2014), and secondary data exists on the competitive factors in the IaaS market.

### **1.3 Research Objective**

The objective of this research is to develop an integrated framework comprised of Porter's (1979) five forces framework and the frameworks from the blue ocean strategy, which is referred to as restructualist strategy (Kim & Maugborgne, 2009). The integrated framework and gathered noncustomer data will be used to create a strategy canvas, which will be used to identify a new market for GreenQloud. Primary data will also be gathered, to research the customer base, comparing it with literature on green consumers, to identify the compatibility of the green brand on the company's user base. Further data will be gathered from the strategy canvas, to identify alternative strategies, based on GreenQloud's green business model.

#### **1. 3.1 Research Questions**

Literature on competitive strategy and blue ocean strategy is sufficient, and will be used as a guideline to form the basis of the research question. The following question has been formulated:

*Does looking across the layers of noncustomers identify uncontested market space for GreenQloud?*



Further sub-questions have been formulated to supplement the main question:

- 1. Does the strategy canvas indicate that GreenQloud is achieving competitive advantage on the environmental front? And is GreenQloud targeting the "green" consumer?*
- 2. What similarities are there between structuralist strategy and restructuralist strategy?*
- 3. What limitations are there to the restructuralist strategy frameworks, in the pursuit of uncontested market space for GreenQloud?*
- 4. What does the competitive environment look like in the IaaS market, according to the five forces?*

### **1.3.2 Significance**

The result of this research would provide an IaaS cloud provider the chance to break free of the current competitive environment in the IaaS market. There is no previous research conducted on applying a framework based on the five forces and blue ocean strategy, to the IaaS market. The framework will be further used to identify a competitive strategy, which could be applied by GreenQloud and further increase the knowledge on strategy formulation in the IaaS market.



## Part II Theoretical Background

The theoretical background chapter reviews earlier findings, which will be used to apply to the primary and secondary data to find a strategy for the development of uncontested market space. The chapter is divided into four sections; the first introduces strategy and the two complimentary theories, which will be applied to supplement the five forces analysis. Part two will review the five forces framework, which will be used to conduct an external analysis of the IaaS market. Part three will introduce the blue ocean strategy, in which the similarities between other strategy schools will be discussed. Part four will introduce the green aspect of strategy formulation, in which green marketing as a differentiation strategy will be introduced and discussed.

### 2.1 Strategy

Defining strategy might seem like an easy task. However, some of the best minds in strategic literature have varying ideas on its meaning. One group of authors explains the issue as being: “There are strongly differing opinions on most of the key issues and the disagreements run so deep that even a common definition of the term strategy is illusive...The strongly conflicted views mean that strategy cannot be summarized into broadly agreed on definitions, rules, matrices and flow diagrams that one must simply absorb and learn to use” (Meyer & Wit, 2004, s. 3). Strategy is a process that involves diagnosing and processing internal weaknesses, as well as seeing possibilities ahead. It is therefore not a final destination to reach (Pugh & Bourgeois III, 2011).

Porter (2012) describes it as the “process of competing to be unique” (p.1), in which a unique value proposition must be defined to compete and remain competitive. A value proposition must answer the customer: “why am I buying this product”? To understand what a company’s value proposition might be, Porter (2012) suggests three basic steps: (1) Understanding the target customer, (2) What needs are fulfilled or should be, and (3) how should the service or product be priced? The bottom-line of the value proposition and being competitive in the market, is the ability to create value for the customer, which they cant find elsewhere, making a company unique.

The value proposition concept was originally created by Lanning and Michaels (1988), and describes a process, which consists of two activities: (1) developing a value proposition and (2) creating a value delivery system, to deliver value to the customer.



What a value proposition is, is an understanding of the target customer, the value offered to the target customer, and the value-based pricing structure, which is a competitive advantage. In its message it must articulate core elements, such as quality, service, price and image. The measurement of a fully well defined value proposition is the customer experience when purchasing and using a product (Murphy & Narkiewicz, 2010).

### **2.1.2 Strategic Management**

Strategic management was originally known as the field of business policy, but was redefined in the 1970s by Shendel and Hofer (1979). When the field of strategic planning was first developed during the 1960s, managers viewed its theories and frameworks as the best method for creating competitive advantage (Mintzberg H. , 1994). There is a unified recognition among authors, that literature on strategic management sufficiently covers business level strategy with theories on how to sustain and attain competitive advantage. However, it lacks an understanding of what exactly contributes to the competitive success of a company (Teece, et al 1997). However, authors such as Kim and Mauborgne (1999), thorough a five-year study identified a concept called value innovation, which they believe explains why some companies succeed and others do not. They discovered that successful companies looked beyond the accepted boundaries of the industry, focusing on doing things differently rather than competing head on with their competition, trying to do activities better. Markides's (2006) research on business model innovation similarly identified the concept of doing things differently than the competitors in the market, with a unique value proposition as the success factor in competitive strategy.

Both theories (e.g. Kim & Mauborgne, 1999; Markides, 2006) will be reviewed in the theoretical background.

The field of strategic management is loosely constructed around paradigms. Porter's five forces framework is one of the defining paradigms in strategic management, as is the resource-based view (Teece, Pisano, & Shuen, 1997).

#### ***2.1.2.1 The three generic strategies***

The generic strategies were developed by Porter (1980; 1985) and introduced in his literary work on competitive advantage. The theory is based on competition being



bound by three states in the industry, (1) cost-leadership, (2) differentiation strategy and (3) focus. The introduction of this framework showed the need for choosing just one strategic position in the industry, to avoid becoming stuck between strategies (Porter M. E., 1996).

The theory behind Porters (1980; 1985) generic strategies is that a company focuses on a specific geographic or demographic, follows a low cost strategy, or follows a strategy to be perceived as unique. During the same decade, in which porter developed his generic strategies, other authors developed competitive theories, which resemble the cost leadership, differentiation and focus strategies (Kim, Nam, & Stimpert, 2004). However, none became as successful as Porter's frameworks.

The elements involved in both cost leadership and differentiation strategies vary greatly. Cost leadership involves activities, such as; improving the modes of producing and delivering goods, better handling of finances and cost reductions. Differentiation on the other hand is closely related to marketing activities within a business. The activities involved when following a differentiation strategy are; responding to customer needs, positioning in niche markets, brand development and improving customer satisfaction. These are value-creating activities (Polonsky & Rosenberger, 2001).

The generic strategy model was widely accepted in the business policy area. Murray (Murray, 1988) describes it as being "appealing because it seemed to offer a solid theoretical framework for a discipline that often lacked theoretical foundations" (p. 390). However, Murray (1988) identified the possibility in certain industries that the cost leadership strategy and differentiation could be pursued simultaneously. Miller (1992), concluding the same, identifies this type of strategy as a hybrid strategy. According to Miller, many companies pursue this hybrid strategy and become highly successful businesses.

#### **2.1.2.2 SWOT**

The origin of the term SWOT is unknown, but is thought to have originated during the 1960s or 1970s. Its purpose is to improve the decision making process in strategy by reducing the amount of information. The model consists of four quadrants, in which strengths, weaknesses, opportunities and threats must be analyzed, to form a clear picture. The SWOT is a popular tool among researchers and students, due to its simplicity (Helms & Nixon, 2010).



### **2.1.2.3 The International Product life cycle**

The theory of the product life cycle was developed by Vernon (1966), and is used to analyze the current position of a product or industry, from its conception to end. The theory claims that once a market becomes mature, it is time to look towards other geographic markets. The theory has its followers (Wood (1990); Dhalla and Yusep (1976)) who find the concept durable and successfully representing the market dynamics.

#### **2.1.2.3.1 Limitations of the Product life cycle**

Criticisms of the theory also exist among scholars and academics, due to the sequences in actual sales failing to match the sequences of the expected sequence of the theory. Also, actual products have been found to revert back to the growth stage, which is not mentioned in the original life cycle theory (Grantham, 2014).

Porter (2008) mentions that a company should never assume that an industry or market is attractive based on its industry life cycle growth rate. He believes that a fast growing industry is not always attractive, due to its ability to mask competition. Opportunities are to be found in a growing industry with low entry barriers, however, the growth can make suppliers powerful.

Wood (1990) mentions that there are certain limitations to the product life cycle. One being the lack of definition, and two, being that we: “observe the effects of management strategies on the life cycle itself” (Wood L. , 1990, s. 147). Both these factors contribute to the results being obscured and inaccurate. Wood goes on to mention that many academics fail to define or agree upon its terminology, resulting in no “comparable and satisfactory empirical validation of the “classic” product life cycle concept exists” (Wood L. , 1990, s. 148). Other factors have come to light, such as the “discovery” of further life cycle shapes, which might better suit products, based on its acceptance by its audience. One example that Woods (1990) illustrates is a product curve for a fad product. It has a staggeringly steep climb, followed by a just as step decline.



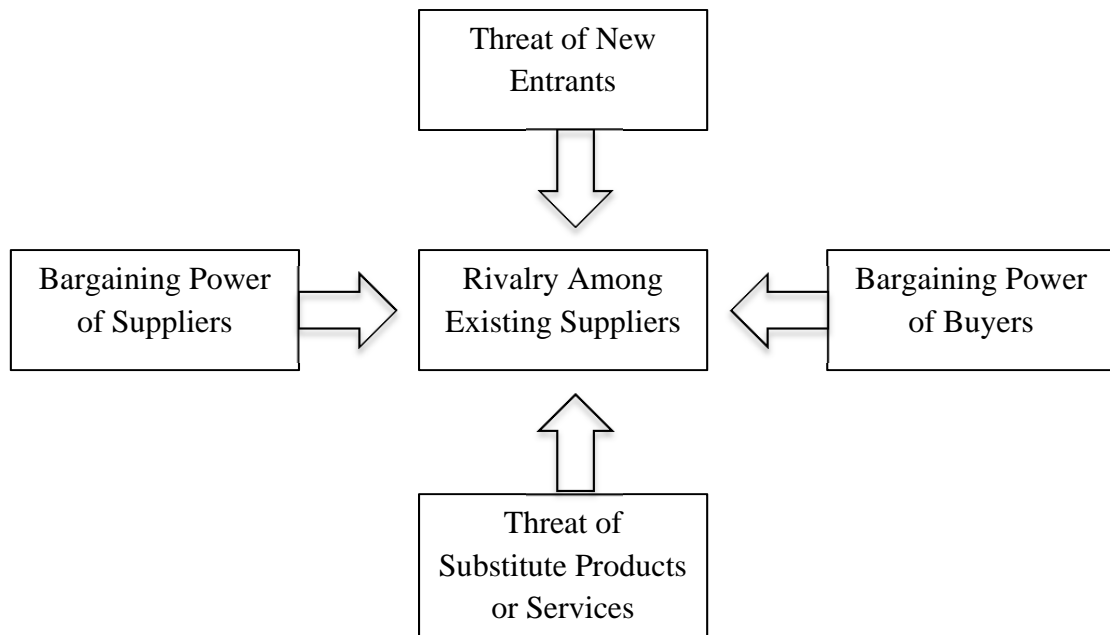
### **2.3 Porters Five Forces model**

The five forces model was developed by Porter (1980), and is used to identify the external, economic and competitive forces in the market. Its theory is based on the assumption that the competitive nature in the market is not determined by the other players, but on external forces, such as customers, suppliers, substitute products and potential entrants (Porter M. E., 1979). The ultimate purpose of the five forces model is to “explain the sustainability of profits against bargaining and direct and indirect competitors”. (Porter M. E., 1991, s. 100). Grundy (2006) describes the model as being both abstract and analytical, and can be improved with further strategic analysis tools, in which it is interdependent. Combining further tools will create a more comprehensive analysis system.

The awareness of Porter’s five forces model is not high among middle and upper management, and has received little interest in further development from other strategists. It is believed that it focuses too widely on the macro analysis, which it over stresses, over the microanalysis, which includes specific product market segments (Grundy, 2006).

The collective strength or weakness of the five forces is what determines the potential profitability and performance in the industry. Understanding the underlying competitive forces that shape the industry provides the fundamentals for a strategic move. Insight from these underlying sources can help identify a company’s strengths and weaknesses, and locate areas where strategic change or diversification can increase the payoff (Porter M. E., 1979).





**Figure 1: Five Forces: Summary of Key Drivers (Porter M. E., 1991)**

The framework illustrates the eroding effect of the competitive factors on the long-term profitability of the industry. The framework's purpose is to diagnose industry structure, and can be used beyond the scope of industry environments. Strategic groups and individual firms can achieve similar results using the framework to diagnose the competitive environment (Porter M. E., 1991).

### **2.3.1 Threat of entry**

New entrants affect the profitability and desirability of an industry by increasing the capacity. Entrants who diversify from other industries, bringing with them knowledge and existing cash flows, have a higher degree of effect, than entrants starting out. It is the threat of entry that influences the overall profitability in the market, and not the actual influx of new entrants. Barriers to entry and the reaction of current players determine the threat of entry in an industry. A high threat of entry implies that an industry sees a cap on its profit potential, resulting in an industry where incumbents lower prices to deter competition (Porter M. E., 2008). Barriers to entry only exist when competitors control the same resources, and these resources are not mobile. It is believed that entry barriers only constitute sustained competitive advantage when company resources are not equally distributed among the players in the market (Barney, 1991)



Porter (2008) identifies seven barriers which increases the barriers to entry, (1) companies which have supply-side-economies of scale, (2) network effects, (3), customer switching costs, (4) the need for entrants to invest large financial resources, (5) existing players have a cost or quality advantage (6) newcomers find distribution channels difficult to access, and (7) Restrictive government policy.

To clarify the first two barriers, companies, which have supply-side-economies of scale, keep new entrants out of the industry by being able to produce goods at a lower unit cost through scale economies. This is also known as a learning curve, in which the theory is that unit costs fall with increased output (Lieberman & Montgomery, 1988) New entrants are discouraged to enter the industry by being forced to commit large entry costs, or stand at a price disadvantage. Customers are able to influence the entry barriers through the network effect, which implies that a customer's willingness to buy increases with the number of other buyers (Porter M. E., 2008).

### **2.3.2 The Power of Suppliers**

Supplier bargaining power is exerted in two ways: by raising prices or lowering the quality on goods or services (Porter M. E., 1979). The theory on supplier power is based on principles which, when followed, result in a supplier with power to exert over the industry. Suppliers acquire their power through; (1) being more concentrated than the industry it is in, (2) when buyers experience high switching costs, (3) the industry is not a major contributor to the supplier's revenues, and (4) their product is differentiated and no substitute exists (Porter M. E., 2008).

### **2.3.3 The Power of Buyers**

Buyers have power through their demands for the product or service, but are only as powerful as their negotiating leverage. Buyers want value, which they can capture further by forcing down prices or demanding better quality. Buyers become powerful when (1) they buy in large volumes in industries with high fixed costs, (2) industry products or services are standardized or similar, (3) can produce the product themselves and are (4) price sensitive (Porter M. E., 2008).

Applying the theory to multiple buyer groups, beyond the consumer, such as industrial and commercial buyers, requires a modification of the frame of reference (Porter M. E., 1979). Intermediate buyers are analyzed with no moderations to the theory. However, their bargaining power increases in relation to their influence on end buyers (Porter M. E., 2008).



### **2.3.4 Threat of substitutes**

Porter defines a substitute product as a product that “...performs the same or a similar function as an industry’s product by a different means” (Porter M. E., 2008, s. 8). Kim and Mauborgne (Kim & Mauborgne, 1999) identify a lack of thought into how customers make trade-offs, from a sellers perspective, on substitute products. Identifying a substitute product can be difficult, as it might be difficult to see the connection with an industry’s product. Substitutes create a profit ceiling if their bargaining power gets too high. A substitutes bargaining power can be reduced through having a superior product or undertaking marketing efforts, which distance the industry’s product from the substitute. The threat of substitutes is high if there exists a price trade-off, which is attractive. Industries can also find their buyers switching to substitutes if the switching costs are low (Porter M. E., 2008).

### **2.5 Blue Ocean strategy**

The theory on blue ocean strategy was developed by Kim and Mauborgne (2005), as an alternative to classical literature on competitive strategy, such as Porter’s (1991) five forces model and generic strategies, which belongs to the structure-conduct-performance paradigm of industrial organization economics (Kim & Mauborgne, 2009). Competitive strategy tends to see competitors converge along the same dimensions, as they share general knowledge on customer and market activities. With this knowledge the competitive convergence deepens, creating an environment where price, quality or both are improved, in order to compete. Blue ocean strategy differs by looking beyond the scope of the accepted boundaries, and looking for opportunities in substitute industries, strategic groups, buyers groups and complementary services or products (Kim & Mauborgne, 1999). Looking beyond existing industry boundaries creates some blue oceans, however most blue oceans are created within competitive industries by expanding the boundaries (Kim & Mauborgne, 2005b).



<b>Red Ocean Strategy</b>	<b>Blue Ocean Strategy</b>
Compete in existing market space	Create uncontested market space
Beat the competition	Make the competition irrelevant
Exploit existing demand	Create and capture new demand
Make the value-cost trade-off	Break the value-cost trade-off
Align the whole system of a firm's activities with its strategic choice of differentiation or low cost	Align the whole system of a firm's activities in pursuit of differentiation and low cost

Figure 2: Red Ocean v. Blue Ocean, (Kim & Mauborgne, 2005b, s. 18)

The Blue Ocean strategy, or restructualist strategy as it also is called (Kim & Maugborgne, 2009), is part of an emerging school of economics called endogenous growth, which "distinguishes itself from neoclassical growth by emphasizing that economic growth is an endogenous outcome of an economic system, not the result of forces that impinge from outside" (Romer, 1994, s. 3). Porter's (1979) theories are based on the assumption that it is the external competitive forces in an environment that shape the actions of individual competitors in an industry. Restructualist strategy on the other hand goes by the strategic move as the unit of analysis (Kim & Mauborgne, 1999). Red ocean strategy is also referred to as a structuralist strategy, to portray its position as being bound by the environment. The method this strategy group utilizes to compete in the industry is with a low cost or differentiation strategy, which generates value for the customer. Restructualist strategy on the other hand, breaks the value-cost trade-off through a technique called value innovation (Kim & Maugborgne, 2009).

The application of a blue ocean strategy is recommended for companies with products in the mature and declining phase of the product life cycle, in which competition is intensified, products are increasingly commoditized and customer loyalty is decreasing (Sheehan & vaidyanathan, 2009). To move out of the competitive environment it is recommended that value renovation tactics be replaced with value innovation, (Kim & Mauborgne, 1999). Porter's (2008) competitive strategy theories include the benchmarking on competitors, as a means to analyze the competitive environment, which is a typical value renovation tactic.



Successfully developing a blue ocean strategy opens up new market space, however imitation soon follows. Two factors are proposed to make imitation difficult: A highly different value curve in the strategy canvas will make it difficult for competitors to imitate, and value innovation will make it too costly to imitate (Kim & Mauborgne, 2005b). Barney (1991) believes that when the link between resources and a company's competitive advantage isn't clear, imitation is almost impossible. It is difficult to duplicate a company's strategy, when the resources used to implement the strategy are unclear. Also, competitor's resources could consist of "complex social phenomena" (p. 110), causing the imitation of a competitor's strategy to be greatly reduced (Barney, 1991).

### **2.5.1 Value Innovation Theory**

The theory behind value innovation forgoes the traditional value-cost trade off, offering value through both low cost and differentiation tactics. Value innovation is based on a five-year study, which looked at the fundamental strategic differences between successful and less successful companies. The less successful companies used benchmarking as a tactic, trying to do better than their rivals. More successful companies however, looked across the accepted boundaries of the industry, instead of attempting to match their rivals. Their strategy was to pay little interest in what other competitors were doing, and instead focus on doing activities differently (Kim & Mauborgne, 1997). Porter (1996) has a similar view on the concept of creating value for the customer in his definition of strategy. Porter believes that activities within a company are the basic units of competitive advantage. One aspect of strategy, which Porter is keen to stress, is the fact that some managers confuse Operational Effectiveness (OE) with strategy. However, both contribute to improved performance within organizations. According to Porter's (1996) definition of OE, it constitutes activities, which an organization performs better than its rivals. Strategy on the other hand implies that a company performs its activities differently than its rivals to achieve competitive advantage.

Value innovators don't spend resources on offering products on the grounds that everyone else does in the market. They distinguish what is valued among their buyer group, and which can generate superior value (Kim & Mauborgne, 1997).

Value innovation must not be confused with value creation. Creating value implies that a customer's net value is improved. Innovation is strategic and tech-driven, which is



sometimes difficult for a customer to accept. Value innovation combines the two concepts, connecting it with the buyer. When value innovating, a company must discover if they are offering their customers superior value, and if their prices are accessible to the buyers in their target group. Aligning these two aspects will potentially unlock a new market (Kim & Mauborgne, 1999).

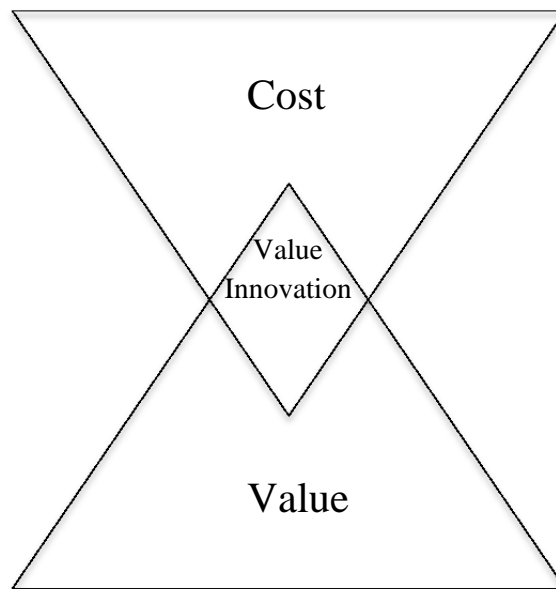


Figure 3: Value Innovation (Kim & Mauborgne, 2005)

#### ***2.5.1.1 Value Innovation through customers***

The theory on creating value through customers focuses on looking for a commonality between buyer groups. Structuralists tend to look towards growing and retaining their customers. Value innovators believe that, despite customer differences, if they are offered a huge leap in value, customers tend to follow suit. They are also aware that losing a few customers along the way is inevitable when value innovation is applied (Kim & Mauborgne, 1997).

#### ***2.5.1.2 Value Innovation through assets and capabilities***

Value innovators don't focus on their resources or abilities, compared to their competitors. The goal is not to become better with the amount of resources a company has, but to ask, "What if we start anew?" (Kim & Mauborgne, 1997, s. 105).



### ***2.5.1.3 Value Innovation Through Product and Service Offerings***

Value innovators look beyond set boundaries which products and services are bound by in the industry. Buyers tend to have to make compromises when looking for a product or service. Value innovation is about looking at the “total solution that buyers seek” (Kim & Mauborgne, 1997, s. 105).

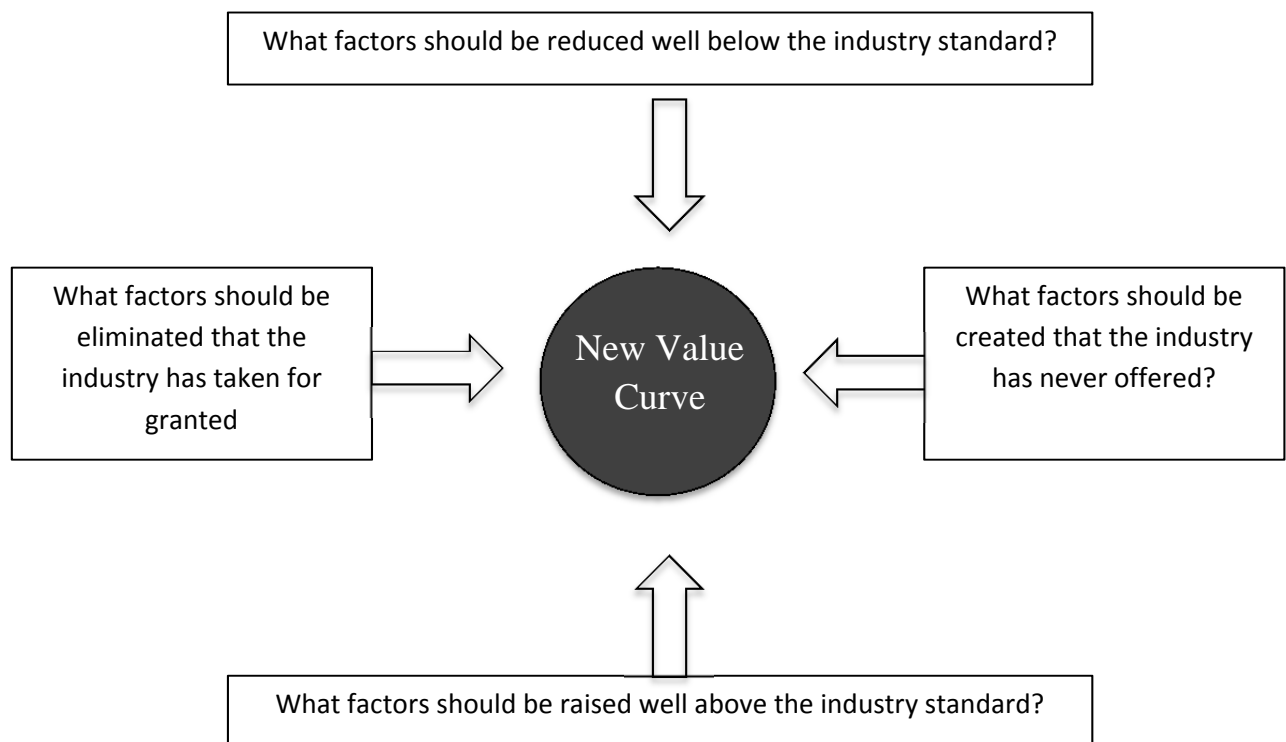
### **2.5.2 Framework's of the Blue Ocean Strategy**

The frameworks of the blue ocean strategy are used to guide the strategist to create new contested market space. Blue ocean strategy has frameworks, which span from conception to execution (Kim & Mauborgne, 2005). For the purpose of this research, only the strategy canvas and four actions framework will be reviewed.

#### ***2.5.2.1 Strategy Canvas and Four Action Framework***

Formulating and executing a blue ocean strategy requires the use of analytical tools and frameworks developed by Kim and Mauborgne (2005). The strategy canvas is a tool, which is used to illustrate the value of offerings comparing them to the competition. The factors included in the strategy canvas represent the defining factors in an industry or market, and is what the players compete on. The strategy canvas is a diagnostic tool, which illustrates the current state of play in a market, in theory, making creating blue oceans possible. Creating a blue ocean strategy requires the strategist to answer four questions from the four actions framework, (1) what should be reduced, (2) raised, eliminated and (4) created (Kim & Mauborgne, 1999). Figuring out what to eliminate, reduce, raise and create is believed to be the easy step in creating blue oceans. What managers find challenging is creating a unique value curve (Sheehan & vaidyanathan, 2009).





**Figure 4: Four Actions Framework (Kim & Mauborgne, 1999)**

#### ***2.5.2.2 The Six Path Framework***

The six paths framework represents the need for a new type of strategic thinking. Blue ocean strategy requires that managers look beyond the accepted boundaries. The goal is to find uncontested market space that represents a leap in value for the customer. To find a blue ocean one must look across substitute industries, buyer groups, complementary product and service offerings, the functional-emotional orientation of the industry, and time (Kim & Mauborgne, 1999).

#### ***2.5.2.3 Looking Across Substitute Industries***

Kim and Mauborgne (1999) suggest looking across substitute industries, as companies tend to unknowingly compete with companies in other industries, which produce substitute products or services. The theory goes that customers unknowingly consider substitute products while making purchasing decisions. A reason why companies don't think to look across this path is due to the vertical walls that stand between industries. Price and business model changes effect the industry that a company resides in,



however substitute industries are not affected by such changes. The potential for a blue ocean is in the space between these two industries.

#### ***2.5.2.4 Looking Across Strategic Groups Within Industries***

Strategic groups are companies, which pursue a similar strategy and typically only compete in their own strategic group. They compete on price and performance, where a leap in price often results in some dimension of a leap in performance. The method of finding a blue ocean across strategic groups is to understand what factors contribute to customers trading up or down between strategic groups (Kim & Mauborgne, 1999).

#### ***2.5.2.5 Looking Across the Chain of Buyers***

An industry consists of different chains of buyers, each with their own definition on value. These groups can consist of, (1) users, (2) purchasers and (3) influencers. When companies question the conventional definitions of a buyer, looking along the chain, they can create a blue ocean by redefining who their customer is (Kim & Mauborgne, 1999).

#### ***2.5.2.6 Looking Across Complementary Product and Service Offerings***

The theory is that there is often untapped potential in complementary products and service offerings. Companies should look at the entire picture, looking at the buyer experience from beginning to end. The method for developing a successful strategy is to understand what solutions buyers look for in a product or service (Kim & Mauborgne, 1999).

#### ***2.5.2.7 Looking Across Functional and emotional appeal to buyers***

There are two types of bases of appeal that companies compete on, (1) rational and (2) emotional. Kim and Mauborgne theorize that customers are affected by the behavior of companies, unintentionally educating them on what to expect in an industry. In this path, companies should challenge the functional-emotional industry orientation (Kim & Mauborgne, 1999).

#### ***2.5.2.8 Looking Across Time***

Kim and Mauborgne (1999) describe this path as the most difficult to use, as it requires an extensive insight into the industry. It concerns looking at industry trends, and thinking in terms of value, on what tomorrow's industry will look like.



### 2.5.3 Three tiers of non-customers

The theory behind the three tiers of non-customers is, that there is a potential for untapped market space to be found by finding commonalities among what they want. The three tiers consist of: (1) soon-to-be noncustomers, (2) refusing noncustomers and (3) unexplored noncustomers (Kim & Mauborgne, 2005).

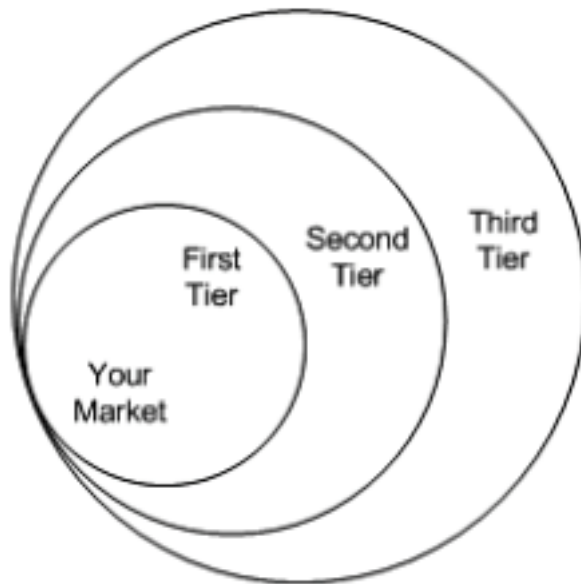


Figure 5: Three Tiers of Noncustomers, (Kim & Mauborgne, 2005b, s. 104)

The first tier, soon-to-be customers use a company's services or offerings minimally, usually waiting for something better to come along. Noncustomers in the second tier are people who don't use a company's offerings for a variety of reasons, which could include not liking what is offered, or due to being financially unable. The third tier customers, where the largest growth is theorized to be, consists of demographics which have not been targeted, and not considered to be interested in what is offered. The key to tapping into a blue ocean from looking at the rings of the noncustomers, is to go for the bigger catchment (Kim & Mauborgne, 2005). Kim and Mauborgne (2005b) describe the normal strategic orientation as involving looking at a company's existing customer base, to seek further segmentation opportunities. They agree that the strategy is good for companies wishing to grow within their own market, but for un-tapping the full potential, and finding that blue ocean, a company must look beyond the existing boundaries of the market they are in.



#### **2.5.4 Creating Blue Oceans Through Disruptive Innovation**

Kim and Mauborgne's (1999) concept of a reconstructuralist strategy and its theory on value innovation as a means of creating new market space is not unique in the field of strategic management. Markides (2006) identifies business-model-innovation as a disruptive innovation, which has the potential to create new market space.

##### ***2.5.4.1 Business Model Innovation***

The theory behind business model innovation, previously referred to as strategic innovation by Markides (1997; 1998), is the discovery of a unique business model by redefining an existing product or service, which creates a new market. In short, it is about offering a different value proposition than the established competitors. Emphasizing on different dimensions to a product will create a new buyer group, which is attracted to the product, as it better suits their needs, compared with the competitors products (Markides, 2006). Markides's (2006) disruptive innovation theory differs from Kim and Mauborgne's (1999) theory on blue ocean strategy on one defining point: Business model innovation looks towards redefining a business within industry boundaries while blue ocean strategy tends to look beyond the accepted industry boundaries. Also Markides (2006) views the value-cost trade off in the same terms as Porter (1991), however, he believes that it can be done, but includes risks and is difficult to conceive. Amit and Zot (2012) mention three factors which highlight the importance of applying business model innovation, (1) it represents a potentially new area for growth, (2) novelty activity systems are difficult to imitate, and (3) it is a potentially powerful tool for management.

Markides (1997) theory on business model innovation reflects the collective idea of doing activities differently than the competition, rather than doing things better. For Porter (1996) and Kim and Mauborgne (1999), this is one of the central ideas behind their theories on competitive strategy.

The role of a business model is to design how a company creates value, how it plans to get customers to pay for this value, and how they will profit. A business model is conceptual and makes assumptions on the customer, their needs and the reaction of competitors. Business models however, lack theoretical grounding in the field of economics and business. It is thought that the literature on economic theory includes theoretical constructs, which solve issues which business models in reality were created



to do. Economic theory assumes that customers will buy if “the price is less than the utility yielded” (Teece, Business Models, Business Strategy and Innovations, 2010, s. 175), which implies that it is not necessary to think about the value proposition, or how a company plans on creating value. What mainstream economic theory does not take into consideration is that customers are not solely interested in the product alone. They are interested in a product, which offers solutions to their perceived needs (Teece, 2010).

When Markides (1997) developed his initial theory on strategic innovation, he studied thirty companies, to find a common element of their success. He discovered that the common denominator among the successful companies was that they broke the rules of the game. He names this common element strategic innovation, which he later termed business model innovation.

It is advised that companies consider internal and external factors before deciding to develop a business model innovation tactic. A company should analyze the competitive environment, looking at the pay offs and their general competitive position. Also evaluating internal strengths and weaknesses are important to determine the change of success (Markides, 1997). Markides (1997) believes that business model innovation happens when managers ask three simple questions, similar to Porter’s (2012) value proposition: Who are the customers? What products should be offered to increase customer value? How should they be priced cost effectively?

#### **2.5.5 First mover advantage**

Buisson and Silberzahn (2010) define first mover advantage as the ability of a company to create new market space through a differentiation strategy, while Liberman and Montgomery (1988) describe a first mover as a pioneering company able to gain positive profits.

The advantages with being the first in the market are widely described by Kim and Mauborgne (1999) in their blue ocean strategy, however Lieberman and Montgomery (1988) believe that second movers have the better advantages in a new market. Second movers are able to take advantage of pioneering firm’s investments in R&D and infrastructure development. Also, pioneers face market and technology uncertainty, which a late mover can avoid by waiting for this to be resolved.



### **2.5.6 Revisiting the Blue Ocean Strategy**

The three strategy propositions are a newer theoretical framework by the authors of the BOS (Kim & Maugborgne, 2009). This framework is not included in their primary piece on the BOS. It revisits the theory on value innovation, and uses the concept of value proposition to create new uncontested market space (Kim & Maugborgne, 2009).

#### ***2.5.6.1 The Three Strategy Propositions***

This framework consists on finding value for: (1) the buyer, (2) the company and (3) the people working for or with the company. A company can do this with a value proposition for each of the three elements. The theory is based on an organization's activity system, which has inputs and outputs. Kim and Mauborgne (2009) describe outputs as being value for the buyer and profits for the company. Inputs are people and production costs. Kim and Mauborgne conclude that all these activities must be consistent and aligned for a strategy to be successful and sustainable.

The two strategic groups diverge where the rules on strategy alignment begin. Structuralist strategy must be aligned with the pursuit of either a low cost strategy or divergence. Never both. Reconstructuralist strategy must be aligned with both strategies to find new market space (Kim & Maugborgne, 2009).

Kim and Mauborgne identify the three groups of strategy propositions: (1) Value proposition, (2) profit proposition and (3) People proposition (Kim & Maugborgne, 2009).

According to Kim and Mauborgne (2009), the Value proposition is, “the utility buyers receive from an offering minus the price they paid for it” (p. 5). Profit proposition is “the revenues an organization generates from an offering minus the cost to produce and deliver it” (p.5). The people proposition is “the positive motivations and incentives put in place for people needed to support and implement the strategy” (p.5).

### **2.6 Customer Value and Green Business**

Due to the importance of increasing customer value in both blue ocean strategic literature and literature on Porters theories, the author wanted to look at literature which examines consumer behavior towards green brands, and look at customer value in the context of green marketing. Papista and Krystallis (2013) conducted research on consumer behavior towards green brands, attempting to understand the motivations and barriers towards the “customer-green brand-relationship” (p.75). Their research on



customer value and green brand relationship is based on pre existing literature in the field of customer value, relationship marketing and environmental behavior.

### **2.6.1 The Green Consumer**

Diamantopolous, et al (2003) identifies the green consumer as being young, female and educated. However Diamantopolous, et al (2003) mentions that the environmental movements and legislation in each country has the power to change the socio-demographic makeup of green consumers. Further authors (e.g. Rokka & Uusitalo, 2008) questioned previous findings, such as from Diamantopolous, et al (2003), and found in their study, that the green consumer had no significantly different demographic characteristics than other buyer groups, in their study on trade-offs between product alternatives with relevant attributes. They did however find that the green buyer group was the largest segment in their study, and whom actively chose a product based in its environmental friendliness. The two other buyer groups identified in the study were the price sensitive group and the brand loyal group. Sandahl and Robertson (1989), on the other hand, discovered that the green consumer is less educated, and receives lower salaries, which contradicts the other two studies.

Papista and Krystallis (2013) identify a lack of knowledge on the factors that influence buyers to purchase green brands. They also identify an inconsistency between environmental awareness and environmental purchasing; meaning that having a higher awareness did not necessarily translate to purchasing green brands. Interested in understanding what motivates and hinders the purchasing of environmentally friendly brands, they have applied the customer value approach in their research, in which they developed a framework to illustrate the streams of influence on the customer value of green brands.

Ginsberg and Bloom (2004) believe that the green consumer can be divided up into five segments, which represent their level of dedication to an environmental issue.

1. The first group represents the buyers who are the most likely to buy green products. Ginsberg and bloom (2004) mention that this group is over four times more likely to avoid non-green brands. They have strong environmental values, and believe that they contribute to the course when buying green
2. This group is not as active as the previous group, but is more willing than the average consumer to buy green.



3. This customer group can go either way. They will never buy a green product if it means spending more. However, if they are appropriately appealed to, they will purchase green products/services.
4. The fourth group is not educated on environmental issues, having a low belief on their contribution to buying green having an effect. Their main beliefs are that green products/services are too expensive and have a lower quality and performance.
5. This group does not care about environmental issues.

## 2.7 The Customer Value Concept

Customer value is defined as “an interactive relativistic preference experience...customer value entails subjective hierarchical preferences based on an individual's situation-specific comparisons of one object with another” (Holbrook, 2006, s. 715). Holbrook (2006) proposes that customer value consists of two dimensions (1) extrinsic value versus intrinsic value, (2) self-oriented value versus other-oriented value. Combining these two dimensions creates the “typology of customer value” (p. 715).

	Extrinsic	Intrinsic
Self-oriented	Economic value	Hedonic value
Other-oriented	Social value	Altruistic value

**Figure 6: Typology of Customer Value, (Holbrook, 2006, s. 715)**

### 2.7.1 Economic value

Economic value refers to a product or buying experience, in which the goal is to achieve economic value through purchasing a product or service which will save on future expenses. It can also refer to receiving a level of excellence (high quality) from the product (Holbrook, 2006).

### 2.7.2 Social value

Social value occurs when purchasing a product, which evokes a response from other individuals. Individuals seeking to receive social value can achieve this through purchasing brands, which highlight an individual's high social status (Holbrook, 2006).



Green brands play a role in contributing to a buyer's enjoyment of social value (Papista & Krystallis, 2013).

### **2.7.3 Hedonic value**

Hedonic value comes from an individual's own pleasure in purchasing a brand, such as a pleasurable activity or purchasing a product which the buyer finds aesthetically pleasing (Holbrook, 2006). Papista and Krystallis (2013) mention that previous studies on the effect of green brands on hedonic value have not been conducted, however they believe that this value positively effects customer value evaluations.

### **2.7.4 Altruistic value**

Altruistic value is the value that is received from understanding how ones purchasing behavior positively effects others (Holbrook, 2006).

### **2.7.5 Second stream of influences**

Papista and Krystallis (2013) have further identified five categories which they believe to negatively effect green customer value, (1) price, (2) effort, (3) Evaluation costs, (4) time, and (5) performance risk.

Papista and Krystallis (2013) suggest that the often-inflated price of green brands, acts as a barrier, affecting the customer brand relationship. Laroche, et al (2001) describes a connection between the perceived importance of an environmental issue, and the inconvenience involved in behaving in an environmentally conscious fashion. If the behavior takes too much effort, the perceived importance of the issue has little effect. Evaluation costs can act as barriers, due to lack of information on how a brand might contribute to the environmental agenda (Young, et al 2010). Green brands are generally limited in number and the time requirements needed to locate and purchase the brand can act as a barrier (Papista & Krystallis, 2013). The performance of a green brand might be questioned, due to the percieved view of green brands having a lower product performance, causing performance risk to act as a barrier (Luchs, et al 2010; Ginsberg & Bloom, 2004).

A further factor which might contribute as a barrier to the adoption of green brands, which is not included in Papista and Krstallises model, is the percieved veiw that the environment issue is a responsibility of an organization or the government (Laroche, Bergeron, & Barbaro-forleo, 2001).



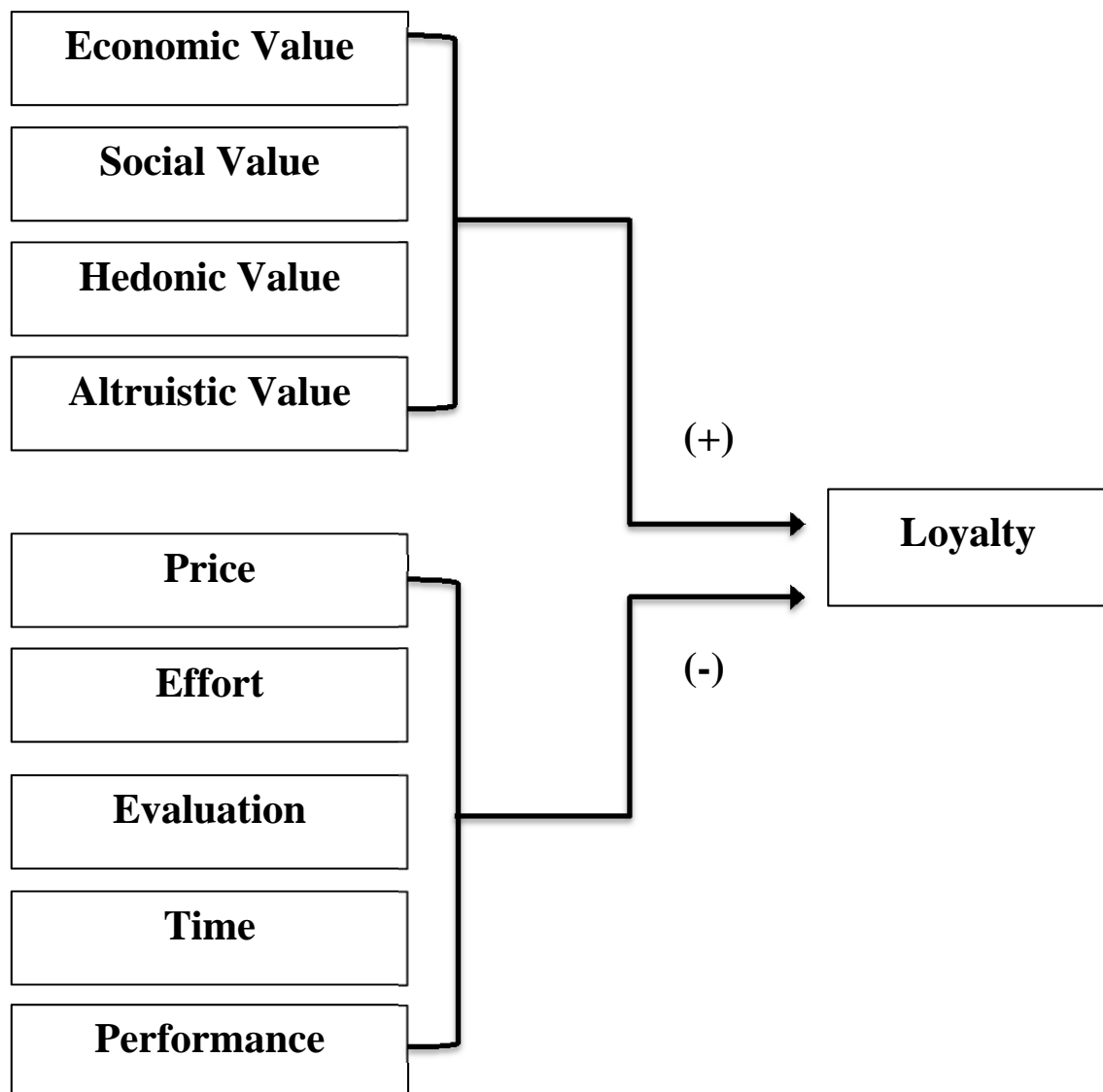


Figure 7: Relationship between types of value, types of cost and loyalty (Papista & Krystallis, 2013).

Papista and Krystallis (2013) acknowledge the effect of “consumer physiographic characteristics”, which they mention are recognized in literature on environmental consumer behavior. Characteristics such as environmental concern can possibly moderate the perceived strength of the types of cost and value, seen in figure 7. Further moderating characteristics are mentioned as an individual’s knowledge on environmental concerns and their ability to understand green brands as having an altruistic value. An individual’s involvement in environmental issues is also an important characteristic, which increases the perception of the determinants in figure 5.



## **2.8 Green Marketing as a differentiation strategy**

Porter's (1996) generic strategies have previously been reviewed, which describe the theories on how to achieve competitive advantage in an industry, through low cost, differentiation or focus strategies. Marketing activities, in which customer needs and wants, brand development and positioning in niche markets, constitute activities, which belong to a differentiation strategy (Polonsky & Rosenberger, 2001).

Green marketing gained momentum in the 1980s and 1990s, following a workshop on ecological marketing in Austin, Texas in 1975. Originally termed ecological marketing (Fisk, 1973) and environmental marketing (Coddington, 1993), it is part of a holistic approach to marketing.

Previous research on green marketing has detected the willingness of global consumers to prefer to buy from environmentally responsible companies. Some studies suggest that consumers are willing to pay a premium for green products, especially in developing countries (Tiwari, et al 2011; Keegan & Green, 2000; Papista & Krystallis, 2013). However, Ginsberg and Bloom (2004) mention that consumers only tend to choose green products when product/service attributes are equal, which in the mind of the consumer rarely are. A consumer will never forego their own desires and needs to be green. For a green product to be successful, it must match up on the same attributes as non-green products/services in the market.

According to De Bakker and Frank (2009), most experts identify green marketing as focusing all marketing activities towards the goal of environmental protection. However some people identify it with promoting and emphasizing a product as being green. Ottman and Miller (1999) believe that green marketing refers to linking the business and the consumer, which needs a holistic approach to line all the business's activities with the cause. A holistic philosophy incorporates the idea that a business's products or marketing strategy should not solely fulfill the needs of the customer, but safeguard long-term interests, as well as people in the rest of society (Tiwari, et al 2011).

De Bakker and Frank (2009) believe that green marketing must take into account the spiritual needs of the consumers, emphasizing on not just the functional aspects of a product, but also on the emotional aspects. A green marketing strategy differs from conventional marketing strategies, by having to include a more proactive and value based approach to marketing the product. Peattie (1999) describes the proactive



approach in green marketing, as positioning green products in the mind of the consumer, to gain competitive advantage.

### **2.8.1 Green Marketing Mix**

In essence a good green marketing strategy must include a green marketing mix, including (1) price, (2) product, (3) place and (4) promotion.

#### **2.8.1.1 Price**

The rule of marketing implies that a customer is only willing to pay additional value, if the product or service supplies additional value, through better performance, design or visual appeal (Tiwari, et al 2011).

#### **2.8.1.2 Product**

The purpose of green products is to limit the consumption of resources, while increasing the preservation of scarce resources (Tiwari, et al 2011). Peattie (1999) suggests that, in order to have a successful marketing strategy, customers must be made aware of the significance of the green product. It must be stated clearly what solutions the customer will receive, on an environmental level, from purchasing a green product.

#### **2.8.1.3 Place**

Tiwari, et al (2011) believes that the choice of where to market a green product, and when to do so, impacts customer-buying decisions.

#### **2.8.1.4 Promotion**

Tiwari, et al mentions that there are three types of green advertising, (1) campaigns which emphasize the relationship between the product/service and the environment, (2) campaigns which promote the green lifestyle, and (3) campaigns which promote the corporate image of environmental responsibility. Singh (2004) mentions that care must be taken to identify appropriate channel to promote the green product, and to ensure that the product is fully green through the supply chain. De Bakker and Frank (De Bakker & Frank, 2009) mention that when promoting the product, it is vital to practice what one preaches. Failing to do so could jeopardize the validity of a green company. Green washing, as described by Tiwari, et al (2011), is used to describe the practice of promoting a product as being green, when in reality it is not.

### **2.8.2 The Green Marketing Strategy Matrix**

A successful green strategy requires that two sets of questions must be asked, to determine which of the four green strategies should be pursued: (1) lean green, (2) defensive green, (3) shaded green, and (4) extreme green (Ginsberg & Bloom, 2004).



The green marketing strategy matrix was developed by Ginsberg and Bloom, and is a model which aids in creating a strategy, based on the green dimension (Singh G. , 2013).

The first set includes questions, such as, how important is the consumer segment for the company? Will an increase in revenues occur by improving the perceived environmental friendliness of a brand? Are there consumers with limited environmental interest, which the company can serve profitably?

The second set includes questions, such as; can the company differentiate itself or the brand on the green dimension? Does the company hold the knowledge and resources needed to become be green? Will the cost of competing against other green brands be too expensive, or can the company successfully compete on the green dimension?

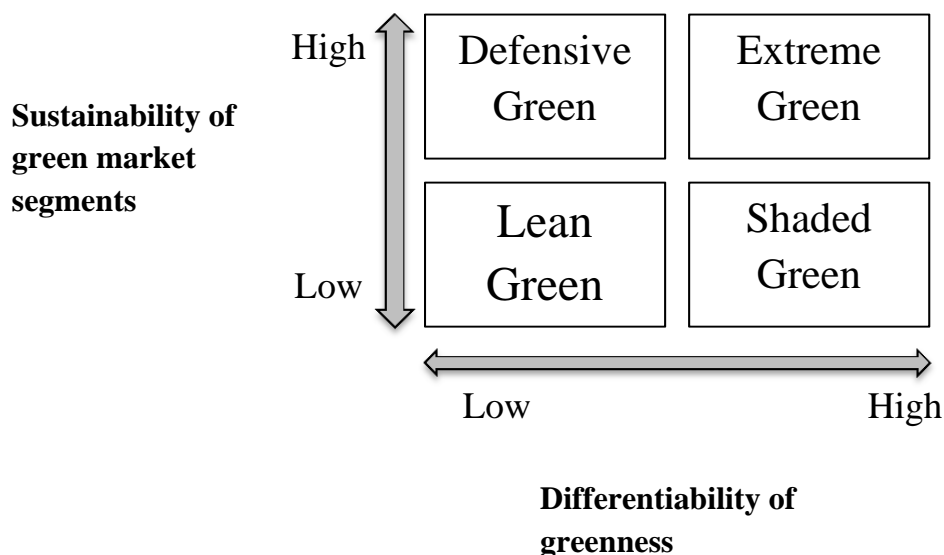


Figure 8: Green Marketing Strategy Matrix, (Ginsberg & Bloom, 2004)

#### 2.8.2.1 Lean green

Companies that follow the lean green strategy are environmentally responsible, but do not however promote their efforts, fearing that they will be held to a higher standard. They pursue pro-environmental activities in order to increase their efficiency and to reduce costs, not to compete on the environmental factor. They do not see money to be made from pursuing the green consumer (Ginsberg & Bloom, 2004).



**2.8.2.2 Defensive green**

A company takes a defensive green strategy in response to the actions of competitors. The company will actively and sincerely promote itself as green. However, it will find differentiating itself from other green competitors difficult. Defensive green companies tend to sponsor smaller environmentally friendly events, and defend themselves from attacks from green activists by promoting and advertising their green records. A green campaign will not be created unless there is reasonable proof that it will lead to competitive advantage (Ginsberg & Bloom, 2004).

**2.8.2.3 Shaded green**

The shaded green strategy sees companies actively commit financially and non-financially to green processes. These companies see the environmental aspect as a competitive opportunity. Unlike lean greens and defensive greens, shaded green companies are able to differentiate themselves on the green factor, but for financial reasons choose not to. They are able to achieve higher profits from stressing other attributes and selling their product/services through mainstream channels (Ginsberg & Bloom, 2004).

**2.8.2.4 Extreme Green**

The extreme green strategy sees a company follow a holistic philosophical approach. They include the environmental aspect into every factor of the company. An extreme green approach usually sees a company serve a niche market, selling their products/services through specialty channels (Ginsberg & Bloom, 2004).

**2.9 Conclusion of the Theoretical background**

The theoretical background includes the theories and models the author thought was relevant to include in an integrated framework, for the purpose of finding new uncontested market space. Porter's five forces and the blue ocean strategy have been thoroughly reviewed, as has the green consumer. Further activities, which contribute to creating a green differentiation strategy, have been included in the theoretical background, for the purpose of further recommendations, following the results of the blue ocean strategy. The author identified a gap in literature on methods to gain competitive advantage through differentiation in the IaaS market, but did however identify pricing strategies for the IaaS market (e.g. (Feng, et al 2014)).



### 2.9.1 Integrated Framework

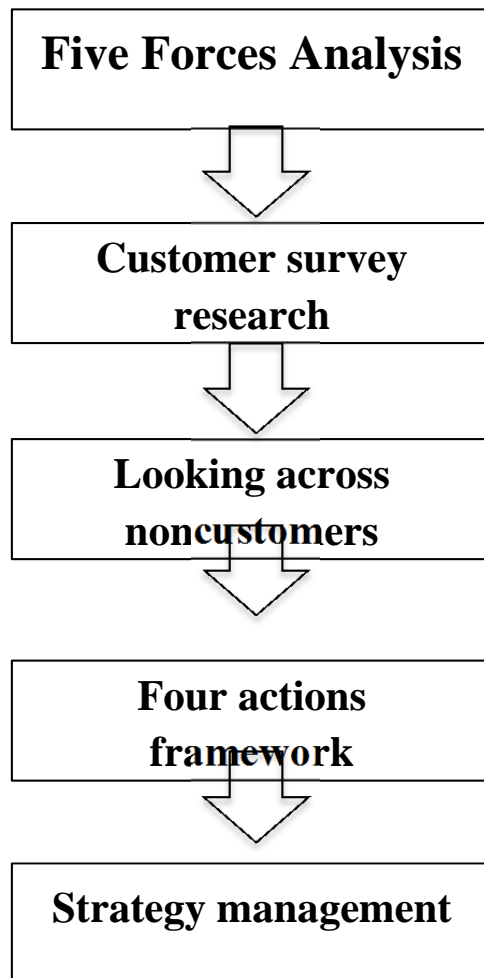


Figure 9: Integrative Framework, author's own creation.



## **Part III: Company Overview**

### **3.1 Background**

GreenQloud has agreed to contribute to the research on developing a strategy for an IaaS cloud provider. The strategy that will be formulated will be based on data retrieved during the research process, and applied to the frameworks of the Blue Ocean strategy (Kim & Mauborgne, 2005) and the five forces (Porter M. E., 1998).

What makes the company special in the current ICT industry, is its devotion to the green aspect of cloud computing. However, with stronger IaaS vendors committing to a greener data future, and new companies entering the market with a similar business model as the case company, they company could find it increasingly hard to compete in the hypercompetitive IaaS market.

GreenQloud is a software company which sells hosting and storage services in the infrastructure-as-a-service cloud market. They operate at the IaaS and quasi PaaS level, but according to the CMO, are publicly fully IaaS. The company was founded in 2010, with the aim of becoming the world's first Truly Green™ cloud provider. The main driving force behind the company is its wish to make an impact on the social and environmental side of cloud computing. The ICT industry is well known to be a highly polluting industry, and it has been the company's mission, from day one, to educate and convert users to a greener side of cloud computing (Greenqloud, 2013). In a report created by the author (Storgaard, 2013), it was discovered that 71% of the surveyed GreenQloud customers chose the environmental factor as a major incentive to choose or switch to GreenQloud.

In a report by Greenpeace (2012) on the impact of cloud computing on the environment, the ICT industry was hung out as a big contributor to rising carbon emissions, surpassing even the aviation industry. The problem originates from cloud providers utilizing data centers powered by fossil fuels. Also, the cooling process that is vital to keep the data centers from over heating, uses twice as much power as it takes to run. Due to GreenQloud's unique geographic location, the company is able to use data centers powered by Iceland's renewable geothermal and hydro powered infrastructure, and cooled by naturally ventilated air. Up until last year, the company marketed itself as being one hundred percent carbon neutral, however, with the new data center in Seattle,



which is powered by 95% renewable energy, their message has changed to being an environmentally friendly cloud company (Greenqloud, 2013).

European vendors see a lot of competition from U.S.-based cloud companies, as they are leading on price, scale and innovation. What GreenQloud and other vendors, who are located in Europe, see as their advantage is “a perception of greater security” (Miller P. , 2014), from unwanted U.S. snooping. GreenQloud also has a unique advantage over both European and American vendors, with their location in the middle of the Atlantic Ocean. This position means that they are located at almost similar distances from both geographic markets. The Icelandic culture is also highly influenced by both the American and European culture. These two factors offer GreenQloud a unique position to, not only have access to each group better than the vendors located solely in these geographic locations, but they are culturally able to relate to both markets.

However, as the market grows and bigger vendors are able to compete more efficiently on price, the differentiation factor becomes ever more important for GreenQloud. The 2011 Greenpeace (Cook & Horn, 2011) report called ”how dirty is your cloud” stirred up the cloud market, forcing some vendors to rethink their energy policies. In the aftermath of this report, vendors such as Google and Microsoft vowed to become more sustainable, with Google benchmarking 2012 as the year they would be 100% powered by green energy (Cook, et al 2014).

Microsoft also upped its commitment to the sustainable aspect of cloud computing, and has chosen the route of purchasing carbon offset credits, which permit the company the right to emit a certain amount of carbon dioxide into the atmosphere. GreenQloud views these credits as being ineffective, believing that the only way forward is through proper social responsibility practices, where the company takes its own measures to limit its carbon footprint (Greenqloud, 2013). One climate researcher (Anderson, 2012) describes offsetting as “worse than doing nothing” and “dangerously misleading and almost certainly contributes to a net increase in the absolute rate of global emission growth”. Not surprisingly, Greenpeace have similar views regarding companies purchasing offset credits and point the finger at companies “choosing to paper over their growing energy footprints” (Cook, et al 2014, s. 5). However, the general public, who might have limited knowledge on environmental policies, might not understand the full concept of carbon offset credits, leading them to make the wrong choice based on their initial wishes.



### **3.1.1 Core competencies**

GreenQloud are highly efficient at responding to their user's needs. In average they reach back to their customers within one hour, compared to the industry standard of twenty-four hours (Greenqloud, 2013). In a report created by the author in 2013 for the company's marketing efforts (Storgaard, 2013), data collected through a survey supports the idea that the company's strengths are in its customer support. 71% percent of the 109 people who answered the survey rated the customer support as being good. A further 27% of the surveyed customers rated the service as being very good. Only 3% surveyed experienced the service received as being bad.

Another factor, which the company believes, adds to their strengths is the design of their console. Marketing describe it as "the Apple" of the IaaS world, due to its user-friendly interface. It is claimed that even novices can use the dashboard to provision storage and compute servers. Their selection of services is also small, compared to some of their competitors. Currently they offer three services: (1) ComputeQloud, which is compatible with Amazon EC2, where users can create cloud servers. (2) StorageQloud, compatible with Amazon S3, which is like a cloud USB drive, with QloudSync as a desktop option to sync files between devices. And finally, (3) Qstack, which is their hybrid cloud solution, which consists of a private cloud software stack, which enterprises can use to create a private cloud as well as access GreenQloud's public cloud. (Greenqloud, 2013).

### **3.1.2 Product overview**

#### ***3.1.2.1 StorageQloud***

StorageQloud is a virtual hard-drive, allowing for easy access to stored data at all hours of the day. The data passes through "industry standard SSL encrypted connections" ensuring the privacy of the stored data. The interface allows users to view stats, such as: their usage, monthly bill estimates which are continuously updated, and a CO2 tracker, which estimates a users emissions savings. StorageQloud's API is compatible with the industry standard API, which is AWS S3 (Greenqloud, 2013).

#### ***3.1.2.2 ComputeQloud***

ComputeQloud is GreenQloud's pay-as-you-go virtual machine. The compute cloud servers can run Linux®, FreeBSD and Windows® systems, which is consistent with what competitors offer. GreenQloud technology is built fully on open source projects, which is software that can be freely distributed, used and modified. The company



describes their ComputeQloud as a “Truly Green™ drop-in replacement for AWS”. ComeputeQloud’s API’s are AWS compatible making “GreenQloud automatable using numerous third party tools and Software as a Service solutions” (Greenqloud, 2013).

#### ***3.1.2.3 Qstack***

Qstack is GreenQloud’s private cloud stack, which enables enterprises to build private clouds, which have access to GreenQloud’s environmentally friendly public cloud. Enterprises can build their private cloud built on GreenQloud public cloud software and take advantage of the scalability of GreenQloud’s public cloud. Where enterprises can benefit in adopting a hybrid strategy is the ability to scale according to demand. During peak times the virtual infrastructure can be scaled to accommodate the increase in demand, while in periods of less usage it can be scaled back, saving on costs. The service uses the industry standard API’s: EC2,S3 and CloudStack 4.X (Greenqloud, 2013).



## **Part IV: Methodology**

### **4.1 Research Purpose**

The purpose of this research was to develop an integrative framework, based on literature from Porter's (1979) five forces and the blue ocean strategy. The integrative framework was created to identify uncontested market space, and to further find a competitive strategy in the current competitive environment, based on GreenQloud's "greenness". The purpose of this research was also, to investigate GreenQloud's success in attracting the green consumer.

### **4.2 Research Approach**

The research approach will supply the methodology with a framework for how the data will be analyzed in the research. The author will introduce the research philosophy, which will introduce the type of study of this research. The type of study will be introduced, and the method in which data was collected will be described. A chapter on the limitations of the research will be included, to explain what was taken into consideration during the research process.

#### **4.2.1 Research philosophy**

According to Blumberg, et al (2011) positivism is a philosophy from the social sciences, in which its basic principles are, (1) The social world exists externally and is viewed objectively, (2) Research is value free, and (3) The researcher is independent, taking the role of an objective analyst. A researcher following the philosophy of positivism will locate observations, which support or contradict their initial hypothesis. A researcher will further test their hypothesis, determining whether or not the observations fit the fundamental laws of the subject. In positivism studies, researchers observing the same phenomena should in theory arrive at the same conclusion.

According to Blumberg, et al (2011), researchers following the interpretivism approach do not believe that principles from the social sciences can be applied to research, meaning that they follow a different approach. Interpretivists believe, (1) the social world is constructed and is given meaning subjectively by people, (2) the researcher is part of what is being observed, and (3) research is driven by interests. Interpretivists don't believe that research can be conducted objectively, as the world is built on intentional actions, and the laws are insufficient at explaining complex social phenomena. Interpretivists conduct their research subjectively, interpreting their



findings as a means to make sense of what is happening. Interpretivist research is formed by the interests of the researcher and their motives. Interpretivists do not put a lot of faith in generalizing findings, as they view such finding in an ever-changing world questionable.

According to Blumberg, et al (2011) realism is a hybrid of positivism and interpretivism. A researcher following the realism approach accepts that the research approach dominant in the natural sciences is important, while accepting that there exist forces outside of human control, which affects actions, resulting in the need for subjectivity in the research.

The philosophy of this research was a realism approach, as the nature of data gathering was both quantitative and qualitative. The nature of the data gathering required more of a realism approach than a positivism approach.

#### **4.2.2 Type of Study**

A study consists of four different structures, (1) exploratory, (2) formal, (3) descriptive, and (4) casual. Exploratory studies are conducted with the aim of future research, and are valuable when the researcher lacks knowledge on the subject. While formal studies are an extension of an exploratory study. Researchers conducting a formal study investigate the current situation of their study area, followed by a research design with the aim of testing hypothesizes and answering research questions. A descriptive study aims to answer who/what/why/when questions, while a casual study aims to understand the relationship among variables (Blumberg, et al 2011).

This research follows the structure of both exploratory and descriptive study. The first part of the research is purely exploratory, while the final part is descriptive in nature. Blumberg, et al (2011) mentions that an exploratory study is useful in research, which is either vague or new. As this is a unique study, in which no previous research has been found on the exact topic, an exploratory study has been useful to create the foundation of the research.



#### 4.2.3 Data Collection Method

This study consists of both primary and secondary data, which has been gathered to form the basis of the research, in order to answer the research questions. Secondary data is important in exploratory research, while primary data is used to find things anew (Blumberg, et al 2011).

Secondary data will be gathered mostly from web-based sources. The current IaaS market, and competitive factors in said market will be gathered to form the secondary data. However, primary data will be gathered to specifically answer the main research question. This research concerns finding uncontested market space for a green cloud provider, in which no previous data exists. It is therefore important to gather company specific customer data to be able to sufficiently answer the main question.

Data collection exists in two forms, (1) qualitative and (2) quantitative. Qualitative data is normally gathered in the form of words or narratives, while quantitative data is gathered in numbers. Blumberg, et al (2011) mentions that there are no rules which state which method of data sampling should be used in specific types of research studies. To understand which method is most suitable for a research project, Blumberg, et al (2011) suggests answering four questions:

1. What is the research problem?
2. Which type of study is being conducted (e.g. exploratory, casual, descriptive, formal)?
3. What are the expected outcomes?
4. What data is needed for the study, and what is available?

The research question has been introduced in the introduction section, and the type of study has been discussed. The objectives are to find secondary and primary data, which will supply qualitative and quantitative information to be used in the main and sub research questions. Secondary data is relatively easy to obtain, concerning the current state of the market, and competitive factors. The secondary data will be used to supplement primary data, and used to answer the main and sub research questions.



### 4.3 Research Design

Research design determines which sources and types of information are gathered, to answer specific research questions. It provides answers for what type of data collection and sampling will be used for a research. In short, it forms the basis of the intended outcome and answers the questions (Blumberg, et al 2011). This section is case orientated and describes steps, which will be taken to gather the relevant information for answering the research questions.

Secondary data was gathered, followed by survey research, which supplied the research with primary data. Further primary data was supplied in the form of email correspondence between the author and employees at GreenQloud. The survey design was both quantitative and qualitative in nature, and will serve the purpose of answering the main research question. The primary data will also supplement the gathered secondary data, in order to answer the sub questions, to further build on the strategy for the case company.

#### 4.3.1. Procedures

The author researched the IaaS market using the Internet. The current situation in the market was defined, followed by identifying the value drivers in the market, and the current competitiveness. The author used an analyst website to identify the market leaders, and to further identify value drivers and the current state of the market.

The author had to narrow down the search for a blue ocean by limiting the path to look at, to the buyer groups. The three tier approach was decided, directing the research to focus on three groups of respondents: (1) GreenQloud's immediate customers, (2) visitors to the site, and (3) random respondents from social media platforms, unrelated to GreenQloud. These groups were researched through a survey, which was created during March, and left running through the process of the research.

The purpose of the survey was to gather the desired level of value of each of the value drivers of the IaaS market, which have been identified through secondary and primary data. Further data was gathered through survey design, on the definition of a GreenQloud customer, to include in the research, and to answer the research questions. An overview of the survey questions and results can be seen in appendix D and E.



#### 4.4 Data Analysis

The survey was launched on the case company's main webpage, allowing both customers and visitors to answer the survey. A further, smaller survey was posted on both Facebook and Google+ channels, including being forwarded by friends of the author, which was aimed at the third tier of noncustomers. The social media group was relevant to identify a need from potential customers, which the case company wasn't supplying, and to identify a commonality. Three sets of data was gathered from the survey, (1) degree of desired value, (2) further needs, and (3) specification of the surveyed person. The data was reviewed with the research questions in mind, and was processed in the results chapter. The first set of gathered data was compiled into a value curve, which could be compared to secondary data. The second set was processed, and similar answers were gathered together and presented in the results chapter, comparing it with secondary data and further applying to the value curve. The third set of data was analyzed and processed, and presented in the results chapter, in which it was compared to secondary data on green consumers. The findings from the results chapter were further analyzed and summarized in the research question chapter.

#### 4.5 Limitations

The three tiers of noncustomers theory describes the first tier as being a customer who only uses a service because they are forced to, out of need (Kim & Mauborgne, 2005b). This need could be down to there being no other providers available or because they can't afford to switch. Surveying just this customer group can be considered impossible. This group will therefore be made up of additional customers who generally enjoy using GreenQloud's services. However, the author does not see this as a major issue, and believes that good data will still be gathered.

The author believes that the survey being based on GreenQloud's individual users over business users will not obscure the actual results of what GreenQloud's actual customer wants are. The decision was based on the infancy of GreenQloud's enterprise cloud, which was only launched in the beginning of 2014, making the individual user base a much better option to research.



## **Part V: The Cloud IaaS Market Overview**

### **5.1 Layers of the cloud**

The cloud-computing sector consists of three layers of “as-a-service” cloud services. An individuals or company’s choice of service depends on its needs. According to Goodrich (2013), these needs depend on software and hardware needs, and specific tasks which need to be accomplished; which could be software development or website hosting.

The definition of Infrastructure as a service is; “a standardized, highly automated offering, where compute resources, complemented by storage and networking capabilities are owned and hosted by a service provider and offered to customers on demand” (Gartner). The cost and hassle with owning in-house infrastructure is eliminated. If the need for increasing storage or compute resources arises, a company simply purchases further cloud resources, rather than purchasing new hardware to accommodate a growing need. The IaaS market has changed and is still changing, to accommodate a growing number of large companies and government sectors attracted to the cost savings and scalability offered by this service. The advantage that the IaaS market has over PaaS and SaaS, and likely why its enterprise-level-services are attracting these big entities, is that the customer still has control over many of the features. Platform-as-a-service is the service of choice for software developers. They are able to deploy their own applications into the cloud infrastructure, without the need to install tools on their own devices. PaaS is a mixture of IaaS and SaaS. (Hashizume, et al 2013). SaaS implied that consumers access the provider’s applications through their cloud infrastructure, usually through a web browser (Hashizume, et al 2013).

### **5.2 Overview of the cloud market**

In this chapter the cloud industry will be reviewed. Due to the case study company, the focus of the research in this chapter will be mainly on the Infrastructure as a service (IaaS) market, which incidentally is the cloud industry’s fastest growing segment.

What will be researched during this chapter is the general market condition, where the current trends will be reviewed. Following that will be a competitor overview, where each company deemed to have an importance in retrospect of GreenQloud, will be

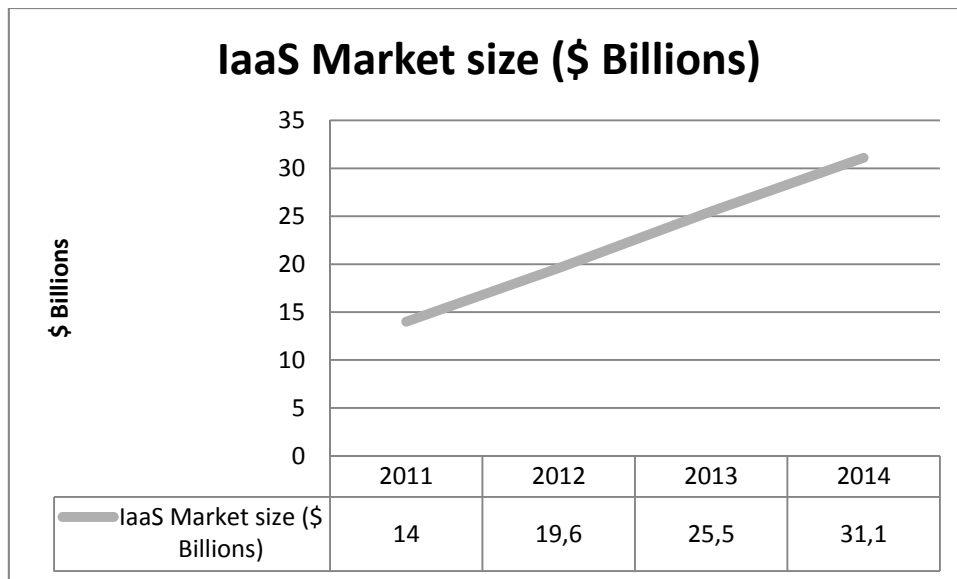


included. The chosen companies will be further analyzed based on the main competitive factors in the market, in preparation for the strategy canvas.

Infrastructure as a Service (IaaS), as a business model, was the creation of Amazon in 2006. With the launch of Amazon S3 (storage service), Amazon SQS (queuing service) and Amazon EC2 (virtual servers), the IaaS market was born. Since then the market has seen a huge influx of providers entering the market. Amazon was the clear choice in provider during the first years, but in 2013 Google and Microsoft shook up the market by launching their IaaS model to rival Amazon Web Services (MSV, 2013). What Microsoft and Google both have is a culture of intelligent innovation, and a portfolio of ground-changing products. Unlike cloud startups, their cloud divisions began life with vast-resources and the pre-existing industry knowhow. They have the important brand awareness and loyal customer base, which they can use to attract customers. Google utilize their presence as one of the biggest company's on the web to create hype over newly added cloud features and add-ons. According to Hardy (2014) Google have announced that they will offer cheaper and more simplified pricing (falling at a rate which follows More's law) and innovative software add-ons. They want to simplify cloud services, arguing, "what developers like to do is to write code, not managing infrastructure or worrying about resource planning". Google are aware of this critical AWS weakness, and are pushing the simplicity factor as much as they can. One weakness for Google, which is evident in the article (Hardy, 2014), is the "Googliness" of the Google culture. They are great at communicating with developers, but lack the experience in dealing with conventional business people.

Due to commercial interest, a large market, low entry costs and minimal infrastructure requirements, the entry barriers for new service providers are low. This encourages newcomers to enter the market at a high rate. As the risk of wasting resources is minimal, some cloud providers have been experimenting with novelty service types, to distinguish themselves from the many others (Shubert, 2010). A report by Parallels (2013) indicates that IaaS has reached market maturity in developed countries with a mature cloud service market, and reached the point of growth in similarly developed countries with a maturing cloud service market. The countries, which have not yet experienced the cloud service market growth, are the developing countries with emerging cloud services.





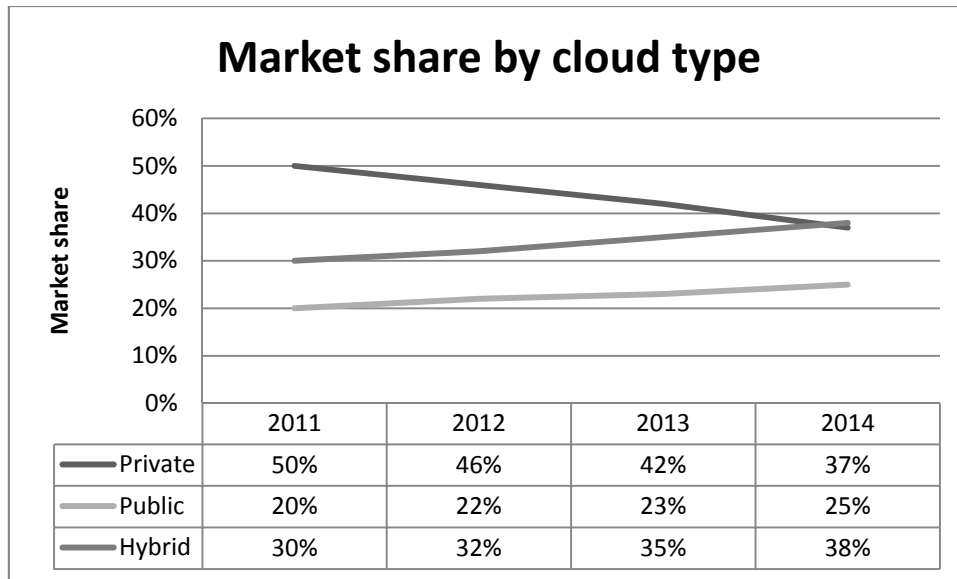
**Figure 10: Cloud market growth 2011-2014 (Defrancesco, 2012)**

Figure 10 depicts the past and current growth in the global IaaS market. The curve shows a market, which is in a state of growth.

Rodrigues (2013) believes that innovation within the cloud market could decline due to AWSs presence. The issue lies with customers increasingly viewing their products as the industry standard. How this could affect the level of innovation in the market is by forcing smaller vendors to adopt similar technologies in order to be compatible with the market leaders services. GreenCloud have responded to AWSs presence by adapting their products to their standard.

Currently the market is burning with activity. Vendors are fighting a price battle on a day-to-day basis. Analyst websites, such as Gigaom, which focuses on technology and cloud computing, illustrate the intense price battle going on in the market. Microsoft and Google have entered the IaaS market, and are focused on taking on the markets biggest vendor. Amazon Web Services, which is a subsidiary of Amazon, is the uncontested market leader, with a market share of over 25% percent of the IaaS market (Darrow, 2013). GreenCloud, aware of the price reductions in the market have followed suit, and lowered to prices, in the first quarter of 2014, to be more competitive.





**Figure 11: market share by cloud type (Defrancesco, 2012)**

Figure 11 illustrates the changing customer preferences in the cloud IaaS market. The enterprises, who previously were hesitant to adopt the cloud, have started to lower their barriers. Enterprises, still concerned with security issues, prefer to use the hybrid cloud solution, as they can “take advantage of the scalability and cost-effectiveness that a public cloud computing environment offers without exposing mission-critical applications and data to third-party vulnerabilities” (Rouse M. , 2013).

### 5.2.3 Hybrid Cloud

Vendors are seeing the potential in the enterprise segment, and are following each other to gain a share from this emerging customer segment. Some experts, such as Linthicum (2014) urge vendors to focus on enterprises, and it appears that most vendors are following suit.

Enterprises have generally been hesitant to join the cloud, likely due to cost-issues and security concerns (Vaquero, et al 2011; Feng, et al 2014). But with cloud vendors fighting each other on price, running the cost of virtual computing and storage services down, enterprises are starting to make the jump.

The enterprise sector represents the new direction in which vendors are leaning in the hypercompetitive IaaS market. Enterprises are seeing the opportunities in adopting a hybrid IaaS strategy, which is scalable and cheaper than conventional in-house infrastructure. In a recent report by Cisco Systems (2013), 40% of decision makers (U.S. and European based) report using a hybrid strategy where “IaaS complements their on premise resources”. Cisco Systems also investigated factors, which hindered the



adoption of the hybrid model in European and U.S. companies. Their findings indicated that security was considered a barrier by 46% of companies surveyed. Of the decision makers in the companies, the “potential need for re-architecting applications to operate in the shared environment” is seen as a concern by 45% and “seamless integration across data center and the cloud service provider” is seen as a concern by 30% of the respondents. Potential enterprise clients are, based on the survey, not just concerned with security, but concerned with the compatibility of their system with a cloud provider. It is apparent, that compatibility is and will be a major competitive factor in the future, based on the current trends of a need for compatibility with the market leader.

### 5.3 Barriers and motivators to cloud adoption

Security is identified as the major concern among businesses of all sizes, in the widespread adoption of the cloud. It is the virtualization of cloud computing which creates it pre-disposed security risks. The seemingly unlimited scalability of cloud computing comes from resource sharing, which introduces multi-tenancy concerns. Virtualization implies that machines and networks are shared, incorporating threats and vulnerabilities into its design. Due to the clouds huge demand for scalability, the multi-tenancy environment poses security risks from malicious tenants and physical attacks (Vaquero, Roderio-Merino, & Moran, 2011).

Vaquero, et al (2011) has identified seven major threats, which pose a security risk in the IaaS market:

1. *Unethical use of cloud computing:* IaaS offerings have hosted malicious applications, such as Trojan horses, and software exploits.
2. *Insecure APIs and infrastructure:* APIs are important for the security of cloud services.
3. *Malicious insiders:* The threat originates from multiple tenants being served under one managed domain. The combination of these factors and the lack of transparency of a providers processes and procedure creates the threat.
4. *Shared technology issues:* Scalable infrastructure, which is shared, poses a threat to tenants.
5. *Data loss or leakage:* having insecure APIs and a shared environment creates this threat.



6. *Account or service hijacking*: Old and known issues in the IT sector. However, with cloud computing it has reached a new dimension. A client's account can become a new base for an attacker.
7. *Unknown security profile*: The multi-tenancy issue of cloud computing creates a complexity issue in detecting who or how is using a cloud providers infrastructure.

According to a survey conducted at Cloud expo Europe Interxion Holding NV discovered that IT professional's valued reliability over low-cost and the ease of setting up. 36% of the surveyed specialists identified reliability as a major value (Interxion, 2013).

#### **5.2.4 VPC**

The next path for vendors to take beyond their hybrid clouds is developing a Virtual Private Cloud. Even though the concept has been around for some time, there are currently not many vendors offering this type of service, and the author has only been able to locate two vendors offering a VPC, namely: Amazon and HP. The definition of the VPC is: "The cloud infrastructure is operated solely for an organization, and is a subset of a larger cloud infrastructure which may be private, community or public. The virtual private cloud is virtually partitioned, rather than completely physically separated, from the larger cloud" (Burns P. , 2009). Where hybrid clouds differ from VPSs is their composition of two, or sometimes more clouds that are separate entities from the providers public offering, which have the ability to burst into the providers public cloud offering (Burns P. , 2009).

#### **5.2.6 Mature and Emerging Cloud Markets**

Many experts see emerging Asia Pacific as a potentially good market for cloud vendors to enter. Businesses in these countries see the need to adopt cloud infrastructure in order to remain competitive on a global scale. It is estimated that this region will see the most growth over any geographic market in the near future. Orlando Ayala, who is the chair of emerging markets for Microsoft, points to the "mobile revolution" and the potential cost savings as the key in Asia Pacific's adoption of the cloud. Individuals and businesses want to access applications anywhere, while SMB want enterprise scale infrastructure at prices they can afford. China is of course the favorite when considering new markets in Asia Pacific, due to its market size, but other countries are emerging as potentially good choices (Uretsky, 2014). Possible targets are seen as China, India and



Korea, in the Asia Pacific market, and Brazil and Argentina in the Latin American markets, as a move to the cloud would help the shift from outdated markets and take advantage of the cost-reduction found in moving to cloud based infrastructure.

Gartner (2012) predict that the greatest overall growth will occur in North America, with an overall growth of 61% from 2011-2016, followed by Western Europe with 17%, in the same timeframe. Japan is one of the mature Asia Pacific markets, and expecting to grow by a CAGR of 11,7% between 2011 and 2016. Both Western Europe and mature Asia Pacific markets are set to see a slow-down of growth. Western Europe will see this due to Eurozone economic issues and Japan, in mature Asia Pacific, will see this due to “economic challenges in the Japanese market”

### **5.3 Competitor overview**

So far, we can gather that the market is growing. Entry barriers are still low, and newcomers are entering the market, lured by the profits, which can be potentially gained in the IaaS (and hybrid cloud) market. Amazon has, with AWS, created the un-official standard IaaS platform through their dominance, forcing most other vendors to create services that are AWS compatible. With the hybrid cloud becoming an increasingly adopted strategy for enterprises, vendors of all sizes are doing what they can to attract this new buyer group. With a market that is highly homogenous in terms of service offerings, vendors are competing with the only strategy remaining, which is a low-cost strategy.

What will be reviewed in this part of the thesis is the competition in the market. Their background, current doings and strategy will be reviewed, resulting in a better understanding of the competitive environment, which GreenQloud is facing.

The competitors in this overview have been chosen, based on the following criteria: (1) their impact on the market and (2) a similar business model to that of GreenQloud's.

Based on these criteria the following cloud companies and subsidiaries will be researched for further use in the BOS framework:

- Microsoft Windows Azure
- Google Cloud Platform
- AWS
- Rackspace



### 5.3.1 Microsoft Windows Azure

Microsoft started life as a startup in 1975 developing OS software. In 1985 the first product, Windows (v. 1.0), entered the market, changing the look of the personal computer forever. The mouse, which was a new feature in Windows 1.0, changed the interface from being command driven to visual, with a click of a button (Microsoft). Microsoft followed public demand, improving their OS over the next two and a half decades. In 2008 they announced their “Windows cloud”, which would later become Windows Azure (Rouse M. , 2009).

Microsoft’s strategy to achieve competitive advantage is its strong R&D initiatives, in which it aims to stay ahead of its competitors on a technological basis (Marketline, 2014). Also, what is clear from the company’s recent activities (see appendix B), is that it is engaging in partnerships where it can further develop its products, or become the sole provider of cloud based services, in which its popular software products are accessible.

Microsoft is a very strong competitor, and has strong ties to the enterprise segment. They pose a massive threat to GreenQloud, as they already supply to big companies.

Where Microsoft sees their opportunities in the cloud is the enterprise end market, with its Windows Azure and Office 365. Enterprises are generating the growth in the public cloud market by adopting hybrid clouds, which allow them to access public clouds through their existing private datacenter investments. This end market is in a state of growth, which is where Microsoft is attempting to tap into the pool of untapped customers. Microsoft has a lot of potential in this market, with their background as a software provider for enterprises.

Microsoft has datacenters all over the globe. Currently their number stands at 38, with data centers located in (Foley, 2010):

- The U.S.
- South America
- Europe
- Australia and New Zealand
- Asia

Microsoft’s pricing structure is the most expensive out of the four competitors (see appendix B).



There are currently four services offered under the Windows Azure service; (1) compute, (2) data services, (3) app services and (4) network services (Microsoft ). Compute and data services are similar to the services offered by GreenQloud, as these services include virtual machines and storage. However, the amount of services within each branch is considerable larger than GreenQloud's.

#### ***5.3.1.1 Microsoft and the environment***

In May of 2012 Microsoft created a plan to be carbon neutral by 2013. So far their only approach to using renewable energy is through the purchase of renewable energy credits and offset credits. However, in the end of 2013 Microsoft announced a purchase agreement, which will supply wind energy to the energy grid, which they use for their data center. Microsoft's energy usage consists of 29% clean energy (Cook, et al 2014).

#### **5.3.2 Google Cloud Platform**

Google began life as a search engine called BackRub in 1996. The company became known as Google in 1998 when it was incorporated. Today it has become a huge technology company offering enterprise and hardware products, operating systems, a well-known search engine and advertisement services (Marketline, 2013).

As of March 2014 Google has two subsidiaries, which offer cloud services in the market; (1) Google drive, which is a storage service accessible through any browser, where access can be given to outsiders, and documents edited in real time. And (2) Google cloud platform, which is an avid contender for a strong competitor against AWS. For the purpose of this research, Google Cloud Platform will be the only cloud subsidiary reviewed.

Google cloud platform services include storage and virtual computing as their core services. They offer further service features within their core services, such as: App Engine, Cloud SQL and Cloud Datastore (Google, Inc). Their platform is relatively new in the market, and as with all things Google, there is a huge interest surrounding their new service. Google are currently trying to diversify from all the other IaaS vendors with a combined infrastructure and platform as a service model (Bourne, 2014).

On the Google cloud platform website (Google, Inc), the company points out their preexisting, advanced computer network, which also happens to be the largest in the world, offers customers a fast, reliable and scalable performance. The company has



fiber optic cables in all areas of the globe, and recently installed one on the bottom of the Pacific Ocean. Also on the company website, they emphasize on their ability to continuously innovate.

According to Darrow (2014), Google is fine-tuning its enterprise partner program, joining the race for a piece of the enterprise market.

According to the company website, there are 32 datacenters located in strategic location around the globe (Pingdom, 2008):

- U.S
- Europe
- South America
- Asia
- Russia

However, according to a website on data center knowledge (Miller R. , 2012), Google are notorious for their secrecy on there data center locations, and numbers. This means that we will never know the full extent of Google's reach across the globe.

Google's pricing structure is low, compared to the other competitors (see appendix B).

#### ***5.3.2.1 Google and the environment***

Google is committed to the environment and has vowed to become 100% carbon neutral. Currently they are being powered by 34% clean energy, with plans to further raise that amount through power purchasing agreements, to help green their data centers.

#### **5.3.3 Amazon Web Services (AWS)**

Amazon Web Services (AWS) was originally launched in 2006 for the North American market. In 2008 they expanded their reach to the European market with Amazon EC2.

AWS experiences frequent outages of its hosting and cloud-computing servers. During 2011 to 2013 Amazon reported incidents involving its web hosting and cloud computing services, causing outages for major companies, such as; Facebook, Instagram and Twitter. What caused it during 2012 were problems with its EBS (Elastic



Block Store), a storage feature which works with EC2, which is their pay-as-you-go compute cloud system. In 2011 Amazon experienced problems with their EC2, which lasted for ten days, resulting in lost customer data, which the company refused to supply an answer for. During the same outage Netflix experienced problems with its streaming services, due to Amazon's outage issues (Marketline, 2013).

One of Amazon's big enterprise programs failed to gain momentum. Nasdaq is considering abandoning FinQloud, which stores financial data, after failing to live up to its promise. This would be a huge blow for AWS, due to the service being used as one of their main case studies for enterprise adoption (Darrow, 2014). Amazon's hybrid strategy for the enterprise market is viewed as their weakest link by Coursey (2014). He believes that the complexity of their hybrid solutions hinders the adoption by enterprises.

AWS is Amazon's cloud based pay as you go service. It consists of six product groups; (1) compute and networking, (2) storage, (3) database, (4) application services, (5) development and management and (6) AWS marketplace software. Amazon S3 was one of the first services offered by Amazon. It was launched in 2006 and was the default storage engine for EC2. In 2009 S3 became the default storage engine for Amazon EBS (elastic block store) (Amazon Web Services, 2014).

Amazon is secretive on the number and location of their data centers. Data was unavailable on this factor.

AWS are currently the cheapest cloud providers, not only among our list of competitors, but most likely across the market. (see appendix B) .

#### **5.3.3.1 AWS and the environment**

Greenpeace (Cook, et al 2014) describe AWS as the least transparent company, when it comes to energy usage. Out of the list of competitors, AWS is the only one that doesn't have a policy in place for becoming a more environmentally sustainable company. As AWS is the largest cloud provider out there, their contribution to a greener data future would be a huge step in the right direction for the ICT industry. Cook, et al. mention that AWS operates its data centers at a high efficiency, but as there is no interest from



Amazon's side to become more transparent, allowing its customers to verify its efficiency, there is no way for customers to compare them with other companies, allowing them to make informed decisions. It is estimated that AWS uses 15% energy from green sources.

#### **5.3.4 Rackspace**

Rackspace, a Texas based startup, was founded in a garage in 1998. Today the company is seen as the global hybrid cloud leader. In 2010 the company created OpenStack, which is one of the two popular platforms for running a hybrid cloud solution. Rackspace has nine data centers globally, and its customer base includes 40% of the fortune 100 companies (Rackspace).

Rackspace are quite transparent with the number and location of their data centers (*Rackspace*). Their website states that they have nine data centers spread across the globe, in six regions:

- U.S. (3)
- Britain
- Hong Kong
- Australia

Rackspace's pricing schedule (see appendix B) is one of the more expensive pricing models of the four competitors included in the research.

##### **5.3.4.1 Rackspace and the environment**

Rackspace made a commitment to be powered fully by 100% renewable energy by 2012. They do not currently own any data centers, but lease them through leasing agreements. It is however claimed that some of their renewable energy credentials come from buying Renewable Energy Credits, most notable from its data usage in the U.S. So far Rackspace claim to be 35% renewable powered (Cook, et al 2014).



## Part VI: Results and discussion

In this chapter the literature will be applied to the secondary and primary data, in order to find uncontested market space, through the use of the five forces analysis and strategy canvas. GreenQloud's green consumer will be analyzed and compared to secondary data from the literature on green consumers. Furthermore, data in the strategy canvas will be analyzed, to identify further strategies which can be achieved in the competitive environment of the IaaS market.

### 6.1 Life-cycle analysis and discussion for the cloud IaaS market

According to Henry (2011), the growth stage allows companies to experience an increase in profits, due to economies of scale. New firms are attracted to the market at this stage, seeing the increase in sales that existing companies are achieving. Marketing activities are important at this stage, as brand awareness is vital to surviving to mature stage of the product life cycle. The mature stage will start to see companies exiting the market, due to the decrease of sales as the market becomes saturated with other cloud vendors. A quarterly rap-up by Linthicum (2013) mentions the slowing down of growth in the entire cloud market, however, that is not the case for the IaaS market, as can be seen in figure 12.

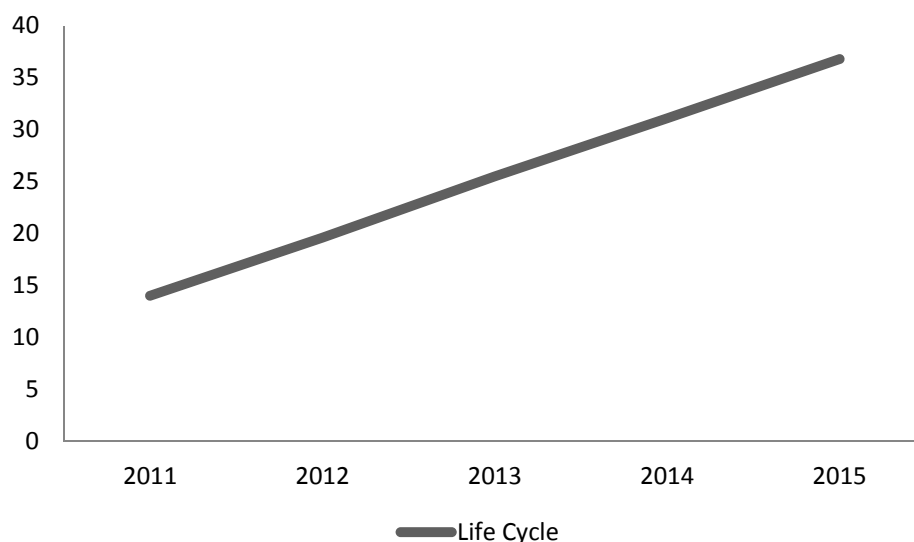


Figure 12: Data based on Defrancesco (2012), further calculation of 2015, author's own creation.



In figure 12 we can see that predicted path, which the market has followed over the past years. The author has used these predictions to calculate a trajectory for the curve in 2015, based on the previous four years of growth. What the graph illustrates is a continuous stage of growth. It is unclear when the market is going to mature, but is predicted to continue beyond 2017 (Marketline, 2014).

There are however developments within the market that could change the current trajectory. According to Henry (2011), disruptions in the competitive conditions in the market can drastically change the current stability of the market. What this means is, that all it would take is a competitor with a new service offering that changes the rules of the game for cloud vendors. Currently the market is following the trend of a punctuated equilibrium environment, which is typical for fast-moving tech-environments following a dominant standard (AWS), leading to a smooth value curve.

Krikos (2014) addresses this theory on environmental disruption within the cloud market. In an article on incremental and disruptive innovation, he notes that existing cloud vendors fail to develop services that disrupt the market. Most cloud vendors are incremental in their approach, reacting to trends, improving and adding to existing products. What Krikos believes is the best approach, is to develop a strategy that includes both types of innovative improvements. Creating a strategy mix of both incremental and disruptive innovation will be critical for long-term growth. They must, in other words, create a blue ocean and continue to improve that disruptive product to achieve long-term growth.

Understanding the product life cycle can be a great asset for a company wishing to see into the future. According to Kan and Ellis (2006), the profit potential in a growing market is good, however, this growth will start to taper off as the market matures. When the market matures competition will start to lower their prices, competing on price. Kan and Ellis (2006) mention that competing on price occurs when the market becomes saturated with competition. This is the final step before products are retracted from the market, and marketing costs are reduced heavily.



## **6.2 Porters Five Forces Analysis and Discussion for the global cloud IaaS market**

According to Porter (1998), factors, which negatively affect the potential for a company to be profitable are; increased competition, low entry barriers, suppliers and buyers with a high bargaining power and a large number of substitutes in the market/industry.

It is argued, that to be competitive in an unattractive market, a company must develop either a cost leadership or differentiation strategy, which “through an appropriate configuration and coordination of its value chain activities” (Stonehouse & Snowden, 2007), can achieve superior performance. The importance of the five forces analysis is made evident by the notion of Rachapila and Jansirisak (2013). They believe that entrepreneurs, who are not aware of the five forces, cannot react to rapidly adapt to changing forces in the competitive environment.

### **6.2.1 Bargaining power of suppliers**

Porter (1979) mentions that suppliers exerting power through increasing their prices or lowering the quality on their goods or services affect an industry's profits and competitiveness. GreenQloud do not own their own data centers, and are therefore more vulnerable to the power of suppliers, than the other vendors in this research. However, vendors, which have ownership of data centers, are still subject to supplier power from energy firms, which supply the power to run the data centers. Porter (1979) also mentions that supplier power exists when suppliers are more concentrated than the industry, which it sells to. Smaller vendors, such as GreenQloud, depend on infrastructure supplied by data centers, as wholesale leasing of data center suites is the only feasible option. It is costly to own a data center, when construction costs and staffing are considered (Berg, 2012). As the demand of cloud computing increases, and the number of suppliers who enter the IaaS market and general cloud industry increases, the demand for data centers likewise increases, increasing their concentration. With this demand an ever-increasing number of data centers are being built to supply this demand. Especially data centers promising to be directly or indirectly green (Neudorfer, 2013). Data center industry data indicates that data center leasing volume went up by 25% in 2013. However wholesale leasing experienced downward pricing pressure from buyers (Miller R. , 2014), most likely due to the influx of new data center companies, attracted by the growing cloud industry, which is growing parallel to the cloud industry.



It appears that the bargaining power of suppliers is moderately low. With datacenters having different levels of quality of service (QoS) (Fang, et al 2013), they must actively compete to attract big clients.

### **6.2.2 Bargaining power of buyers**

Porter (1979) mentions that when products or services are undifferentiated, buyers tend to be more price-sensitive. The main services in the IaaS market are virtual machines and storage services, and the need for vendors to be compatible with AWS products is causing the offerings in the market to become similar. According to the life cycle analysis of the market, it is still in a growth stage. Even though the market is still growing, sign of its maturation might be evident. IaaS cloud providers are starting to aggressively compete on price (Hu, 2014).

Porter (1979) also mentions that the buyer has power when the industry's product is of no importance, such as in terms of quality. What we know from the market overview, is that quality is an important factor in cloud computing. A cloud provider must provide a high level of security and reliability, in order to please the end-user.

The bargaining power of the buyer in the cloud market is moderate. There are many choices for the consumer; however, they are still looking for a good quality provider with a good level of security and reliability.

### **6.2.3 Competitive rivalry**

Feng, et al (2014) mentions that the market has become an oligopoly market, in which many small players are competing against one another. The past few years has seen the IaaS market grow at a huge rate, encouraging startups to enter the market, due to low entry barriers (Shubert, 2010). Porter (1979) mentions slow market growth as a cause of rivalry among existing competitors, however this is not the cause here. The rivalry in the IaaS market is most likely due to the lack of differentiation in services and a large number of equally positioned competitors. One theory which can explain AWS's market dominance is the network effect, in which a customers willingness to buy increases with other customers. These are all factors, which are happening in the current IaaS market, causing the competitive rivalry in the market to be intense.

The competitive rivalry in the market is considered high, due to the previously low entry barriers and following attraction to enter, and the lack of differentiation among the services in the market.



#### **6.2.4 Threat of new entrants in the market**

The IaaS market has seen many new players enter the market in the previous few years (Shubert, 2010; Feng, et al 2014; Fang, et al 2013). A maturing market is a common cause of barriers to entry, according to Porter (1979), as is economies of scale. Since the market is not maturing, the only factor effecting the market is AWS. AWS is the largest provider, with a market share of about 25% of the entire IaaS/PaaS market (Darrow, 2013), and current aggressively competeing on price, which AWS can afford to do with their massive customer base. However, further barriers, such as product differentiation and capital requirements needed to enter, are low. It is easy for a new provider to emulate and compete on the same specifications as most of the other players. Entry costs in the cloud market are also considered relatively low (Shubert, 2010).

The threat of new entrants appears to be moderate. AWSs dominance is creating entry barriers. However, a lack of product differentiation and no need for exstensive capital requirements causes the entry barriers to be lower.

#### **6.2.5 Threat of substitutes in the market**

A substitute product “performs the same or a similar function as an industry’s product by a different means ” (Porter M. E., 2008, s. 8). In the IaaS market a substitute product could be considered to be an external hard drive, or a service such as Google drive. However, an external hard drive lacks the scalability and can be easily damaged. Google drive is limited to creating, editing and storing documents, and has no other purpose. Also, the paradigm of the cloud market is constantly changing and evolving, incorporating many services, which used to be substitutes, into their operations. The public cloud can be considered a substitute product, which has been incorporated into the IaaS business model and offered as a hybrid cloud, connecting it with the public cloud.

Due to the factors above, the threat of substitution in the market is considered low.



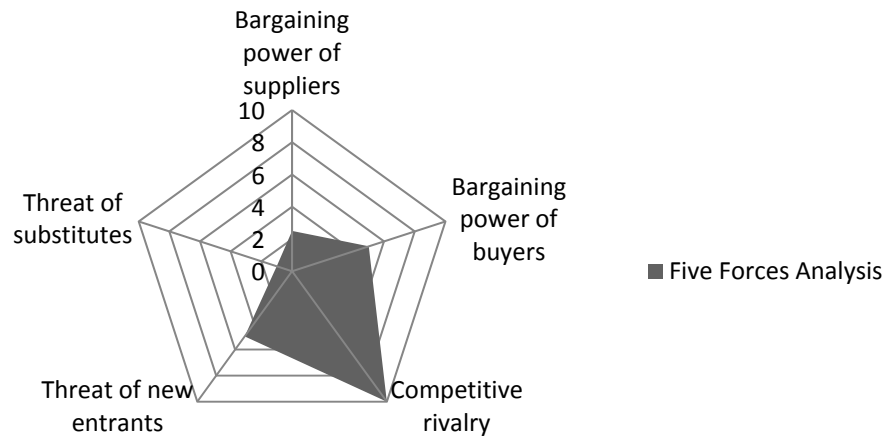


Figure 13: Five Forces Analysis of the Global IaaS Market, Author's Own Creation.

### 6.2.6 Conclusion

Competition in the IaaS market is intense, however, the market is still relatively attractive. With a good quality product, a focus on supplying a good level of security, and an attractive pricing, GreenQloud should be able to find opportunities to grow.

Following an assessment of the of the five forces in action in the cloud IaaS market, Porter (1979) suggests identifying a company's weaknesses and strengths, in order to formulate a strategy. A SWOT analysis will be used to gather this data.

## 6.3 SWOT analysis of GreenQloud

### Strengths

- Location – Iceland (Europe).
- Cultural similarities between both the U.S. and Europe.
- Access to cheap sustainable energy.
- Seen as a European vendor (better perceived security).
- Good reactive tendencies to the market.
- Environmental factor.

### Weaknesses

- Reactive rather than proactive approach.
- Latency to the west coast of the U.S.
- Fewer resources than larger U.S.-based vendors.



- Not competitive on price
- U.S. data center reduces their sustainability from 100% to 95%-98%
- U.S. data center has affected customer opinion on security.
- Increasing standardization of AWS products.
- Environmental factor – if few people care.

### **Opportunities**

- Demand for cloud computing is still growing for the time being.
- Focus on security.
- Increase customer value on the green factor.
- Differentiation through the green factor.
- Growing market

### **Threats**

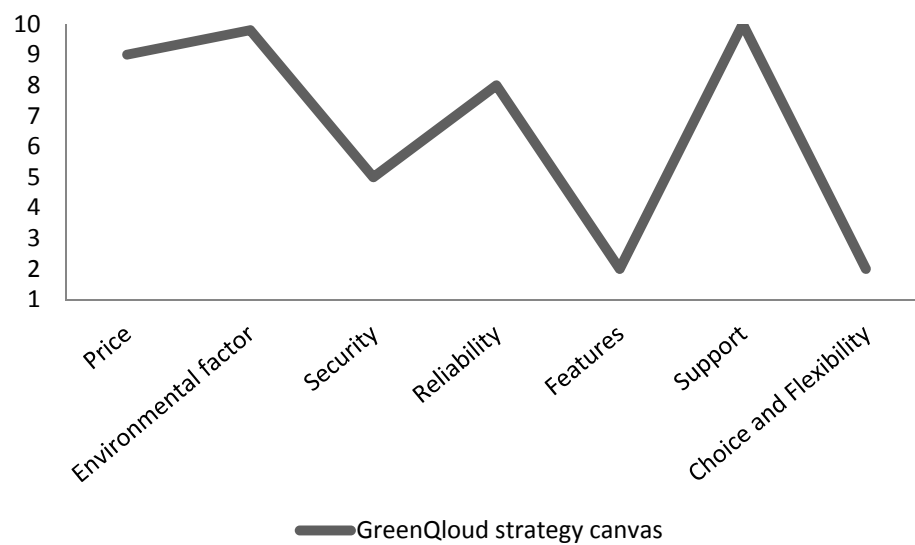
- Nordic vendors offering sustainable cloud computing (Fjord IT) (minimizing GreenQloud's differentiation factor).
- AWS increasing market dominance.
- Other vendors are taking steps to become more environmentally friendly (even those using offset credits).

## **6.4 GreenQloud's Strategy Canvas**

The external environment has been analyzed, as has GreenQloud's strengths and weaknesses. The next step in the process is to utilize a strategy canvas, to identify GreenQloud's current strategy and that of the competitors, which will aid in identifying a blue ocean strategy. The value drivers in the IaaS market were identified in the secondary data, as well as primary data from email correspondence with GreenQloud Europe division CEO. See appendix A. The environmental factor is not an important value to compete on in the market, but has been included due to being a major selling point of GreenQloud's.

The strategy canvas will be used to identify GreenQloud's, and the competitors, current level of value drivers, which will be compared with the gathered primary data from the three tiers of noncustomers. The value drivers are factors, which GreenQloud and other competitors compete on in the IaaS market.





**Figure 14: GreenQloud's Strategy Canvas, Author's Own Creation.**

Figure 14 illustrates GreenQloud's current level of offerings, compared with the competition. See appendix B for the full overview. GreenQloud offers a high level of support and is almost fully powered by sustainable energy, causing the offering to be high. However, security and reliability might not be high enough, to attract buyers. The five forces analysis identified a possible barrier to buyer attraction, which was the lack of differentiation among the markets products, and the need to increase the quality or lower the price.



#### 6.4.1 Looking across the three tiers of noncustomers

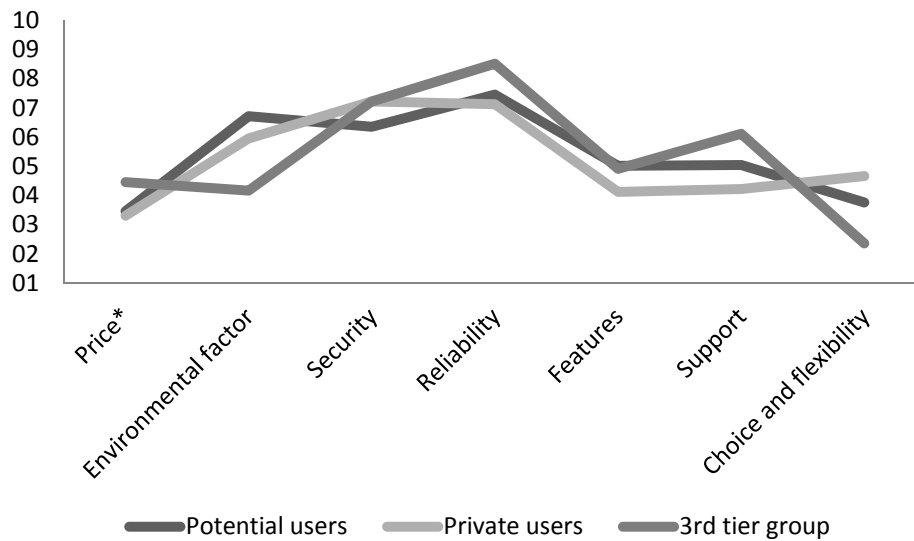


Figure 15: Three Tiers of Noncustomers Strategy Canvas, Author's Own Creation.

The three tiers of noncustomers in this research were composed of (1) current GreenQloud users, (2) people visiting the site (potential users), and (3) people from social networking sites, who might never have heard about GreenQloud. See the survey in appendix x.

All three groups of noncustomers have almost similar demands on what they expect from a cloud provider. (Note: Pricing<sup>2</sup> has been modified to fit the canvas).

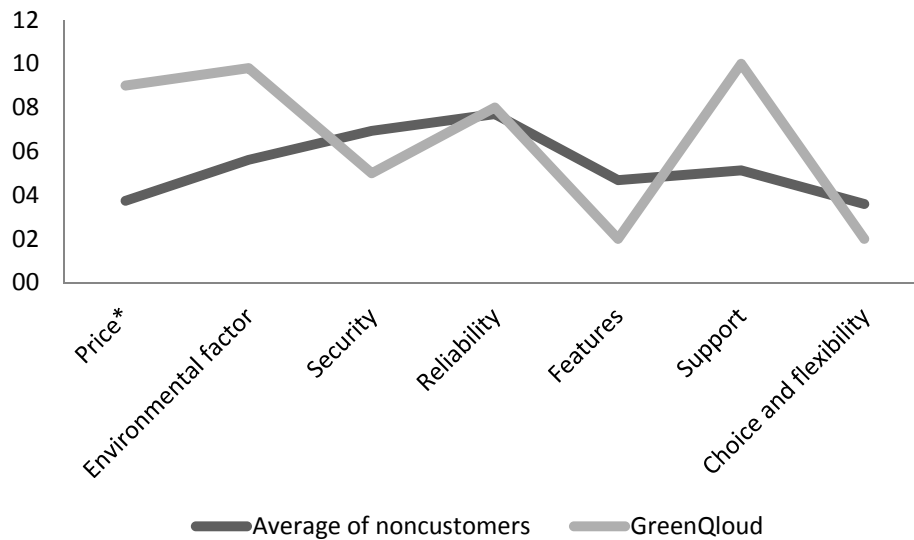
The value curve follows the secondary data on the demand for better security and reliability, and also the five forces analysis, which mentioned an increase in the demand for higher quality services in an oligopoly market. What is un-usual is the data from private users, indicating that the environmental factor is not higher on the value scale. Secondary data on consumers, who actively seek out and buy green products or services, indicate that they are willing to pay more for a product, if it is environmentally friendly (Papista & Krystallis, 2013). Primary data suggests that customers and potential users are price sensitive, valuing price over the sustainability aspect, contradicting the secondary data. This could potentially indicate that GreenQloud are

<sup>2</sup> Pricing data was reversed to represent pricing on a low to high scale.



either not focused enough on the customer segment who are willing to buy green products, or the value of the green element is not high enough.

Both strategy canvases can be combined to help identify factors, which need to be re-shuffled and created by the four actions framework.



**Figure 16: Strategy Canvas Featuring Noncustomers and GreenQloud, Author's Own Creation.**

Figure 16 illustrates the discrepancies between what customers want and what GreenQloud offers. These three groups of noncustomers are price sensitive, looking for a lower price than value. The strategy canvas shows that GreenQloud offers a high level of support and offers its customer a high level of green value, powered by sustainable sources, which is not necessarily valued.



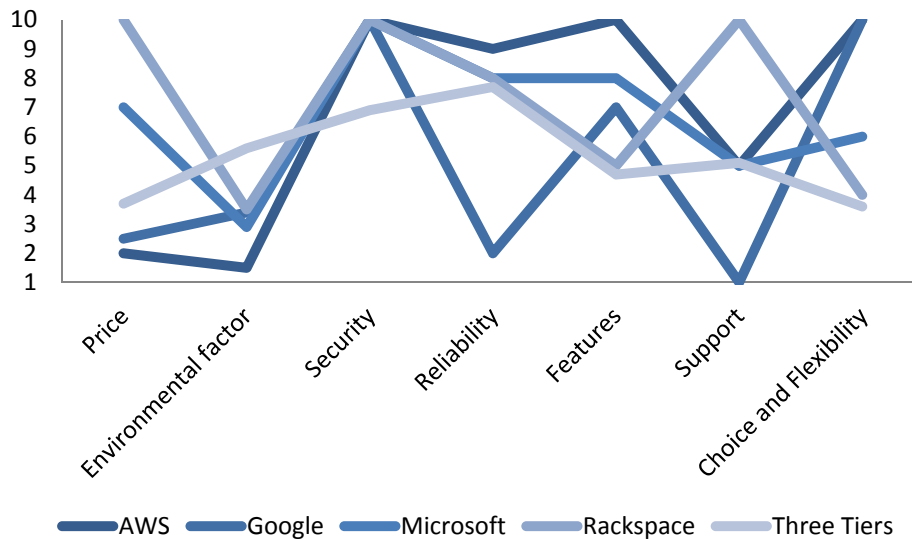


Figure 17: Strategy canvas including competitors and noncustomers' data, author's own creation.

The importance behind this research was to identify a blue ocean by analyzing the responses from the three tiers of noncustomers. As figure 17 illustrates, the IaaS market has competitors competing on price, value and both, creating value curves which don't follow a coherent strategy. The price leaders are large multinational companies, which are able to offer lower costs than pure cloud companies, such as GreenQloud and Rackspace, due to their reach into other industries. GreenQloud are unable to compete sustainably on price, due to their sole reliance on income through their cloud platform.

The four actions framework below will further help identify the possibility of a blue ocean in the IaaS market. By analyzing what must be raised, reduced, eliminated and created, the author can determine whether or not a blue ocean exists.

#### 6.4.2 The Four Actions Framework

According to Kim and Mauborgne (1997) the method of finding a blue ocean through buyer groups, is to find a commonality between the groups. Three of the main factors noncustomers thought were lacking from cloud providers can be seen below:

- **Ability to use new formats and standards**
- **Green Credentials**
- **Lower prices**



As the survey identifies, current customers consist of people in the IT industry, or in some way related to the IT sector (see appendix D and E). They view the ability to use the newest formats and standards an important factor in cloud computing.

Green credentials were a request from visitors to the site and from people surveyed over social media platforms. It identifies a need for consumers being guaranteed that what they are purchasing is indeed environmentally friendly, and that steps are taking to be as green as possible.

A lower price on services was pointed out as a factor, which buyers feel, is lacking. Other vendors are obviously experiencing the same feedback, which is likely contributing to the price competition in the market.

#### ***6.4.2.1 Create***

Data from the five forces analysis suggests that to attract buyers and break away from the increasing competition in the market, a provider must either lower their prices or differentiate. To increase the quality of GreenQloud's services, new standards and formats will be created to increase buyer value.

#### ***6.4.2.2 Eliminate***

The competitive rivalry in the market is high. Eliminating any factors, while still having a higher price than most of the bigger rivals (see appendix B), might negatively affect GreenQloud's competitiveness in the market. The best choice is not to eliminate any factors.

#### ***6.4.2.3 Reduce***

Pricing would be the logical choice to reduce, however, it must also be possible by the company. When Kim and Mauborgne (1999) explain value innovation, the notion of forgoing the original value-cost tradeoff must be fully understood. Value innovation does not imply lowering costs while increasing value. It implies that the cost must be accessible to the target customer, while being able to offer superior value. The author suggests that the pricing remain at the current GreenQloud level, while support, which is supplied, free of charge by the company is reduced.

#### ***6.4.2.4 Raise***

Reliability and security are shown to be the factors, which are most valued among the tiers of noncustomers. These are factors, which other competitors are aggressively

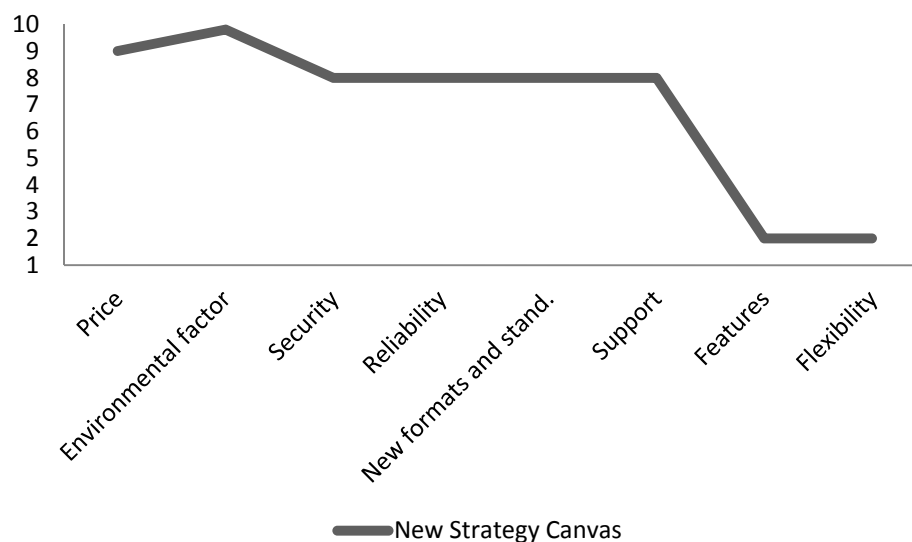


competing on, along with price. The author suggests that these two factors are raised to compete with the rest of the market.

#### 6.4.3 New Strategy Canvas

The strategy canvas identifies the only factor which none of the competitors satisfy is the environmental aspect. The author believes that by taking steps to increase customer value on this factor, GreenQloud can increase their competitive advantage in the market.

The environmental factor is the third highest value on the three tiers strategy canvas, but has not received enough first choice picks from the noncustomers' samples to score high. This indicates that none of the three noncustomer groups felt that the environmental factor was a major value driver, and the request for green credentials from two tier groups identified that GreenQloud must do more to further promote their commitment to sustainable cloud computing.



**Figure 18: GreenQloud's New Strategy Canvas, author's own creation.**

The logic behind the new strategy canvas in figure 18 is that it exceeds customer value expectations on the important aspects, such as security and reliability, and keeps a reasonable level of support, which was identified as a major factor in customer satisfaction, in a previous customer report (Storgaard, 2013). Ginsberg and Bloom (2004) mention that consumers tend to buy green products/services when attributes are equal. For a product/service to become successful it must match the same attributes as



the non-green providers in the IaaS market. The value curve in the strategy canvas has been positioned to match the competitors as close as possible on the most desired attributes. The green aspect, even though it wasn't perceived as the most important value driver among the surveyed noncustomers, it is still a vital part of GreenQloud's business model, and has the potential to attract a buyer group who highly value the sustainable factor, which can increase the company's competitive advantage if the correct customer is targeted. Features and choice and flexibility were considered the least important by the noncustomers, and have been lowered to increase value in more important areas. Kim and Mauborgne (2005a) mention that the concept behind the blue ocean strategy is to offer accessible prices, while driving the value for customers up. This means that increasing value across all factors and driving prices down is not a plausible strategy. A company must make compromises on its decisions in the four actions framework to make a realistic strategy.

## 6.5 Conclusion

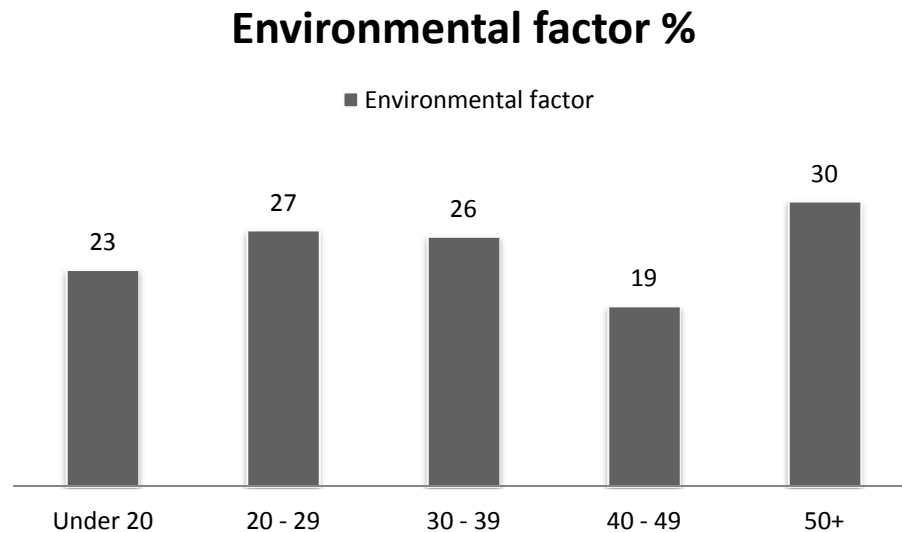
The author can conclude that the results did not lead to finding a blue ocean in the IaaS market. It is impossible to dramatically change GreenQloud's value curve, to make it different from the competitors, without compromising on value. However, the data has identified the need to improve GreenQloud's green value proposition to increase the attractiveness of the green brand. GreenQloud's competitive advantage exists in its green value to customers. Other competitors don't focus on this aspect, leaving it available for GreenQloud to actively pursue alone.

The five forces analysis, supplemented by the SWOT and life cycle analysis, enabled the primary data to be further analyzed beyond what the strategy canvas offered. The strategy canvas provided an overview of the competition in the market, and a basic view of the strategies applied by the competitors. Without the environmental analysis, a new value curve would have been difficult to create.

## 6.6 GreenQloud's Green Consumer



Ginsberg and Bloom (2004) suggest studying survey data to gather the size of the green market segment. The company's position as either a defensive green, lean green, shaded green, or extreme green, depends on its ability to differentiate with the green factor, and the estimated size of the green customer segment.



**Figure 19: Environmental factor by age group, author's own creation.**

The literature on green consumers is contradictive. Some literature suggests wealthy, well-educated young women (Diamantopoulos, et al 2003). Further literature suggests no specific demographic (Rokka & Uusitalo, 2008), while a third mentions the consumer as being on low salaries with little educational background, and male (Sandahl & Robertson, 1989). One study even suggests looking towards developing countries, as they are said to be more eager to buy green (Tiwari, et al 2011). Unfortunately GreenQloud's reach to developing countries is minimal, and the data from the handful of responses was not sufficient to give any insight.

Figure 19, illustrates the voters who chose GreenQloud based on the environmental aspect. Data shows that each age group has as similar number of respondents who have chosen GreenQloud based on the environmental aspect. There is therefor no significant difference between young and old users, on the willingness to use a cloud provider based on its "greenness".

Figure 20 represents the gender division of all activity on the GreenQloud website. Data suggests that the majority of visitors are male.



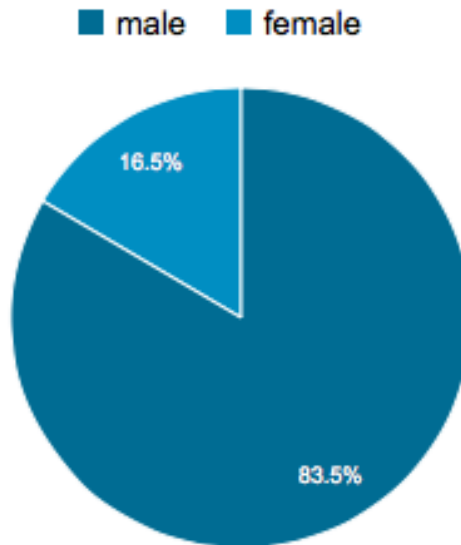


Figure 20: Gender division of visitors on website, accessed from Google Analytics.

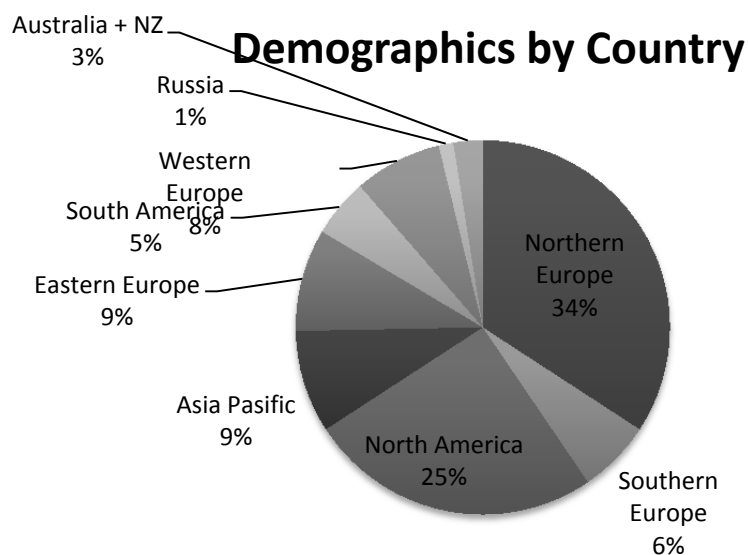


Figure 21: Country Demographics, author's own creation.

Primary data, seen in figure 21, suggests that the largest market segments are in northern Europe and North America. Primary data on the occupation of the private users suggests that there is almost a 50%-50% division of students and people under employment. The majority of the employed work in the IT sector, and are 20 – 29 years old. A large group also consists of teenagers.

Based on the collection on primary data, the average GreenQloud consumer is young, either a student or in IT, male, lives in northern Europe or North America, and based on data from the strategy canvas, not highly environmentally motivated and price sensitive.



The green customer segment is estimated to be small, based on the gathered data. GreenQloud's uniqueness among the competitors, on its environmental factor, and the estimated market size, means that the company is considered a shaded green company. It is aware of the competitive advantage gained through the environmental factor, but tends to compete on the same attributes as the other competitors.

Once the consumer has been identified, Ginsberg and Bloom (2004) suggest that a company ask itself questions, such as, are there consumers with little environmental interest which the company can serve profitably? And does the company have the resources to go green?

Figure 22 shows the company's profits from the previous three years. The current customer base, which values price over the environmental factor, is not sufficiently profitable for the company.

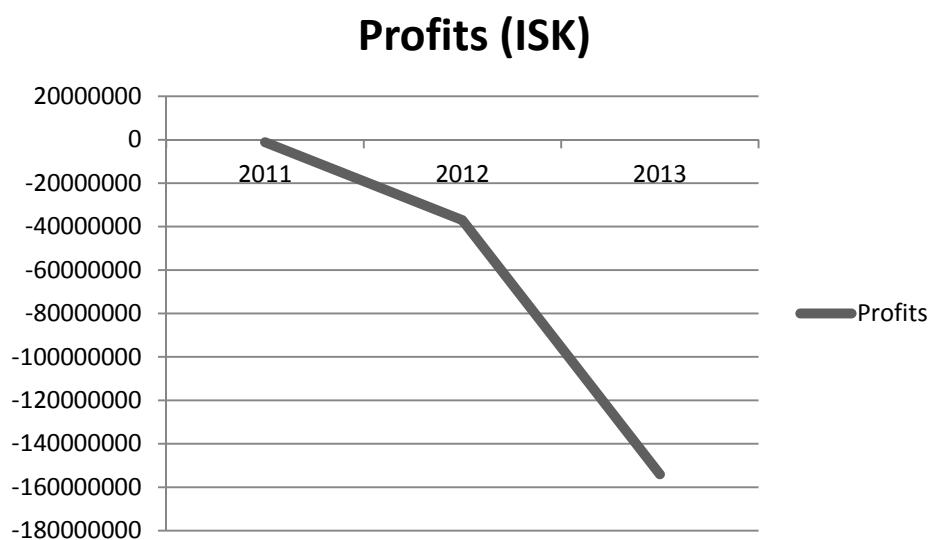


Figure 22: Financial overview of GreenQloud, 2011 - 2013, (Source: GreenQloud's CFO)

However, due to the inconclusiveness of the literature on the definition of a green consumer, it is difficult to conclude whether or not GreenQloud are targeting the correct demographic. Survey data suggest that there is no specific age group that seeks the environmental factor, and locational data and gender data doesn't offer any insights, due to the inconclusiveness of literature on the green consumer. One clue however, that GreenQloud are not targeting the green consumer, is that the majority of respondents value a low price, and chose pricing as the main factor in using GreenQloud (see



appendix D), suggesting that they are price sensitive rather than environmentally motivated.

## 6.7 Research Questions

In this chapter the research questions will be answered, based on primary and secondary data. Both sources of data will be combined with the answers where it is appropriate.

*Does looking across the layers of noncustomers identify uncontested market space for GreenQloud?*

According to Kim and Mauborgne (1999; 2005), there are six paths in which the possibility of a blue ocean exists. The path chosen by the author was to look at buyer groups, as data was easily accessible and the blue ocean strategy could be based on data, which had significant weight. Kim and Mauborgne (2009) suggest that a company use the BOS framework, to analyze each path individually, to determine which is the most likely to find a blue ocean. A company must analyze each path, going through each one until a plausible path is found. If none can be found, the blue ocean strategy cannot be applied to the company (Dusseldorf & Wubben, 2012).

In the case of GreenQloud, the author only focused on one path, looking through the buyer group. The three tiers of noncustomers were used to identify three groups to analyze. The five forces analysis, which was supplemented by a life cycle and SWOT analysis, was used to include a deeper analysis of the external environment, as the strategy canvas does not supply this.

Based on the initial findings from the five forces analysis, it was evident that certain features are competed on in the market. These factors are price, reliability and security. The author further discovered, through the strategy canvas, that some companies are competing on value (differentiation), price (cost strategy) or like AWS, on both (cost and differentiation strategy). This leaves GreenQloud with few opportunities against bigger and more successful vendors, as a blue ocean is represented by a company having a different value curve than that of the competition (Kim & Mauborgne, 2005a). The only options left for GreenQloud, to create a different looking value curve is to lower value and raise costs, which is not a good strategy. The additional suggestions



from the noncustomers didn't open any further options for a blue ocean strategy, as the suggestions of lowering prices are not possible for GreenQloud, and applying new standards and features can be easily imitated by other vendors. The only request, which held any weight, was to include green credentials, which showed that customers valuing the green factor felt that green cloud vendors, such as GreenQloud, must increase the perceived green value of the brand.

The author therefore concludes that a blue ocean, and therefore uncontested market space, cannot be found by looking through the buyer group and noncustomers. However, an opportunity has been identified, through the strategy canvas and customer recommendations for green certificates, to enhance the buyer value on the green aspect, through proper target customer identification and analyzing the motivators and barriers towards GreenQloud's green customer value creation. The strategy canvas has identified a need for a new green value proposition.

*Does the strategy canvas indicate that GreenQloud is achieving competitive advantage on the environmental front? And is GreenQloud targeting the "green" consumer?*

GreenQloud's strategy canvas illustrates that the company is offering its customers a high level of value on the environmental front. However, primary data from customers indicate that they don't value the environmental factor as much as the price and quality of the service. Due to the customers' preferences, the green aspect is not gaining GreenQloud competitive advantage in the cloud IaaS market. However, as discovered above, the customers who are motivated to use green cloud services feel that the perceived value must be raised. Differentiating on this aspect, by raising the perceived value of the brand might help GreenQloud to attract the buyers who are more willing to buy green, and the buyer group who can go either way.

Literature on the green consumer is contradictory and cannot be applied to GreenQloud's customer base. The strategy canvas however, has identified a discrepancy between the value GreenQloud offers on the environmental front, and the desired value. Primary data suggests that the typical GreenQloud consumer is more price-sensitive than concerned with the brand being green.



*What similarities are there between structuralist strategy and restructuralist strategy?*

Kim and Mauborgne's (2005a) restructuralist strategy differs from structuralist strategy on its unit of analysis, which is the strategic move. Porter's (1979) frameworks however, are based around the industry being the unit of analysis. Reconstructuralist strategy is based on structuralist strategy, but redefines it by encouraging managers to look across accepted boundaries. Business model innovation closely resembles reconstructuralist strategy, but follows the rules of structuralist strategy to find uncontested market space.

The main concept behind reconstructuralist strategy is value innovation, which challenges the original theory on the value-cost trade off. Kim and Mauborgne believe that combining both cost leadership and differentiation strategies is the key to creating new market space. However, this theory has been explored by Miller (1992) and Mintzberg, et al (1995), in which they conclude that many firms pursue this type of hybrid strategy, and many do so successfully.

It appears that the value innovation theory is not just confined to reconstructuralist theory, but exists in structuralist theory as the hybrid strategy. However, where reconstructuralist strategy differs, is with its many frameworks, which are claimed to aid in identifying and creating uncontested market space.

*What limitations are there to the reconstructuralist strategy frameworks, in the pursuit of uncontested market space for GreenQloud?*

The strategy canvas is claimed to be a great tool to view a market or industry in its present and future form (Kim & Mauborgne, 2005a). The author found the visual aspect useful in gaining an overview of the competitive market, and the strategies each competitor pursued. However, frameworks are missing which analyze the internal and external environments in depth, forcing the strategist to use a five forces analysis. Also, the strategist must possess a vast insight into the business, competitive environment and competitors, in order to evaluate which of the six paths will identify a new market



space.

*What does the competitive environment look like in the IaaS market?*

The IaaS cloud market is seeing a lot of competition from larger and stronger competitors. The life cycle indicates that the growth of the market is continuing, which implies that other barriers, such as undifferentiated products/services and is causing the competitive rivalry currently witnessed in the IaaS market.



## **Part VII: Findings and Recommendations**

Both primary and secondary data has been collected, and research questions have been answered, resulting in the following findings by the author. The findings included in this chapter are assumptions, based on reviewed literature and the results. This chapter will explain the findings on the search for new market space, and recommend further structuralist-based strategies, based on the findings from the results chapter.

Primary and secondary data showed a market, which is highly competitive, caused by undifferentiated products and service adoption barriers, with vendors applying all three types of competitive strategies to gain an advantage. GreenQloud are trying to keep up in the market, lowering their costs, increasing their quality and adapting their cloud to further attract new buyer groups, such as the emerging enterprise segment, but are still finding it hard to be competitive.

The objective behind this research was to identify a new area of growth for the case company, by using the tools from the blue ocean strategy and five forces analysis. The results did not indicate new market space by looking through the three tiers of noncustomers, but it did indicate a discrepancy in what GreenQloud are offering, in terms of environmental friendliness, and the desired value of this factor among the three surveyed groups. The value curve further indicated that other vendors are not focusing on this aspect as highly as GreenQloud, and are offering less value on this factor than the surveyed groups wanted. Based on this insight, the author has identified increasing the perceived value of the green element, as a valid differentiation strategy for the case company. The author believes that more value has to be added to attract three of the groups of green consumers, described by Ginsberg and Bloom (2004). The first group is highly likely to buy green products/services. The second group is more willing than the average consumer to buy green. The third group will buy green if they are appropriately appealed to. The further two groups are uninterested in green products, and won't use GreenQloud unless value is given elsewhere.

The first step, which the author recommends that GreenQloud must take to raise the perceived value, is to understand their customers. Further research must be conducted to identify the green buyer specific to the cloud industry. The literature was not able to



confirm the identity of a buyer group that might be more likely to buy green services, and noted that environmental movements and legislation in individual countries had an effect on the socio-demographic makeup of green consumers, likely making the green consumer different in each location. Without conclusive literature on the green consumer, the primary data could not be sufficiently analyzed and compared, to gather whether or not the environmentally active consumer is part of GreenQloud's customer base. However, Primary data did identify a higher value towards pricing, than to the environmental aspect, indicating a need to further investigate the green consumer of the IaaS market.

The second recommended step is to identify the motivators and barriers, which play against each other, influencing the behavior pattern of potential buyers. Holbrook's (2006) concept is useful for understanding the different types of value given from buying green products/services. Holbrook identified value as consisting of two dimensions, creating four types of value: economic, social, hedonic and altruistic. With the secondary data and the data from the results section, these values can be applied to GreenQloud.

Economic value refers to the value one receives from buying a product, which saves the buyer on future expenses. Also a high quality product can provide this value. Secondary data mentions that cloud computing offers long term cost savings by replacing in-house infrastructure costs. Also, with GreenQloud's new value curve, increasing the quality of the service by increasing security and reliability will increase the economic value.

A person receives social value from purchasing a product/service, which evokes a response from other people. On the environmental front, this value will be high with buyers that run eco-friendly businesses, or are highly environmentally motivated, and who like to promote their eco-friendliness. Primary data indicates that the majority of GreenQloud customers, and visitors to the site consist of people from an IT background or university, who most likely are not environmentally orientated.

Hedonic value is the value received from finding pleasure in purchasing a brand, or finds it aesthetically pleasing. GreenQloud mentioned that their console interface was "like the Apple of the IaaS world". Focusing on creating an interface, which is both simplistic and aesthetically pleasing, will increase this type of value.



People receive altruistic value from understanding how their purchasing behavior affects others. The customer request for green credentials highlights a need to understand how GreenQloud are contributing to the lowering of carbon emissions in the ICT industry. Offering this information on the website will provide people with a better understanding of their own contribution to the “green” cause.

Papista and Krystallis’s (2013) framework on the relationship between motivator and barriers, mentions price, effort, evaluation, time and performance, as barriers that act against the above mentioned motivators.

Luchs, et al (2010) and Ginsberg and Bloom (2004) mention that often, green brands are considered to have a lesser degree of performance than non-green brands. This factor has been acknowledged during the strategy canvas process, and the new value curve has been created to increase the value drivers, which increase the quality of the service. This one issue has been solved, however, GreenQloud must further research ways of limiting to other barriers, making finding their services easier and lowering the evaluation barrier by increasing the altruistic value.

The author suggests that what is learnt from the barriers and motivators be applied to a green marketing strategy which includes the appropriate marketing mix, or four p’s, to create a unique differentiation strategy. Many authors have researched the green marketing mix (Tiwari, et al 2011; Peattie, 1999; Singh S. , 2004; De Bakker & Frank, 2009), and conclude that one must fully understand their customer, practice what one preaches and find the right time and place of promotion. Primary data indicated that potential customers require more proof of GreenQloud’s “greenness”, pointing towards buyer education and a more focused promotion as the first step. The life cycle analysis indicates that marketing activities are at their most important during the products growth cycle.



## **Part VIII: Final Remarks**

While the author was formulating the problem for this research, a gap in literature on strategies applied by IaaS cloud providers was discovered. However, secondary data was abundant for gaining a good insight into the current market and the competitors. The author was able to apply secondary and primary data to literature on blue ocean strategy, to decrease this gap, identifying what is competed on in the market, and which type of general strategies are applied by the competitors. Combined with primary data, the author was able to attempt to create a blue ocean strategy, which turned out to be impossible with the chosen path. The results of the primary research objective identified a further path, which the company could take. For this path, there was no gap in literature. The author was able to find much literature on methods of differentiation with a green brand. However, the definite literature on green consumers was lacking, making the identification of GreenQloud's green consumer troublesome.



## References

- 10toptenReviews. (n.d.). *Windows Azure*. Retrieved April 8, 2014, from 10toptenReviews: <http://cloud-hosting-review.toptenreviews.com/windows-azure-review.html>
- 451 Research, Uptimeinstitute, Yankee group. (2014). *Hosting and Cloud Study 2014: Hosting and Cloud Go Mainstream - Survey Results*. The 451 Group. The 451 Group.
- Ajzen, I. (1991). The Theory of Planned Behavior. *Organizational Behavior and Human Decision Processes*, 50, 179 - 211.
- Ajzen, I. (1988). *Attitudes, Personality and Behavior*. Chicargi, IL: Dorsey.
- Alfred, A. M. (2011). *Management Strategy: Achieving Sustained Competitive Advantage* (2nd ed.). McGraw-Hill/Irwin.
- Al-Roomi, M., Al-Ebrahim, S., Buqrais, S., & Ahmad, I. (2013). Cloud Computing Pricing Models: A Survey. *International Journal of Grid and Distributes Computing*, 6 (5), 93-106.
- Amazon Web Services. (n.d.). *Amazon Web Services Free Usage Tier*. Retrieved March 25, 2014, from Amazon Web Services: Free Usage Tier: <http://aws.amazon.com/free/>
- Amazon Web Services. (2014). *AWS Products and Solutions*. Retrieved March 10, 2014, from Amazon Web Services: [http://aws.amazon.com/free/?sc\\_ichannel=ha&sc\\_ipage=homepage&sc\\_iplace=hero2&sc\\_isement=nc&sc\\_icampaigntype=free\\_tier&sc\\_icampaign=ha\\_en\\_freeTier](http://aws.amazon.com/free/?sc_ichannel=ha&sc_ipage=homepage&sc_iplace=hero2&sc_isement=nc&sc_icampaigntype=free_tier&sc_icampaign=ha_en_freeTier)
- Amit, R., & Zott, C. (2012). Creating Value Through Business Model Innovation. *Sloan Management Review*, 53 (3), 40 - 50.
- Anderson, K. (2012, April 4). *The Inconvenient Truth of Carbon Offsets*. Retrieved April 3, 2014, from Nature Website: <http://www.nature.com/news/the-inconvenient-truth-of-carbon-offsets-1.10373>
- Ansoff, H. I. (1965). *Corporate Strategy*. McGraw-Hill Inc.
- Ansoff, H. I. (1991). Critique of Henry Mintzberg's The Design School: Reconsidering the Basic Premises of Strategic Management. *Strategic Management Journal*, 12 (6), 449-61.
- AWS. (n.d.). *Amazon Elastic Compute Cloud*. Retrieved April 8, 2014, from AWS Documentation: <http://docs.aws.amazon.com/AWSEC2/latest/UserGuide/using-regions-availability-zones.html>
- Ajzen, I. (2002). Percieved Behavioral Controll, Self Efficiency, Locus of Control, and the Theory of Planned Behavior. *Journal of Applied Social Phsycology*, 32 (4), 665 - 683.
- Bacani, C. (2009, June 25). *Asia Challenges the U.S. for Green Tech Supremacy*. Retrieved May 2, 2014, from Time: World: <http://content.time.com/time/world/article/0,8599,1906704,00.html>



- Barney, J. (1991). Firm Resources and Sustained Competitive Advantage. *Journal of Management* , 17 (1), 99 - 120.
- Berg, P. (2012). Build or Buy Your Data Center? Same Dilemma, New Facts. *The Data Center Journal* , 22, 11 - 16.
- Bloomberg. (2014, March 24). *Company Overview of Dropbox, Inc.* Retrieved March 24, 2014, from Bloomberg Businessweek:  
<http://investing.businessweek.com/research/stocks/private/snapshot.asp?privcapId=49093148>
- Blumberg, B., Cooper, D. R., & Shindler, P. S. (2011). *Business Research Method*. Berkshire: McGraw-Hill Education.
- Bourne, J. (2014, March 27). *Amazon Responds to Google: You've Slashed Your Prices - Now here's Ours.* Retrieved March 29, 2014, from Cloudcomputing News: Cloudtech:  
<http://www.cloudcomputing-news.net/news/2014/mar/27/amazon-responds-google-youve-slashed-your-prices-now-heres-ours/>
- Bourne, J. (2014, March 26). *Google Slashes Prices for Cloud Platform, Throws Down Gauntlet To Amazon.* Retrieved March 29, 2014, from Cloudcomputing News; Cloudtech:  
<http://www.cloudcomputing-news.net/news/2014/mar/26/google-slashes-prices-cloud-platform-throws-down-gauntlet-amazon/>
- Broadgroup. (2013). *China Cloud: Challenges and Opportunities in China's Cloud Deployment*. Consulting. Broadgroup.
- BSA: The Software Alliance. (2013). *2013 BSA Global Cloud Computing Score Card: A Clear Path to Progress*. The Software Alliance.
- Buisson, B., & Silberzahn, P. (2010). Blue Ocean or Fast Second Innovation? A Breakthrough Model to Explain Successful Market Domination. *International Journal of Innovation Management* , 14 (3), 359 - 378.
- Burke, A., Stel, A. V., & Thurik, R. (2010, May). Blue Ocean vs. Five Forces. *Harvard Buisness Review* .
- Burns, C. (2013, June 3). *Stack Wars: OpenStack v. CloudStack v. EUcalyptus.* Retrieved March 10, 2014, from Networkworld: Cloud:  
<http://www.networkworld.com/supp/2013/enterprise3/060313-ecs3-open-stack-269899.html>
- Burns, P. (2009, August 30). *Defining the Virtual Private Cloud.* Retrieved April 10, 2014, from Neonvise: Paul Burns's Blog: <http://www.neovise.com/defining-virtual-private-cloud-vpc#>
- Business Standard. (2014, March 27). *IBM eyes India Market for its Cloud Services.* Retrieved April 26, 2014, from Business Standard: Companies, News: [http://www.business-standard.com/article/companies/ibm-eyes-india-market-for-its-cloud-services-114032700841\\_1.html](http://www.business-standard.com/article/companies/ibm-eyes-india-market-for-its-cloud-services-114032700841_1.html)



- Cisco Systems. (2013). *Enterprises Seek The Benefits Of Hybrid Cloud, And Work To Overcome The Challenges*. Cisco Systems.
- Cloud Security Alliance & ISACA. (2012). *Cloud Computing Market Maturity*. IL: ISACA.
- Cloudreviews. (n.d.). *Cloud reviews*. Retrieved April 7, 2014, from Cloudreviews.com: <http://www.cloudreviews.com>
- Coddington, W. (1993). *Environmental Marketing*. New York: McGraw-Hill.
- Cook, G., & Horn, J. V. (2011, April). Greenpeace: How Dirty is Your Data. Retrieved January 28, 2014, from <http://www.greenpeace.org/international/Global/international/publications/climate/2011/Coal%20IT/dirty-data-report-greenpeace.pdf>
- Cook, G., Dowdall, T., Pomerantz, D., & Wang, Y. (2014). *Clicking Clean: How Companies are Creating the Green Internet*. Washington: Greenpeace Inc.
- Coursey, D. (2014, March 25). *Is It Too Late For Cisco In The Cloud*. Retrieved March 25, 2014, from SiliconANGLE: <http://ht.ly/uWI7j>
- Ctera. (2014, March 26). *Survey Finds 63% Prefer Private Cloud Storage Solutions Over SaaS Alternatives*. Retrieved April 2, 2014, from Ctera: News & Events: <http://www.ctera.com/company/news-and-events/press-releases/item/251-survey-finds-63percent-prefer-private-cloud-storage-solutions-over-saas-alternatives>
- D'Aveni, R. (1991). Strategic Supremacy through disruption and dominance. *Sloan Management Review*, 40 (3), 127-35.
- Darrow, B. (2014, March 24). *Bad Timing: Nasdaq reconsiders AWS-Based FinQloud Service*. Retrieved March 24, 2014, from Gigaom: Cloud: <http://gigaom.com/2014/03/24/bad-timing-nasdaq-reconsiders-aws-based-finqloud-service/>
- Darrow, B. (2013, December 18). *It's Official: China is the Wild Wild West of Cloud Computing*. Retrieved April 24, 2014, from Gigaom: Cloud Computing: <http://gigaom.com/2013/12/18/its-official-china-is-the-wild-wild-west-of-cloud-computing/>
- Darrow, B. (2013, May 29). *Killer Cloud: Report Says Amazon Web Services Threatens All IT Incumbents*. Retrieved March 11, 2014, from Gigaom: Cloud Computing: <http://gigaom.com/2013/05/29/killer-cloud-report-says-amazon-web-services-threatens-all-it-incumbents/>
- Darrow, B. (2014, March 16). *Microsoft and Oracle solidify cloud coexistence as Amazon's Cloud Turns 8*. Retrieved March 24, 2014, from Gigaom: Cloud: <http://gigaom.com/2014/03/16/microsoft-and-oracle-solidify-cloud-coexistence-as-aws-turns-8/>
- Darrow, B. (2014, March 13). *Once More With Feeling: As Google Drive Slashes Prices, How Low Can Storage Prices Go?* Retrieved March 21, 2014, from Gigaom: Cloud:



- <http://gigaom.com/2014/03/13/as-google-drive-slices-prices-we-again-ask-how-low-can-storage-go/>
- Darrow, B. (2013, May 30). *Surprised? Cloud Vendors Bring in \$2B in First Quarter*. Retrieved March 21, 2014, from Gigaom: Cloud: <http://gigaom.com/2013/05/30/surprised-cloud-providers-bring-in-2b-in-first-quarter/>
- Darrow, B. (2014, March 6). *With Tweaked Enterprise Partner Programs, Google's Looking More Like Microsoft Everyday*. Retrieved March 21, 2014, from Gigaom: Cloud: <http://gigaom.com/2014/03/06/googles-looking-more-like-microsoft-every-day/>
- D'Aveni, R. (1994). *Hypercompetition: Managing the Dynamics of Strategic Maneuvering*. New York: Free Press.
- De Bakker, & Frank, G. (2009). Corporate Culture and Environmental Practice: Making Change at a High-Technology Manufacturer. *Organization and Environment* , 22 (2).
- Defrancesco, R. (2012, April 4). *A Cloud-Computing Forecast*. Retrieved March 7, 2014, from <http://research.gigaom.com/report/a-cloud-computing-market-forecast/moving-to-the-cloud/>
- Dhalla, N., & Yuspeh, S. (1976). *Forget the Product Life Cycle*. Harvard Business Review. Harvard Business Review.
- Diallo, A. (2014, February 11). *FIDO Alliance Opens its Security Standards to the Public*. Retrieved April 28, 2014, from Forbes: Tech: <http://www.forbes.com/sites/amadoudiallo/2014/02/11/fido-alliance-opens-its-security-standards-to-the-public/>
- Diamantopoulos, A., Schlegelmilch, B. B., Sinkovics, R. R., & Bohlen, G. M. (2003). Can Socio-Demographics Still Play a Role in Profiling New Consumers? A Review of the Evidence and an Empirical Investigation. *Journal of Business Research* , 56, 465 - 480.
- Dropbox. (n.d.). *Choose your dropbox plan*. Retrieved March 25, 2014, from Dropbox: Pricing: <https://www.dropbox.com/pricing>
- Dusseldorf, S., & Wubben, E. (2012). Bringing Blue Ocean Strategy to FMCG Markets. *International Journal on Food Systems Dynamics* , 105 - 118.
- Fang, W., Zhou, Q., An, Y., Li, Y., & Zang, H. (2013). Cost-Aware Workload Dispatching and Server Provisioning for Distributed Cloud data Centers. *International Journal of Grid and Distributed Computing* , 6 (5), 51 - 60.
- Fee, J. (2013, August 26). *The beginners Guide to The Cloud*. Retrieved April 9, 2014, from Mashable: Tech: <http://mashable.com/2013/08/26/what-is-the-cloud/>
- Feng, Y., Li, B., & Li, B. (2014). Price Competition in an Oligopoly Market with Multiple IaaS Cloud Providers. *The IEEE Transactions on Computers* , 63 (1), 59 - 73.



- FileCloud. (2014, February 8). *A Game of Stacks: OpenStack v. CloudStack*. Retrieved March 10, 2014, from FileCud: Blog: [http://www.getfilecloud.com/blog/2014/02/a-game-of-stacks-openstack-vs-cloudstack/#.Ux2uefl\\_uO6](http://www.getfilecloud.com/blog/2014/02/a-game-of-stacks-openstack-vs-cloudstack/#.Ux2uefl_uO6)
- Fisk, G. (1973). Criteria for a Theory of Environmental Consumption. *Journal of Marketing* , 37, 24 - 31.
- Florentine, S., & Olavsrud, T. (2013, December 30). *2014 Forecast for Cloud Computing: CIO*. Retrieved January 22, 2014, from CIO Web site: [http://www.cio.com/article/745155/2014\\_Forecast\\_for\\_Cloud\\_Computing?page=2&taxonomyId=3024](http://www.cio.com/article/745155/2014_Forecast_for_Cloud_Computing?page=2&taxonomyId=3024)
- Foley, M. J. (2010, March 26). *Where is the World are Microsoft's Datacenters?* Retrieved April 8, 2014, from ZDNet: <http://www.zdnet.com/blog/microsoft/where-in-the-world-are-microsofts-datacenters/5700>
- Furtht, B., & Escalante, A. (2010). *Handbook of Cloud Computing*. New York: Springer Science+Business Media.
- Gartner. (2012, August 20). *Forecast Overview: Public Cloud Services, Worldwide, 2001-2016, 2Q12 Update*. Retrieved April 28, 2014, from Gartner: Content: [http://www.cloudpeople.it/wp-content/uploads/forecast\\_overview\\_public\\_clo\\_234817.pdf](http://www.cloudpeople.it/wp-content/uploads/forecast_overview_public_clo_234817.pdf)
- Gartner. (2014). *Gartner Says Indian Public Cloud Market On Pace to Total \$550 Million in 2014*. Mumbai: Gartner.
- Gartner. (n.d.). *Infrastructure as a Service (IaaS)*. Retrieved April 9, 2014, from Gartner: IT Glossary: <http://www.gartner.com/it-glossary/infrastructure-as-a-service-iaas>
- Gartner. (2013, February 28). *Press Release: Gartner*. Retrieved January 23, 2014, from Gartner Web site: <http://www.gartner.com/newsroom/id/2352816>
- Ginsberg, M. J., & Bloom, P. N. (2004). Choosing the Right Green Marketing Strategy. *MIT Sloan Management Review* , 46 (1), 77 - 84.
- Gonzales, N., Miers, C., Redígolo, F., Simplício, M., Carvalho, T., Naslund, M., et al. (2012). A quantative analysis of current security concerns and solutions for cloud computing. *Journal of Cloud Computing* , 1 (11).
- Goodrich, R. (2013, August 1). *What is IaaS (Infrastructure as a Service)?* Retrieved April 9, 2014, from Business News daily: Trending: <http://www.businessnewsdaily.com/4862-what-is-iaas.html>
- Google Cloud Platform. (n.d.). *Google Developers*. Retrieved March 25, 2014, from Google Cloud Platform: Try Now: <https://cloud.google.com>
- Google. (n.d.). *Frequently Asked Questions: What are IPv4 and IPv6*. Retrieved April 28, 2014, from Google: IPv6: <https://www.google.com/intl/en/ipv6/faq.html>



- Google. (n.d.). *Storage Plan Pricing*. Retrieved March 25, 2014, from Google Drive: Help: <https://support.google.com/drive/answer/2375123?hl=en>
- Google, Inc. (n.d.). *Products*. Retrieved March 24, 2014, from Google homepage: <https://cloud.google.com/products/>
- Google, Inc. (n.d.). *Data Center Locations*. Retrieved April 7, 2014, from Google: About: <http://www.google.com/about/datacenters/inside/locations/index.html>
- Grantham, L. (2014). *The Validity of the Product Life Cycle in the High Tech Industry*. ProQuest.
- Greenleaf, G., & Park, W.-i. (2012). Korea's New Act: Asia's toughest data Privacy Law. *Privacy laws and Business International Report* (117), 1 - 7.
- Greenpeace. (2012). *How Clean Is Your Cloud?* Greenpeace. Greenpeace.
- Greenqloud. (2013). Awards - Ready Made Questions. Reykjavik.
- GreenQloud. (2013). *Categories: Tech Trailblazers*. Retrieved January 20, 2014, from Tech Trailblazers Web site: <http://tech-trailblazers.wazoku.com/comp/sustainable/entry/6eb98b02edad0facffdcdbd2adb23f2d>
- GreenQloud. (2013). Guiding Principles. Reykjavik, Iceland. Retrieved January 28, 2014
- Greenqloud. (2013). Master Document for Sales and Marketing. *Greenqloud: Documentation* . Reykjavik.
- Greenqloud. (n.d.). *Startup Program*. Retrieved March 25, 2014, from Greenqloud: Startup Program: <https://www.greenqloud.com/startup-program/>
- Grundy, T. (2006). Rethinking and Reinventing Micheal Porter's Five Forces Model. *Strategic Change* , 15, 213 - 229.
- Haberberg, A., & Rieple, A. (2008). *Strategic Management: Theory and Application*. Oxford University Press.
- Hardy, Q. (2014, March 25). *Google's Bigger, Cheaper Cloud*. Retrieved April 2, 2014, from The New York Times: Cloud Computing: [http://bits.blogs.nytimes.com/2014/03/25/googles-bigger-cheaper-cloud/?\\_php=true&\\_type=blogs&\\_r=0](http://bits.blogs.nytimes.com/2014/03/25/googles-bigger-cheaper-cloud/?_php=true&_type=blogs&_r=0)
- Hashizume, K., Rosado, D. G., Fernandez-Medina, E., & Fernandez, E. B. (2013). An Analysis of Security Issues for Cloud Computing. *Journal of Internet Services and Applications* , 4 (5), 1-13.
- Helms, M. M., & Nixon, J. (2010). Exploring SWOT Analysis: Where Are We Now? A Review of Academic Research Over the Last Decade. *Journal of Strategy and Management* , 3 (3), 215 - 251.
- Henry, A. E. (2011). *Understanding Strategic Management* (Second Edition ed.). Oxford University Press Inc.



- Holbrook, M. (2006). Consumption Experience, Customer Value, and Subjective Personal Introspection: An Illustrative Photographic Essay. *Journal of Business Research* , 59, 714 - 725.
- Hu, E. (2014, April 23). *The Price War Over the Cloud Has High Stakes for the Internet*. Retrieved May 13, 2014, from IPR: The Industry.
- IBM. (2009). Business Strategy for Cloud Providers. Retrieved January 28, 2014, from [http://public.dhe.ibm.com/common/ssi/rep\\_wh/n/GBW03096USEN/GBW03096USEN.PDF](http://public.dhe.ibm.com/common/ssi/rep_wh/n/GBW03096USEN/GBW03096USEN.PDF)
- Ingram, M. (2014, February 20). *Mark Zuckerberg Has Learnt What Steve Jobs Knew: You Need To Disrupt Yourself Before Your Competitors Do*. Retrieved March 21, 2014, from Gigaom: Cloud: <http://gigaom.com/2014/02/20/mark-zuckerberg-has-learned-what-steve-jobs-knew-you-need-to-disrupt-yourself-before-your-competitors-do/>
- Interxion. (2013, March 14). *About us: News*. Retrieved May 20, 2014, from Interxion Website: <http://www.interxion.com/about-us/news/reliability-in-the-cloud-is-more-valuable-than-low-cost-and-ease-of-set-up/>
- Kan, W. H., & Ellis, D. P. (2006). Is Market Orientation Affected by the Product Life Cycle? *Journal of World Business* , 42 (2), 145-56.
- Keegan, W., & Green, M. (2000). *Global Marketing* (Vol. 2nd ed.). Englewood Cliffs, NJ.
- Kim, C., & Mauborgne, R. (2005a). Blue Ocean Strategy: From Theory to Practice. *California Management Review* , 47 (3), 105 - 121.
- Kim, C., & Mauborgne, R. (1999). Creating New Market Space. *Harvard Business Review* , 1 -13.
- Kim, C., & Mauborgne, R. (1999). Strategy, Value Innovation, and the Knowledge Economy. *Sloan Management Review* , 40 (3), 41 - 54.
- Kim, C., & Mauborgne, R. (2005b). Value Innovation: A Leap into the Blue Ocean. *The Journal of Business Strategy* , 26 (4), 22 - 28.
- Kim, C., & Mauborgne, R. (1997). Value Innovation: The Strategic Logic of High Growth. *Harvard Business Review* , 75 (1), 102 - 12.
- Kim, C., & Mauborgne, R. (2009, September). How Strategy Shapes Structure. *Harvard Business Review* .
- Kim, E., Nam, D.-I., & Stimpert, J. (2004). The Applicability of Porter's Generic Strategies in the Digital Age: Assumptions, Conjectures, and Suggestions. *Journal of Management* , 30, 568 - 589.
- Kim, W. C., & Mauborgne, R. (2005). *Blue Ocean Strategy: How to create Uncontested Market Space and Make competition irrelevant*. Harvard Business School Press.
- Kim, W. C., & Mauborgne, R. (2011, February 7). HBR's Must-Reads on Strategy: Blue Ocean Strategy. *Harvard Business Review* , pp. 71-80.



- Krikos, A. (2014, January 28). *Why Cloud Service Providers Need Both Incremental and Disruptive Innovation*. Retrieved March 23, 2014, from Forbes: Business: <http://www.forbes.com/sites/sungardas/2014/01/28/seeding-the-cloud-why-cloud-service-providers-need-both-incremental-and-disruptive-innovation/>
- Lanning, M., & Michaels, E. (1988). A Business is a Value Delivery System. *McKinsey Staff Paper*, 41.
- Laroche, M., Bergeron, J., & Barbaro-forleo, G. (2001). Targeting Consumers Who Are Willing To Pay More For Environmentally Products. *Journal of Consumer Marketing*, 18 (6), 503 - 520.
- Legal Information Institute. (n.d.). *18 U.S. Code § 2703 - Required disclosure of customer communications or records*. Retrieved April 4, 2014, from Cornell University Law School: <http://www.law.cornell.edu/uscode/text/18/2703>
- Lieberman, M. B., & Montgomery, D. B. (1988). First-Mover Advantages. *Strategic Management Journal*, 9 (Special Issue), 41 - 58.
- Linthicum, D. S. (2014, March 14). *Calling For Fewer But Bigger Players*. Retrieved March 21, 2014, from Gigaom: Cloud: <http://research.gigaom.com/2014/03/calling-for-fewer-but-bigger-cloud-players/>
- Linthicum, D. S. (2013, October 16). *Cloud and Data Third Quarter 2013: Analysis and Outlook*. Retrieved March 20, 2014, from Gigaom: Cloud : <http://research.gigaom.com/report/cloud-and-data-third-quarter-2013-analysis-and-outlook/viability-of-microsofts-cloud-strategy-questioned/>
- Linthicum, D. S. (2014, April 9). *The Brazilian Cloud Computing Market Explodes*. Retrieved April 25, 2014, from Gigaom: Cloud, Analyst Blog: <http://research.gigaom.com/2014/04/the-brazilian-cloud-computing-market-explodes/>
- Linthicum, D. S. (2014, January 24). *What AWS Price Reductions Really Mean*. Retrieved March 21, 2014, from Gigaom: Cloud: <http://research.gigaom.com/2014/01/what-aws-price-reductions-really-mean/>
- Loftsdottir, A. S., & Thorarinsdottir, R. I. (2006). *Energy in Iceland: Historical Perspective, Present Status, Future Outlook*. Icelandic Government, Ministries of Industry and Commerce. National Energy Authority.
- Luchs, M., Naylor, R., Irwin, J., & Raghunathan, R. (2010). The Sustainability Liability: Potentially Negative Effects of Ethicality on Product Preference. *Journal of Marketing*, 74, 18 - 31.
- Ludwig, S. (2012, October 8). *An Ugly Duckling No More: Why Platform-As-A-Service Is Poised For Huge Growth*. Retrieved April 4, 2014, from Venturebeat News: <http://venturebeat.com/2012/10/08/paas-platform-as-a-service-explained/>
- Maitland, J., & Linthicum, D. S. (2013, December 26). *Cloud Computing and Database 2014: The trend is your friend*. Retrieved March 8, 2014, from Gigaom: Research, Analysts Blog:



- <http://research.gigaom.com/2013/12/cloud-computing-and-database-2014-the-trend-is-your-friend/>
- Markedes, C. (1998). *A Dynamic View of Strategy*. Sloan Management Review.
- Marketline. (2013, December 27). *Company Profile: Amazon.com, Inc.* Retrieved from Marketline.
- Marketline. (2014, February 7). *Company Profile: Microsoft Corporation*. Retrieved March 11, 2014, from Marketline.
- Marketline. (2013, December 13). *Dell Announces Strategic Partnership With Dropbox*. Retrieved March 24, 2014, from Marketline: Company News: <http://hrproxy.hir.is:2243/Product?pid=EDCF6A28-2773-4993-9D65-B87CE6929298>
- Marketline. (2013, September 18). *Google: Company Overview*. Retrieved March 24, 2014, from Marketline: <http://hrproxy.hir.is:2243/Product?pid=5B199F61-608D-4923-B4A3-F5EE15285ADE>
- Markides, C. (2006). Disruptive Innovation: In Need of a Better Theory. *Journal of Product Innovation Management* , 23, 19 - 25.
- Markides, C. (1997). Strategic Innovation. *Sloan Management Review* , 38 (3), 9 - 23.
- Markides, C. (1998). Strategic Innovation in Established Companies. *Sloan Management Review* , 39 (3), 31 - 42.
- Martinez, V., & Bititci, U. S. (2006). Aligning the Value Propositions in Supply Chains. *Journal of Value Chain Management* , 1 (1), 6-18.
- Matrix. (2014, March 17). *SaaS Expected To Win More Cloud Converts*. Retrieved April 2, 2014, from Matrix Blog: <http://www.matrix-ibs.com/2014/03/saas-expected-to-win-more-cloud-converts/>
- McClelland, S. (1995). Gaining competitive advantage through strategic management development. *American Journal of Management Development* , 1 (1), 4-10.
- Mcheick, H., Obaid, F., & Safa, H. (2011). Cloud computing: Past, Current and Future. *2011 Congress in Computer Science and Computer Engineering and Applied Computing*. WorldComp 2011.
- Meyer, R., & Wit, B. D. (2004). *Strategy: Process, Content and Context* (3rd ed.). Thomas Learning.
- Microsoft . (n.d.). *Microsoft Azure*. Retrieved April 9, 2014, from Microsoft: Features: <http://azure.microsoft.com/en-us/>
- Microsoft. (n.d.). *A History of Windows*. Retrieved April 10, 2014, from Windows: Meet Windows: <http://windows.microsoft.com/en-us/windows/history#T1=era10>



- Microsoft, corp. (n.d.). *Office Download*. Retrieved March 25, 2014, from Microsoft: <http://office.microsoft.com/en-ca/>
- Miller, D. (1992). The Generic Strategy Trap. *Journal of Business Strategy* , 13 (1), 37 - 42.
- Miller, P. (2014, March 26). *Sector RoadMap: The European Cloud Infrastructure Market*. Retrieved April 1, 2014, from Gigaom: Cloud.
- Miller, R. (2012, May 15). *Google Data Center FAQ*. Retrieved April 8, 2014, from Data center knowledge: FAQ, Google: <http://www.datacenterknowledge.com/archives/2012/05/15/google-data-center-faq/>
- Miller, R. (2014). *Report: Data Center Leasing Surged 25% in 2013*. Data Center Knowledge.
- Mintzberg, H. (1990). The Design School: Reconsidering the Basic Premises of Strategic Management. *Strategic Management Journal* , 11 (3), 171-95.
- Mintzberg, H. (1994). The Fall and Rise of Strategic Planning. *Harvard Business Review* .
- Mintzberg, H., & Waters, A. J. (1985). Of Strategies, deliberate and emergent. *Strategic Management Journal* , 6 (3), 257-72.
- Mintzberg, H., Lampel, J., Quinn, J. B., & Ghoshal, S. (2003). *The Strategy Process: Concepts, Contexts and Cases* (4th ed.). Pearson Education Limited.
- Mintzberg, H., Quinn, J., & Ghoshal, S. (1995). *The Strategy Process: Concepts, Contexts and Cases* (Vol. European Ed.). Englewood Cliffs, NJ: Prentice Hall.
- Morh, C. (2014, February 14). *Tech Companies in FIDO Alliance to Push For a More Reliable Authentication Standard*. Retrieved April 28, 2014, from Tmcnet: Feature: <http://www.tmcnet.com/topics/articles/2013/02/14/326851-tech-companies-fido-alliance-push-a-more-reliable.htm>
- MSV, J. (2014, February 28). *A Checklist For Stacking up IaaS Providers*. Retrieved March 8, 2014, from Gigaom: Cloud: <http://research.gigaom.com/report/a-checklist-for-stacking-up-iaas-providers/storage/>
- MSV, J. (2013, December 17). *Infrastructure as a Service Basics: a Guide for IT Pros*. Retrieved March 10, 2014, from Gigaom: Research: <http://research.gigaom.com/report/infrastructure-as-a-service-basics-a-guide-for-it-pros/who-is-behind-the-iaas-momentum/>
- Murphy, R., & Narkiewicz, V. (2010). Electronic Commerce and Value Proposition. *The Journal of Human Resource and Adult Learning* , 6 (1), 99 - 105.
- Murray, A. I. (1988). A Contingency View of Porter's "Generic Strategies". *Academi of Management Review* , 13 (3), 390 - 400.
- Neudorfer, J. (2013, December 24). *Drive for Green Data Center Energy to Run Through 2014*. Retrieved May 13, 2014, from Datacenter Dynamics: <http://www.datacenterdynamics.com/focus/archive/2013/12/drive-green-data-center-energy-run-through-2014>



- Osterwalder, A., & Pigneur, Y. (2010). *Business Model Generation*. John Wiley & Sons Inc.
- Ottman, J., & Miller, D. (1999). Green Marketing. *Electronic Green Journal* .
- Owens, D. (2010). Securing Elasticity in the Cloud. *Association for Computing Machinery. Communications of the ACM* , 53 (6), 46.
- Papista, E., & Krystallis, A. (2013). Investigating the Types of Value and Cost of Green Brands: Proposition of a Conceptual Framework. *Journal of Business Ethics* , 115, 75 - 92.
- Parallels. (2014, March). *Parallels March News Letter*. Retrieved April 24, 2014, from Parallels: Service Providers News Letters: <http://www.parallels.com/news/spnewsletter/mar2014/>
- Parallels. (2013). *SMB Cloud Insights Report 2013*. Washington: Parallel.
- Peattie, K. (1999). Shifting to a Greener Paradigm. In Charter, M., and Polonsky, M. (eds). *Greener Marketing, A Global Perspective on Greening Marketing Practice* .
- Pingdom. (2008, April 11). *Map of all Google data center locations*. Retrieved April 8, 2014, from Pingdom: Royal Pingdom: <http://royal.pingdom.com/2008/04/11/map-of-all-google-data-center-locations/>
- Polonsky, M., & Rosenberger, P. (2001). Reevaluating Green Marketing: A strategic Approach. *Business Horizons* , 44 (5), 21 - 30.
- Porter, M. E. (1980). *Competitive Strategy*. New York: Free Press.
- Porter, M. E. (1985). *Competitive Strategy*. The Free Press.
- Porter, M. E. (1998). *Competitive Strategy: Techniques for Analysing Industries and Competitors*. Thee Free Press.
- Porter, M. E. (1998). *Competitive Strategy: Techniques for Analysing Industries and Competitors* (Vol. 1998 Edition). Thee Free Press.
- Porter, M. E. (1979). How Competitive Forces Shape Strategy. *Harvard Business Review* , 137 - 145.
- Porter, M. E. (2008). The Five Competitive Forces that Shape Strategy. *Harvard Business Review* , 79 - 93.
- Porter, M. E. (1991). Towards a Dynamic Theory of Strategy. *Strategic Management Journal* , 12 (Special Issue), 95 - 117.
- Porter, M. E. (1996, November-December). What is Strategy? *Harvard Business Review - HBR's Must-Reads on Strategy* , pp. 3-21.
- Porter, M. E., & van Der Linde, C. (1995). Green and Competitive: Ending the Stalemate. *Harvard Business Review* , 73 (5), 120 - 134.
- Porter, M. (2012). Strategic Positioning in a Challenging World: Creating Shared Value. *World Lottery Summit* (pp. 1-23). Boston: Harvard Business School.



- Porter, M. (2001). Strategy and the Internet. *Harvard Business Review* , 79 (2), 62 - 78.
- Powel, T. C. (2001). Competitive advantage: Logical and Philosophical Considerations. *Strategic management Journal* , 22, 875 - 888.
- Prnewswire. (2014, April 23). *Cloud Computing Market in Korea 2013 - 2017*. Retrieved April 27, 2014, from Prnewswire: Newsroom: <http://www.prnewswire.com/news-releases/cloud-computing-market-in-korea-2014-2018-256403071.html>
- Pugh, J., & Bourgeois III, L. J. (2011). "Doing" Strategy. *Journal of Strategy Management* , 4 (2), 172 - 179.
- Rachapila, T., & Jansirisak, D. (2013). Using Porters Five Forces Model for Analysing the Competitive Environment of Thailand's Sweet Corn Industry. *International Journal of Business and Social Research* , 3 (3), 174 - 84.
- Rackspace. (n.d.). *Global Infrastructure*. Retrieved April 8, 2014, from Rackspace: About, Global infrastructure: <https://www.rackspace.com/about/datacenters/>
- Rackspace. (n.d.). *Rackspace Loves Developers*. Retrieved March 25, 2014, from Rackspace: Free tier: <http://developer.rackspace.com/devtrial/>
- Rackspace Support. (2013). *Rackspace 2013 Hybrid Cloud Survey Results*. Rackspace.
- Rodrigues, T. (2013, October 3). *Amazons Market Dominance in IaaS: The consequences for Innovation - TechRepublic*. Retrieved January 23, 2014, from TechRepublic Website: <http://www.techrepublic.com/blog/the-enterprise-cloud/amazons-market-dominance-in-iaas-the-consequences-for-innovation/#>.
- Rokka, J., & Uusitalo, L. (2008). Preference for Green Packaging in Consumer Product choices: Do Consumers Care? *International Journal of Consumer Studies* , 32, 516 - 525.
- Romer, P. M. (1994). The Origins of Endogenous Growth. *Journal of Economic Perspectives* , 8 (1), 3 - 22.
- Rouse, M. (2013, September 23). *Hybrid Cloud*. Retrieved March 21, 2014, from SearchCloudComputing: <http://searchcloudcomputing.techtarget.com/definition/hybrid-cloud>
- Rouse, M. (2009, May). *What is Windows Azure*. Retrieved from Searchcloudcomputing: Windows Azure.
- Sandahl, D., & Robertson, R. (1989). Social Determinants of Environmental Concern: Specification and Test of the Model. *Environment and Behavior* , 21 (1), 57 - 81.
- Selznik, P. (1984). *Leadership in Administration: A sociological Interpretation*. University of California Press.
- Sheehan, N. T., & vaidyanathan, G. (2009). Using a Value Creation Compass to Discover "Blue Oceans". *Strategy and Leadership* , 37 (2), 13 - 20.



- Shendel, D., & Hofer, C. (1979). *Strategic Management: A New View of Business Policy and Planning*. Boston, MA: Little Brown.
- Shubert, L. (2010). *The Future of Cloud Computing - Opportunities for European Cloud Computing Beyond 2010*. European Commission - Information Society and Media.
- Singh, G. (2013). A Study of Evolution and Green Marketing by various Companies in India. *International Journal of Management and Social Sciences research*, 2 (7), 49 - 56.
- Singh, S. (2004). *Market Orientation, Corporate Culture and Business Performance*. Ashgate Publishing.
- Stabel, C. B., & Fjeldstad, Ø. D. (1998). Configuring Value for Competitive Advantage: on Chains, Shops and Networks. *Strategic Management Journal*, 19, 413 - 437.
- Stonehouse, G., & Snowdon, B. (2007). Competitive advantage revisited: Micheal Porter on Strategy and Competitiveness. *Journal of Management Inquiry*, 16 (3), 256-73.
- Storgaard, N. A. (2013). *Customer Research Report*. Greencloud. Reykjavik: Not published.
- Tantau, A. D., & Mateescu, S. (2013). The Green Ocean Strategy. *International Journal of Business, Humanities and Technology*, 3 (6), 59 - 65.
- Teece, D. J. (2010). Business Models, Business Strategy and Innovations. *Long Range Planning*, 43, 172 - 194.
- Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic Capabilities and Strategic Management. *Strategic Management Journal*, 18 (7), 509 - 533.
- Thompson, J., & Martin, F. (2010). *Strategic Management: Awareness and Change*. Thomas Rennie.
- Tiwari, S., Tripathi, D. M., Shrivastava, U., & P.K., T. (2011). Green Marketing: Emerging Dimensions. *Journal of Business Excellence*, 2 (1), 18 - 23.
- U.S. Commercial Service. (2012). *Doing Business in China: 2012 Country Commercial Guide for U.S. Companies*. Retrieved April 26, 2014, from Export Gov: [http://export.gov/china/build/groups/public/@eg\\_cn/documents/webcontent/eg\\_cn\\_025684.pdf](http://export.gov/china/build/groups/public/@eg_cn/documents/webcontent/eg_cn_025684.pdf)
- Uretsky, B. (2014, January 21). *How Cloud Computing Will Dominate Emerging Markets*. Retrieved April 24, 2014, from Huffingtonpost: The Blog: [http://www.huffingtonpost.com/ben-uretsky/the-future-of-cloud-hosti\\_1\\_b\\_4632226.html](http://www.huffingtonpost.com/ben-uretsky/the-future-of-cloud-hosti_1_b_4632226.html)
- Vaquero, L. M., Rodero-Merino, L., & Moran, D. (2011). Locking the Sky: a Survey on IaaS Cloud Security. *Computing*, 91, 93 - 118.
- Veliyath, R. (1996). Hypercompetition: Managing the Dynamics of Strategic Manuevering. *Academy of Management Review*, 21 (1), 291 - 294.



- Vernon, R. (1966). International Investment and International Trade in the Product Life Cycle. *The Quarterly Journal of Economics* , 80 (2), 190 - 207.
- Walker, G. (2003). *Modern Competitive Strategy*. McGraw-Hill/Irwin.
- Windows Azure. (n.d.). *Downloads*. Retrieved March 25, 2014, from Windowsazure: <http://www.windowsazure.com/en-us/pricing/free-trial/>
- Wood, L. (1990). The End of the Product Life Cycle? Education Says Good Bye to an Old Friend. *Journal of Marketing Management* , 6 (2), 145-55.
- Wood, L. (1990). The End of the Product Life Cycle? Education Says Goodbye to an Old Friend. *Journal of Marketing Management* , 6 (2), 145 - 55.
- Woodburn, D. (2013, August 27). *Amazon Owns More Than 25% of the IaaS/PaaS Market: CRN*. Retrieved January 23, 2014, from CRN Website: <http://www.channelweb.co.uk/crn-uk/news/2291068/amazon-owns-more-than-a-quarter-of-iaas-paas-market>
- Yeboah-Boateng, E. O., & Essandoh, K. A. (2013). Cloud Computing: The Level of Awareness Amongst Small and Medium Sized Enterprises (SME's) in Developing Economies. *Journal of Emerging Trends in Computing and Information Sciences* , 4 (11), 832 - 839.
- Young, W., Hwang, K., McDonald, S., & Oates, C. (2010). Sustainable Consumption: Green Consumer Behavior When Purchasing Products. *Sustainable Development* , 18, 20 - 31.
- Yu, E. (2014, April 23). *Office 365 Cloud Service Officially Launched in China*. Retrieved April 25, 2014, from ZDNet: Cloud: <http://www.zdnet.com/cn/office-365-cloud-service-officially-launched-in-china-7000028677/>
- Zang, Q., Cheng, L., & Boutaba, R. (2010). Cloud Computing: State-of-the-Art and Research Challenges. *Journal of Internet Service Applications* , 1, 7 - 18.
- Zhou, T. (2014). *China Cloud Market*. Retrieved April 26, 2014, from IDC: Home: [http://www.idc.com/getdoc.jsp?containerId=IDC\\_P20679](http://www.idc.com/getdoc.jsp?containerId=IDC_P20679)



## Appendices

### Appendix A – Correspondence with GreenQloud Employees

**Paula Gould, CMO, 2. April 2014.**

**Author:** Does GreenQloud have any plans to offer SaaS?

**Paula:** Not any time soon. We partner with SaaS companies.

**Author:** It is not something that has been discussed?

**Paula:** We really like operating at the IaaS level and quasi-PaaS level, but publicly we are all IaaS.

**Paula Gould, CMO, 3. April 2014**

**Author:** Have you come across companies that have been hesitant to go with the hybrid cloud, over security issues?

**Paula:** Our Hybrid cloud is so brand new (released last month) so no, not yet.

**Jess Bygd, Community Manager, 3. April 2014**

**Author:** I have you mention that some customers are a little concerned with the move to using a U.S.-based data center.

**Jess:** Well, yes, there have been some concerns. Especially since previously, folks were joining GQ in part -because- they wanted to keep their data snoop-free

*Message from customer on December 26, 2013, 14:19 (dritz)*



Hi,

I just read on <http://greenqloud.com/reflecting-on-2013> that you have plans on expanding to the US. I'm a bit worried about this as one of the reasons for joining GreenQloud (beside the green aspect of course) was that it's not American. If you do expand to Seattle, will this be a completely separate unit, or will you be subject to the Patriot Act?

***Response from GQ***

*GreenQloud is an Icelandic owned entity. As we indicated previously, we are opening a colocation in Seattle, which will enable our customers to choose whether they wish to keep their data in Iceland, the US or both. We'll be releasing additional public announcements with more details about the legal particulars in the near future. Cheers!*

*-Jess (GreenQloud Community Mgr)*

***Message from customer on March, 6, 2014, 9:27 (Richard)***

dritz is correct with his statement about company ownership, would you mind providing a response please? Additionally, does GreenQloud intend on subscribing to the US Department of Commerce Safe Harbor Scheme?

Richard

***Message from customer on February 27, 2014, 05:22 (dritz)***

Question is the company ownership. If American citizen owns GreenQloud its irrelevant where files are stored, hell have to oblige to an American court order to deliver the data. As soon as Greenqloud mentioned USA data center I was totally blindsided and feel betrayed. This is simply a matter of principle.

About us page says its privately funded in 2010 and I am guessing the "funder" isn't Icelfander.

I have seen such fake Icelandic companies recently like "unseen.is" owned by American



company with american CEO from California.

**Irony is that Greencloud to get into American market has to stay out of America or anywhere else and stay only in Iceland.**

### **Response from GQ**

*Hi! We're still in the setup phase at this point, but the 'expansion' is happening! (Click here for the full [press release](#).)*

*The short answer is that the Seattle availability zone will be separate and independent. Everything within the US-based zone is subject to US laws, everything Iceland-based is subject to Icelandic law.*

*However, nothing will be moved to the US automatically. The basic idea is that when you're creating new instances, you'll be able to choose where your virtual machines are running/where data is stored – if that means that you'd like to stick with Iceland-based datacenters; that's absolutely a choice you will be able to make.*

*We'll be releasing additional public announcements in the near future with more details about the legal particulars, but you can find more info about the US datacenter location here: <http://greencloud.com/greencloud-selects-digital-fortress-as-next-green-data-center-provider/>.*

*- Jess (GreenQloud Community Mgr)*

### **Email correspondence with GreenQloud's CEO, March 28<sup>th</sup>, 2014.**

Hi Nicole

Here are my answers to your questions , this is not be distributed out side GreenQloud.



*Could you please explain your vision for GreenQloud's future?*

For the GQ public cloud to be known not only for running on renewable energy and great user interface but for stability and quality support and services. To build up a network / alliance of green data centers across the globe that are using our software and part of GQ availability zone offering.

For our Qstack (private / Hybrid cloud). For that to become the preferred private cloud software to implement for companies of all sizes and shapes, that can also be seen as the stepping stone into a renewable energy to use our public cloud for their excessive workload with our burst ability feature.

*Are we going to actively pursue the enterprise model like many others in the IaaS market, or do you have other targets in sight?*

Yes and yes. Specially with our Qstack product it is a great fit for enterprise companies and data centers. To manage their entire server and storage infrastructure with one portal. See the total cost of departments and projects from a infrastructure point of view. That does not only relate to enterprise companies , it is just as true for any size companies. I think that our Qstack product is a perfect fit for any short of development companies , that wants to have clear division between departments and projects / product development.

*Could you, from an experts perspective, identify a number of factors which the IaaS market invests and competes on?*

A quick run through I would say it looks something like this.



1. Quality and stability
2. scalability
3. Price
4. savings , by using our software do they save in other areas.
5. support
6. feature / options
7. ability to meet custom feature request.
8. Ease of use



## Appendix B – Market research data

(overview from cloud providers websites)

	Cost Reductions / Optimizations				
Provi ders	Variety of Payment Plans	Average Monthly Price \$	Storage Costs \$ (/GB)	Cost of Data Transfer In (/GB)	Cost of Data Transfer Out (/GB)
Gree nQlo ud	Pay-as-you-go (month)	105,12	0,095	Free	0,08 pr GB/month (1TB free)
AWS	Pay-as-you-go (month, year)	51,1	0,03	Free	Free to NV region. 0,020 to other regions (1TB free)
Googl e	Pay-as-you-go (month)	53,29	0,026	Free	Free to the same region. 0,12 beyond.
Micro soft	Pay-as-you-go (month)	108,04	0,068	Free	0,12 pr GB/month (first 5 GB free)
Backe	Pay-as-you-go				
Scalability and Automation			0,12	Free	1,12 pr GB/month
Scale Up	Scale Out	APIs	Monitoring		
Yes	Yes	Yes	Average		
Yes	Yes	Yes	Extensive		
Yes	Yes	Yes	Average		
Yes	Yes	Yes	Average		
Yes	Yes	Yes	Extensive		



Choice and Flexibility		
Data Centers	Instance Types	Supported Operating Systems
2	8	2
10	35	6
32	15	7
10	8	6
9	9	6

- Poor - Companies that have no monitoring/alert solutions integrated, requiring the deployment of third-party tools or that extra services be purchased
- Average - Companies with very simple integrated monitoring tools (few indicators or no alerting)
- Extensive - Companies with very complete integrated monitoring tools offered for no additional cost



## Appendix C – Calculations

$$\frac{x_1w_1 + x_2w_2 + x_3w_3 \dots x_nw_n}{Total}$$

Potential users	1	2	3	4	5	6	7			
Price*	22	5	7	4	4	1	2	45	2,4	3,5
Environmental factor	4	8	2	6	6	8	13	47	4,7	6,7
Security	1	9	6	6	6	15	4	47	4,4	6,4
Reliability	1	2	4	1	20	7	11	46	5,2	7,5
Features	5	9	8	14	6	3	2	47	3,5	5,0
Support	1	10	15	13	2	4	2	47	3,5	5,0
Choice and flexibility	22	7	3	3	4	5	2	46	2,6	3,8

Private users	1	2	3	4	5	6	7			
Price*	45	11	20	11	4	4	1	96	2,3	3,3
Environmental factor	12	10	13	14	10	21	9	89	4,2	6,0
Security	2	6	7	10	28	25	15	93	5,1	7,2
Reliability	1	2	8	30	16	19	18	94	5,0	7,1
Features	23	18	21	8	10	6	2	88	2,9	4,1
Support	16	26	24	10	6	4	5	91	3,0	4,2
Choice and flexibility	26	17	11	10	6	9	11	90	3,3	4,7

Third Tier	1	2	3	4	5	6	7			
Price*	5	4	5	7	3	0	1	25	3,1	4,5
Environmental factor	4	7	7	2	2	2	0	24	2,9	4,2
Security	2	6	7	10	28	25	15	93	5,1	7,2
Reliability	0	0	1	1	6	7	10	25	6,0	8,5
Features	1	8	5	6	1	3	1	25	3,4	4,9
Support	0	1	8	6	4	5	1	25	4,3	6,1
Choice and flexibility	12	7	0	0	0	0	1	20	1,7	2,4







## Appendix D – Survey report

1<sup>st</sup> and 2<sup>nd</sup> Tier customer Survey Report




# Current Customers and Visitors

Please specify:

Response	Chart	Percentage	Count
I use GreenQloud through my company/organisation/university		13.7%	43
I am a private user		40.3%	127
I am in charge of the running of Greenqloud for my organisation/university		3.8%	12
I am not a GreenQloud customer		42.2%	133
<b>Total Responses</b>			<b>315</b>

3<sup>rd</sup> Tier Customers:

Which applies to you?

Response	Chart	Percentage	Count
Student/educator		45.9%	51
Employed. Sector?		45.0%	50
Unemployed		9.0%	10
<b>Total Responses</b>			<b>111</b>

Which applies to you? (Employed. Sector?)

#	Response
1.	social services
2.	IT
3.	IT
4.	Developer
5.	Software
6.	Telecoms
7.	Telecoms
8.	IT
9.	IT
10.	IT



11. IT
12. IT
13. IT
14. IT services
15. Web development, Saas
16. Retail
17. Web
18. Finance
19. Geographic information systems & web development
20. not for profit
21. it
22. Hosting
23. Insurance
24. IT
25. Internet
26. finance
27. IT
28. Environmental consulting
29. Web Development
30. it
31. Web Development
32. I'm an entrepreneur in the financial technology sector
33. IT
34. business to business
35. Self employed mentor / poet / publisher
36. manager
37. Data Science
38. Health Care
39. IT
40. Designer/developer
41. Software development
42. Software development
43. Food
44. games development



45. Food
46. Web development
47. Security
48. SaaS
49. teacher

In which country are you located?

#	Response
1.	Denmark
2.	Spain
3.	Greece
4.	Iceland
5.	Ireland
6.	Ísland
7.	Peru
8.	France
9.	Iceland
10.	United States
11.	india
12.	Iceland
13.	USA
14.	Spain
15.	Spain
16.	United States
17.	iceland
18.	Germany
19.	Greece
20.	Singapore
21.	egypt
22.	Greece
23.	Croatia
24.	usa
25.	INIDIA
26.	Iceland
27.	Iceland



28.	france
29.	Poland
30.	Sweden
31.	Australia
32.	Australia
33.	Romania
34.	Norway
35.	Iceland
36.	turkey
37.	Brazil
38.	Iceland
39.	Bulgaria
40.	argentina
41.	United States
42.	UK
43.	Denmark
44.	USA
45.	USA
46.	USA
47.	Uk
48.	Switzerland
49.	Australia
50.	Australia
51.	uae
52.	Iceland
53.	US,New York
54.	norway
55.	UK
56.	United States
57.	Germany
58.	Denmark
59.	United States
60.	Viet Nam
61.	Germany



62.	Iceland
63.	United States of America
64.	Estonia
65.	US
66.	greece
67.	New Zealand
68.	Brazil
69.	usa
70.	Sweden
71.	Uk
72.	United States of America
73.	US
74.	turkey
75.	usa
76.	Iceland
77.	mexico
78.	United States
79.	USA
80.	Spain
81.	Germany
82.	Iceland
83.	Portugal
84.	Iceland
85.	Iceland
86.	Iceland
87.	germany
88.	spain
89.	United States
90.	Cyprus
91.	United Kingdom
92.	China
93.	The Netherlands
94.	China
95.	Canada



96.	Canada
97.	United Kingdom
98.	UK
99.	australia
100.	UK
101.	Canada
102.	Tanzania
103.	USA
104.	USA
105.	UK
106.	Germany
107.	USA
108.	Germany
109.	indonesia
110.	usa

Is there a particular reason or reasons for not using a cloud provider?

#	Response
1.	No
2.	Have a few monts until graduation
3.	I don't know, the university hosts their own stuff
4.	No
5.	You are too expensive, up to 3 times more. You have to become more competitive...
6.	Price
7.	none
8.	NO I AM STUDENT I DON'T MONEY FOR BUY
9.	high cost, bad DDOS protection
10.	School projects and learning.
11.	HAVen't had a need.
12.	i dont have money
13.	no
14.	Research cloud options
15.	none
16.	none
17.	Data and IP protection



18.	no
19.	No need for it yet.
20.	nothing
21.	I will be
22.	None, currently looking for a provider.
23.	no
24.	We like to keep our servers local
25.	Price
26.	Havent signed up yet
27.	no
28.	security
29.	Not tried it yet.
30.	No
31.	No
32.	If I need bare metal speeds or need custom hardware, such as a hardware security module.
33.	None
34.	Don't know a lot about it.
35.	Don't know a lot about it.
36.	Never used one so I do not know the technology very much.
37.	no

If you were looking for a cloud provider, which of the following seven factors would you deem to be the most important?

	1	2	3	4	5	6	7	Total Responses
Price	22 (48.9%)	5 (11.1%)	7 (15.6%)	4 (8.9%)	4 (8.9%)	1 (2.2%)	2 (4.4%)	45
Environmental factor	4 (8.5%)	8 (17.0%)	2 (4.3%)	6 (12.8%)	6 (12.8%)	8 (17.0%)	13 (27.7%)	47
Reliability	11 (23.9%)	7 (15.2%)	20 (43.5%)	1 (2.2%)	4 (8.7%)	2 (4.3%)	1 (2.2%)	46
Features	2 (4.3%)	3 (6.4%)	6 (12.8%)	14 (29.8%)	8 (17.0%)	9 (19.1%)	5 (10.6%)	47
Support	2 (4.3%)	4 (8.5%)	2 (4.3%)	13 (27.7%)	15 (31.9%)	10 (21.3%)	1 (2.1%)	47
Security	4 (8.5%)	15 (31.9%)	6 (12.8%)	6 (12.8%)	6 (12.8%)	9 (19.1%)	1 (2.1%)	47
Location of their data	2	5	4	3	3	7	22	46



centre	(4.3%)	(10.9%)	(8.7%)	(6.5%)	(6.5%)	(15.2%)	(47.8%)
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Do you feel that cloud providers are lacking certain features or offerings? If yes, please specify:

#	Response
1.	email accounts, DNS settings control
2.	sucurity
3.	i don't know
4.	they should provide better API
5.	no
6.	no
7.	I believe many don't offer cpanel or equivalent in the aspect of easy to use
8.	Still researching available options
9.	i don't know yet
10.	No
11.	no
12.	no
13.	Load balancing and virtual private networks
14.	none
15.	Green credentials and ethical ownership/investment/business practice.
16.	Green credentials and ethical ownership/investment/business practice.
17.	Very difficult to have completely free trials. How can I spend money before I know the product? If you offer the trials you still have the power in your hands as a supplier so why not give them and close them down if unpaid?

Please specify your occupation:

Response	Chart	Percentage	Count
Student		44.7%	46
Educator		4.9%	5
Employed (which industry)		41.7%	43
Unemployed		8.7%	9
<b>Total Responses</b>			<b>103</b>

Please specify your occupation: (Employed (which industry))



#	Response
1.	Self Employed - Online
2.	Online business
3.	IT
4.	Pharmaceuticals
5.	Healthcare
6.	Software
7.	Distribution
8.	IT
9.	Comercial Services
10.	Software development
11.	Web Development
12.	Health
13.	Software
14.	Information Technology for education sector
15.	Information Technology
16.	IT
17.	IT
18.	Software IT
19.	web development
20.	Information Technology
21.	Information Technology
22.	IT for Healthcare
23.	Industrial design and applications (Hardware and software)
24.	web developer
25.	Blogging
26.	Web Hosting
27.	Education
28.	eSports
29.	Software Development
30.	University Web Developer
31.	Web design
32.	IT
33.	vpnlinecl



34. non profit organization
35. IT
36. International Development
37. Internet
38. Programmer
39. Graphic Design
40. Cloud computing
41. Software development
42. Finance
43. IT

What is your age?

Response	Chart	Percentage	Count
Under 20		21.6%	22
20 - 29		51.0%	52
30 - 39		18.6%	19
40 - 49		5.9%	6
50 and over		2.9%	3
<b>Total Responses</b>			<b>102</b>

In which country are you located?

#	Response
1.	UK
2.	United States
3.	UK
4.	Denpasar
5.	USA
6.	Lithuania
7.	US
8.	United States of America
9.	United States
10.	United Kingdom
11.	US
12.	iran
13.	INDONESIA



14.	INDONESIA
15.	Iceland
16.	Iceland
17.	Canada
18.	Iceland
19.	Latvia
20.	USA
21.	New Zealand
22.	Iceland
23.	Greece
24.	Russian Federation
25.	Iceland
26.	Turkey
27.	Hungary
28.	Greece
29.	Sweden
30.	united states
31.	France
32.	Croatia
33.	Australia
34.	Indonesia
35.	Germany
36.	belgium
37.	United States
38.	Ireland
39.	Germany
40.	china
41.	Sweden
42.	Iceland
43.	united kingdom
44.	Viet Nam
45.	United States of America
46.	United Kingdom
47.	USA



48.	US
49.	Czech Republic
50.	usa
51.	Greece
52.	United States
53.	United States
54.	netherlands
55.	Iceland
56.	indonesia, jakarta
57.	Turkey
58.	United States
59.	Greece
60.	Brazil
61.	Dubai
62.	Iceland
63.	USA
64.	United States
65.	Iceland
66.	USA
67.	United States
68.	Iceland
69.	united kingdom
70.	united kingdom
71.	Chile
72.	italy
73.	India
74.	United Kingdom
75.	INDIA
76.	Poland
77.	Finland
78.	Mauritius
79.	Belgium
80.	Sweden
81.	Brazil



82.	United Kingdom
83.	serbia
84.	germany
85.	The Netherlands
86.	usa
87.	Iceland
88.	Vietnam
89.	Poland
90.	Mexico
91.	usa
92.	viet nam
93.	Iceland
94.	Iceland
95.	Spain
96.	United Kingdom
97.	Indonesia
98.	Brazil
99.	Poland
100.	usa

Which factors do you feel are the most important when choosing a cloud provider?

	1	2	3	4	5	6	7	Total Responses
Price	45 (46.9%)	11 (11.5%)	20 (20.8%)	11 (11.5%)	4 (4.2%)	4 (4.2%)	1 (1.0%)	96
Environmental factor	9 (10.1%)	21 (23.6%)	10 (11.2%)	14 (15.7%)	13 (14.6%)	10 (11.2%)	12 (13.5%)	89
Security	15 (16.1%)	25 (26.9%)	28 (30.1%)	10 (10.8%)	7 (7.5%)	6 (6.5%)	2 (2.2%)	93
Reliability	18 (19.1%)	19 (20.2%)	16 (17.0%)	30 (31.9%)	8 (8.5%)	2 (2.1%)	1 (1.1%)	94
Features - such as web app	2 (2.3%)	6 (6.8%)	10 (11.4%)	8 (9.1%)	21 (23.9%)	18 (20.5%)	23 (26.1%)	88
Support	5 (5.5%)	4 (4.4%)	6 (6.6%)	10 (11.0%)	24 (26.4%)	26 (28.6%)	16 (17.6%)	91



Location of data centers	11 (12.2%)	9 (10.0%)	6 (6.7%)	10 (11.1%)	11 (12.2%)	17 (18.9%)	26 (28.9%)	90
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Which of these did you consider when signing up for GreenQloud?

Response	Chart	Percentage	Count
Price		75.5%	77
Environmental factor		51.0%	52
Security		44.1%	45
Reliability		27.5%	28
Features		23.5%	24
Support		17.6%	18
Location		47.1%	48
Other? Please specify:		8.8%	9
<b>Total Responses</b>			<b>102</b>

Which of these did you consider when signing up for GreenQloud? (Other? Please specify:)

#	Response
1.	Icelandic company :)
2.	Íslenskt já takk :)
3.	I love Iceland
4.	
5.	Chance of falling prey to the NSA and similar organizations.
6.	Try GreenQloud
7.	Api
8.	
9.	got free account from RU

What could we do/add to improve your experience with GreenQloud?

#	Response
1.	Make your FAQ's a little easier to understand as not everybody who uses Cloud storage is a professional. I spent ages until I found how to access API keys. Even then it was a happy accident.
2.	2 Factor Authentication, Perfect Forward Secrecy, etc
3.	More reliability, better support/guides for automated infrastructure.



4.	Yes
5.	Introduce FIDO compliant 2-factor/Universal 2 Factor
6.	Everything is great
7.	Keep on improving the reliability, it is definitely moving in the right direction but is just not there yet
8.	IPv6 Support, more locations for data centers in data-safe countries like Iceland
9.	None
10.	i'm not experience for GQ but i'm believe
11.	My hope i have a experience with GreenQloud
12.	The security of the API looks/feels fishy, especially how it can access my instances, but nothing I can pinpoint out specifically. May just be my paranoia, but keep up the good work. :-)
13.	Nothing specific
14.	pretty fantastic so far
15.	Ensure better reliability, and better price
16.	Payment with bitcoin or any other anonymous payment
17.	Add a reverse DNS setting to the UI, accept payments in Bitcoins, implement two-factor auth, add OpenBSD images, an out-of-band console like on Linode, IPv6 addreses (RootBSD gives /64 blocks, even!)
18.	Bucket desktop integration and Synching on Linux platforms. (I'm using Debian).
19.	More Good Prices
20.	Mobile apps please :)
21.	add more os
22.	iOS app for iPhone/iPad
23.	FREE STORAGE
24.	membagi ssh keorang lain
25.	Its great atm :)
26.	More flexibility in ComputeQloud config, eg. installing OS from ISO, partitioning 10GB volume for different mount points, & ability to resize those partitions (& fixing Debian grub issue)
27.	Better features in the storage sync app. Make it like Dropbox? Add a cloud backup app that is closer to time machine or cloud backups as well as the bucket/Dropbox sync app.
28.	Public IPV6 support. DNS.
29.	It's actually just perfect :)
30.	more OS images (maybe some with pre-installed software)
31.	Test Server
32.	Nothing the GreenQloud service is great! The only thing I would like to see is official support for Linux and Android for QloudSync.



33.	computecloud is very buggy - i often click on things like "create instance", "deattach IP address" etc, and nothing will happen, until I wait a few hours and try again. this is my biggest problem with GreenQloud
34.	no idea
35.	Make sure the interface works well, seems buggy.
36.	More real minimal appliace (virtual images) of servers. Like very minimal Fedora. And specialised distributions. Diversity. ... Properly support discritics in names, etc.
37.	add more OS
38.	Add more location server.
39.	North American datacenter
40.	Enable people to create a VPS instance with some packages installed (like a LAMP stack, WordPress etc.).
41.	make adsense in adwards i think
42.	More operating systems, please. (My desired one is Arch Linux)
43.	Can't think of anything yet :)
44.	Nothing!
45.	computecloud has always been a bit flaky for me.
46.	Provide additional images for compute machines
47.	LOL
48.	increase internet speed
49.	net speed
50.	green app
51.	Add options to import existing Virtual Machines (VMs)
52.	LOWER THE PRICE
53.	add an instant chat window so as the clients can talk and get quick answer, there should be 24/7 support
54.	Add more customer support
55.	Better bandwidth
56.	nothing
57.	This survey UI is very confusing
58.	Add new Location in Asia
59.	iOS App
60.	yes
61.	More attractive pricing
62.	server
63.	bonus sign up





## Appendix E – Third tier survey report

3<sup>rd</sup> Tier independent survey

(Completion rate: 100.0%)

Which applies to you:

Response	Chart	Percentage	Count
Student/educator		26.9%	7
Employed		73.1%	19
<b>Total Responses</b>			<b>26</b>

In which country are you located?

#	Response
1.	England
2.	Germany
3.	UK
4.	UK
5.	UK
6.	iceland
7.	Iceland
8.	iceland
9.	Iceland
10.	iceland
11.	Norway
12.	Iceland
13.	Australia
14.	Iceland
15.	Iceland
16.	UK
17.	Iceland
18.	Denmark
19.	Iceland
20.	Iceland



21. Iceland
22. Denmark
23. Iceland
24. Iceland
25. Island
26. Iceland
27. iceland
28. Iceland
29. Iceland
30. Denmark
31. denmark

Which industry are you in?

#	Response
1.	Healthcare
2.	Marketing Webdesign
3.	Sustainability Consulting
4.	software / sustainability services
5.	Management Consulting
6.	research
7.	Iceland
8.	architecture
9.	consulting
10.	Education
11.	Software
12.	Architecture
13.	IT
14.	Software Engineering
15.	hotel industry
16.	construction
17.	Medical
18.	Transportation
19.	Engineering
20.	Health care
21.	Airport



22. retail
23. Consulting
24. tourism

Please rank which factors you deem to be the most important in a cloud provider (from 1-6).

	1	2	3	4	5	6	7	Total Responses
Price	5 (20.0%)	4 (16.0%)	5 (20.0%)	7 (28.0%)	3 (12.0%)	0 (0.0%)	1 (4.0%)	25
Environmental factor	0 (0.0%)	2 (8.3%)	2 (8.3%)	2 (8.3%)	7 (29.2%)	7 (29.2%)	4 (16.7%)	24
Reliability	10 (40.0%)	7 (28.0%)	6 (24.0%)	1 (4.0%)	1 (4.0%)	0 (0.0%)	0 (0.0%)	25
Features - such as mobile app	1 (4.0%)	3 (12.0%)	1 (4.0%)	6 (24.0%)	5 (20.0%)	8 (32.0%)	1 (4.0%)	25
Support	1 (4.0%)	5 (20.0%)	4 (16.0%)	6 (24.0%)	8 (32.0%)	1 (4.0%)	0 (0.0%)	25
Security	7 (29.2%)	5 (20.8%)	7 (29.2%)	4 (16.7%)	1 (4.2%)	0 (0.0%)	0 (0.0%)	24
Location of their data center	1 (5.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	7 (35.0%)	12 (60.0%)	20

Do you feel that cloud providers are lacking something from their offerings? If yes, please explain:

#	Response
1.	nope
2.	Green Credentials (certified)
3.	Ease of access
4.	no.
5.	no
6.	Trust that price will stable
7.	no

#### Cross Tabulations



Response	Under 20	20 - 29	30 - 39	40 - 49	50 and over
I am a private user	22 21.4%	53 51.5%	19 18.4%	6 5.8%	3 2.9%

Which of these did you consider when signing up for GreenQloud?

Response	Under 20	20 - 29	30 - 39	40 - 49	50 and over
<b>Price</b>	13 16.9%	42 54.5%	15 19.5%	4 5.2%	3 3.9%
<b>Environmental factor</b>	9 17.3%	24 46.2%	12 23.1%	5 9.6%	2 3.8%
<b>Security</b>	10 22.7%	22 50.0%	5 11.4%	5 11.4%	2 4.5%
<b>Reliability</b>	6 21.4%	15 53.6%	4 14.3%	2 7.1%	1 3.6%
<b>Features</b>	6 25.0%	14 58.3%	3 12.5%	1 4.2%	0 0.0%
<b>Support</b>	5 27.8%	10 55.6%	2 11.1%	1 5.6%	0 0.0%
<b>Location</b>	7 14.3%	25 51.0%	13 26.5%	2 4.1%	2 4.1%

	Environmental factor	Price	Security	Reliability	Features	Support	Location	Other
Under 20	23	16	18	11	11	9	12	2
20 - 29	27	15	14	10	9	6	16	3
30 - 39	26	21	9	7	5	4	23	5
40 - 49	19	24	24	10	5	5	10	5
50+	30	20	20	10	0	0	20	0