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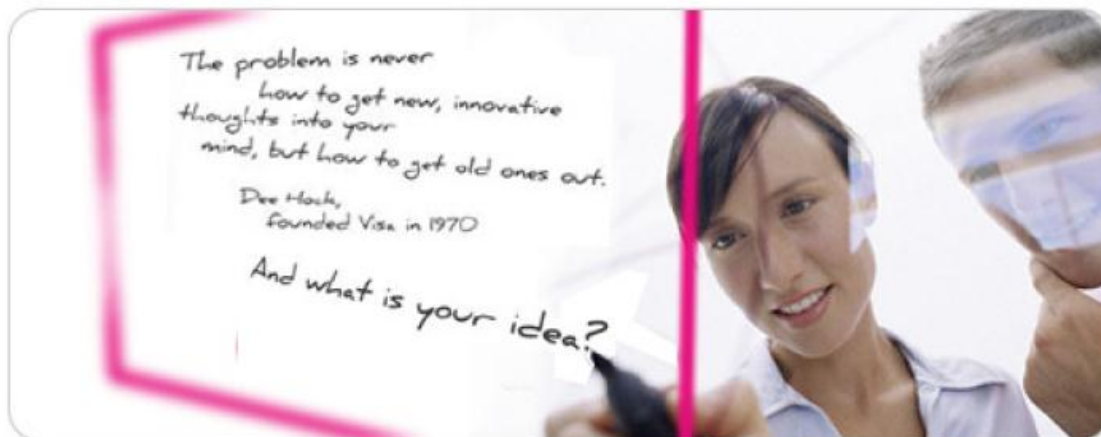
The Big Picture: A new source of competitive advantage

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26th September 2011

FLANDERS DISTRICT OF CREATIVITY

Flanders DC is the **Flemish organisation for entrepreneurial creativity** and was established by the Flemish Government in 2004. Flanders DC's mission is **to make enterprising Flanders more creative and to make creative Flanders more entrepreneurial.**



Flanders DC builds **knowledge**, raises **awareness** and designs **practical tools** for anyone wishing to launch a creative and enterprising project. To this end Flanders DC established a **Knowledge Centre** at Vlerick Leuven Gent Management School and the Antwerp Management School. Research themes include: innovation, intra/entrepreneurship, internationalisation and the creative industries.

Flanders DC focuses on **entrepreneurs, teachers, students, policy-makers and the general public.** Among the many options Flanders DC offers are: a free online training in creative thinking, a creativity test, a brainstorm kit, invite an entrepreneur to speak in your class or at your event, take part in the De Bedenkers (The Inventors) classroom competition and an online game to discover how you score as an innovative manager.

Entrepreneurial creativity is not an end in itself for Flanders DC but a means **to turn Flanders into an international top region with increased competitiveness.** This is necessary to ensure that Flanders remains economically healthy and to create new jobs. Flanders DC wishes to contribute to this with more **entrepreneurial creativity** on the one hand and a stronger **creative industry** on the other hand. Thanks to entrepreneurial creativity companies find new innovative and more creative responses to their current and future challenges. They can anticipate change. This gives them a competitive edge. Entrepreneurial creativity encompasses the non-technological aspects of innovation.

Flanders DC believes that creativity and innovation originate in new combinations. Flanders DC therefore wants to be a **networking platform** where various initiatives, companies and regions can easily find one another. In this way Flanders DC aims to facilitate fast and new combinations between players in different domains.

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- **Ondernemen.meerdan.ondernemen**, an online learning platform
- **Creativity Class** for young high-potentials
- **Flanders DC Fellows**, inspiring role models in business creativity
- **Creativity Talks**, monthly seminars on business creativity and innovation
- **Innovix**, online innovation management game
- **Flanders DC Academic Seminars**, research seminars on business creativity and innovation
- **TeamScan**, online tool
- **Web 2.0 Readiness Scan**
- **HR Toolbox**



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1 Introduction

Since the dawn of the industrial revolution, businesses have sought competitive advantage in their operations: their imperatives have been to source more cheaply, to make more efficiently, and to sell more effectively. The locus of competitive advantage has been in the upstream, and internal to the firm. But with the flood of marketplace data now available, we see the opportunity for a significant shift in that locus: from upstream and internal sources to downstream, marketplace-based sources of competitive advantage. In this report we examine a specific type of downstream advantage: the business' big picture perspective on the market, its big picture view of its customers, and its ability to understand and create value from customer information patterns.

Consider the following analogy: if 500 people each possess one piece of a 500 piece puzzle but do not know of the existence of the other 499 pieces, their possession is essentially meaningless to them. But for someone who knows of the puzzle and its dispersed pieces, there is unique and valuable insight to be gained from assembling the pieces to see the whole picture.

Your customers^{*} possess information that is akin to a piece of a puzzle. They just don't know what to do with it – it is meaningless unless assembled. In most instances that piece of the puzzle remains forgotten in a drawer or in a database, un-accessed, unused because customers fail to realize its possible role in the larger context. Data remain uncollected, measures go unmeasured, information remains trapped. Often, it takes someone from the outside to see the potential of piecing together the puzzle. That outsider is someone who has contact with all 500, knows they each possess a piece of the puzzle, and understands the potential value of assembling the pieces. That outsider can be your business. And once you find a way to bring together the pieces, you can see patterns you've never seen before, patterns your customers have never seen before; patterns that can help your customers make choices and gain tremendous value.

This value is created by resolving the inherent information asymmetry that exists between the company and its customers. The Big Picture perspective is unique to the organisation, and its value can be released by revealing the bigger picture to the individual customers who do not possess this unique helicopter view.

Most businesses today gather considerable amounts of data about the customers that buy from them. But despite progress, those data remain remarkably underutilized. Customers leave behind information traces as they use products and services. They leave behind information as they search for information. These traces reveal patterns of behaviour, tacit needs, and systems of interrelated activities that customers undertake. Piecing these traces together and aggregating data from multiple sources creates a unique understanding of the market and enables companies to uncover real needs

* In the text throughout the report, we are referring to "customers" but the recipients of the Big Picture value and the sources of Big Picture data may also be other stakeholders of the company, such as suppliers, distributors, and partner companies.

behind expressed demand, as well as opportunities that are untapped and often implicit (Dawar and Vandenbosch, 2004, Mitreanu, 2005).

In this report, we will show how the value of such a big picture view translates into sustainable competitive advantage that cannot be readily replicated. Moreover, we will show how, counter to the general rule, competitive advantage gained through the big picture may even become stronger over time, as the company develops capabilities to recognise and predict (Dawar and Vandenbosch, 2004).

Modern technology, the Internet and the digitisation of consumers' lives have created an environment awash in data. Each type of data has the potential to paint a Big Picture, and can offer unique insights that cannot be obtained from seeing individual data points. This broad view across customers contains value that can be leveraged to create new products, services, knowledge, value and competitive advantage.

The challenge for businesses is to recognize their unique ability to piece together information puzzles, and to identify untapped customer insights and the hidden assets they may already possess.

1.1 Google Flu Trends

Take for example Google, the largest search engine in the world. Google handles over 2 million searches per minute, globally, which amounts to several billion searches in a day (McGee, 2010A). This gives Google access to enormous amount of data in the form of keywords. The goldmine of information that resides in these millions of keywords was waiting to be exploited. It wasn't until 2006 that Google started analysing the keywords people put in their search windows (Google, 2011, Siegler, 2008, McGee, 2010B).

In 2008 Google took keyword analysis a step further and focused on illness, or medical symptom-related search keywords and the Internet Protocol (IP) addresses they came from. This combination of spatial data with search items enabled Google to correlate illness-related keywords with geography (Google, 2011). When the relationship between illness-related keywords and influenza occurrence in the United States was measured, the results confirmed a correlation. In fact, trends observed in the search-engine data proved to be consistently 1 to 2 weeks ahead of the Center for Disease Control surveillance reports.

Google Flu Trends, a product developed on the basis of these data can create immense value for national and regional health authorities, clinics and hospitals, as well as individual patients in prevention, as well as treatment of contagious diseases. This example hints at the potential benefits of data aggregation and pattern recognition.

Google was not the first entrant into the search engine market, but it has been a pioneer in the use of the data to generate insights that were entirely new.

2 Big Picture: The Principle

Every organisation is a member of a supply chain through which it obtains input materials into its processes and through which it delivers its products or services to its end customers. A customer base may contain thousands, or even millions of customers. Each customer carries a piece of the puzzle. If collected and aggregated, these pieces will reveal patterns. The resulting trends can uncover underlying causes of purchase behaviour, patterns and commonalities in behaviour, and may even reveal needs, previously unseen (Zook, 2007).

Consider the example of CitySense, the mobile application that maps social activity in a number of major cities in U.S. The application collects location based information on the GPS signal from customers' smartphones and combines this with information from taxi and limousine services to identify the "cultural buzz" in town. Originally, it was built to show users where people in the city were spending their time. However, Sense Networks, the company behind CitySense, was gradually able to identify 7 different behavioural segments among the users in terms of the patterns of their social life. Based on this information, the application is now able to tell the user where *people like them* are at any given time. Uncovering these behavioural segments creates a new form of value for CitySense customers – they know where others like them are hanging out. And the insight into customer behaviour also has the potential to create even more value for marketers when combined with demographic variables, such as income or spending patterns (Forrest, 2008, Poratta, 2008, Sense Networks, 2011).

As noted previously, an important characteristic of the Big Picture is that the patterns constituting it cannot be observed by looking at any individual customer in isolation, but rather are unveiled through aggregation – by looking at all of the information at once. This is when game-changing opportunities can be recognised. The value of the information a company has about its customers as a whole is far greater than the value of individual customer profiles put together (Dawar and Vandebosch, 2004).

Because any given company has a unique set of data and information flowing through it from many varied sources, the Big Picture to which it has access is unique, and uniquely valuable to customers because they neither possess the capacity to capture that data, nor are they exposed to so many diverse contacts and information flows (Dawar and Vandebosch, 2004, Zook, 2007).

It is worth noting that our call for creating value from the big picture contrasts with the marketing trends toward personalisation and micro-segmentation based on data-mining. Our approach calls for a broader perspective that cannot be created by drilling down to determine the preferences of each and every customer. Instead, we suggest that businesses take a step back from over-segmented markets to see larger trends and patterns. Similarly, the Big Picture is not about statistics or data-mining to predict the next transaction. The Big Picture view can range from a simple but previously unseen fact about one's customers to observing a complex system of interrelated events within the market (Dawar

& Vandebosch, 2004). This strategic insight will form a basis for guiding decisions throughout the organisation towards sustainable customer value creation.

2.1 Insight From the Big Picture

Insight from the Big Picture can be extracted in two ways. It can either be used within the company or it can be relayed onto customers or other company stakeholders.

First we look at the case of John L. Scott Real Estate and Zillow.com, both information examples in the real estate business. These companies help illustrate how a company can create value for their customers by passing the Big Picture view it possesses onto its customers.

In 2005, the leading regional realtor in Washington launched an online 3D visual property search tool using Microsoft's Virtual Earth platform. The tool enables potential clients to browse the listed properties. The system also records the prices at which houses are eventually sold, so an inexperienced house seller has the opportunity to benchmark their asking price with the prices of similar properties in the neighbourhood. Similarly, a house seller can view the property prices in his or her area to better estimate the market price of his or her property.

One might ask what the added value from aggregating and sharing this information is for John L. Scott Real Estate. Apart from astonishing significant increase in customer loyalty (46%), the company reported the highest number of website visitors in its history amounting to almost 1.2 million per month shortly after introducing the tool, which represents an 11% increase in comparison to previous figures.

The tool also helped the company differentiate itself from the competition, as it was one of the first companies worldwide to adopt such technology. It is true that competitors could quickly follow in adoption of the 3D visualisation platform. However, before they did, John L. Scott had already enhanced the trust associated with its brand to the extent that it not only attracted many loyal customers, but also the best realtors in the region to work for the company (Microsoft Corporation, 2006A).

Zillow.com, a Seattle start up performs a similar information aggregation function for the entire U.S. real estate market. In February 2006, just months after John L. Scott's search tool went live, Zillow launched its massive online property database updated daily. Zillow.com is not a real estate agency itself. Its business model focuses on creating customer value from the listings published on each and every U.S. realtor's website. Using this information, Zillow.com can project real-time house prices in any area within the U.S., projected on a map, and can even predict where prices are headed. By providing valuations of more than 65 million US homes for sale, as well as median prices per property type within an area, Zillow helps real estate consumers answer the question "How much is my house really worth?"(Microsoft Corporation, 2006B).

John L. Scott Real Estate and Zillow.com chose to use the insight from the Big Picture by relaying it onto its customers. Simply giving the customers access to the Big Picture they possess, and making it visible to them created customer value.

However, a company may also decide to create customer value from the Big Picture indirectly, as illustrated in our next example, Orica, an Australian explosives company.

Orica is an Australian company that is a leader in the explosives business. The company was founded in the 19th century as a supplier of explosives to the Victorian gold mine fields. Today, Orica is among the top 30 companies on the Australian Stock Exchange. But explosives are a commodity business, purchased by tender. How does a company thrive in such a commodity industry? Like many of its competitors, Orica focuses on efficiency to lower the costs of its explosives to remain competitive. However, engineers at Orica also approached the challenge differently. They realised that significant cost and risk reduction could be achieved by mastering the precision and efficiency of the blast. They identified some 20 parameters that influenced the quality of the blast, and started collecting data from their customers on these parameters. Before long, Orica was able to develop a prediction algorithm to specify the input parameters required to obtain the output required. Based on the aggregation of years of data from hundreds of blasts, Orica can now predict the outcome of any given blast. This allows the company to break away from the commodity trap. Orica no longer sells explosives, it can now sell broken rock (Kotler, et al 2009, Laudon & Laudon, 2008, Vandenbosch & Dawar, 2002).

3 The Framework

The examples above illustrate how the Big Picture creates value for customers, directly or indirectly. In the case of John L. Scott real estate and Zillow.com, the Big Picture is relayed to the customers and the value for the customer resides in lowering costs of research related to buying or selling their property. In the example of Orica, which used the Big Picture insight to develop a new offering of a guaranteed output, value is created by minimising uncertainty in terms of result and costs. In each instance, the companies adopted a customer-centric view to identify untapped opportunities for value creation or hidden insights that could help them fulfil a need.

For a company to adopt this view, it is necessary to focus on the activities customers perform while selecting, using and maintaining the product in question. We propose that the customer purchase cycle is a useful organizing structure for identifying opportunities for value creation from the Big Picture perspective (see Figure 1: Opportunities for Big Picture Value along the Purchase Cycle).

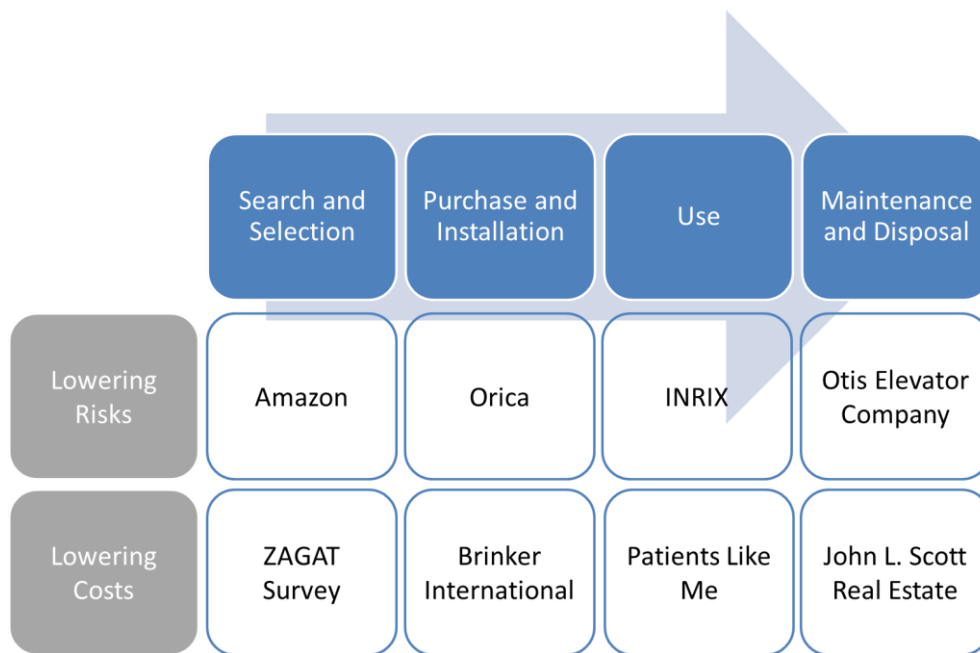


Figure 1: Opportunities for Big Picture Value along the Purchase Cycle

Customer’s total cost of ownership of a product represents all the costs, monetary and non-monetary relating to the acquisition, purchase, usage, maintenance and disposal, i.e. costs emerging throughout the purchase cycle. We suggest that customer value stemming from the Big Picture view of the market is the result of lowering customer costs and/or reducing customer risks (Vandenbosch & Dawar, 2002).

Looking at the examples in the previous section, John L. Scott Real Estate not only reduced research costs for their customers by giving them information on competitive offers, but it also reduced their risk of buying too expensively or selling too cheaply. Similarly, Orica not only reduced the risks associated

with the outcome of each explosion for their customers, but also the costs of reworking the output of the blasts if they did not yield the right outcomes. The examples used in the following section provide an illustration of how various companies lower risks or costs for their customers.

3.1 Lowering Costs

Lowering costs doesn't mean selling the product at the cheapest price. There are numerous product lifecycle costs throughout the customer purchase cycle. These include search and selection costs, switching costs, costs of maintaining the product, costs of usage, as well as costs of disposal (Day, 1999). By recording and aggregating the right kind of information a company can reduce customer costs at one or more stages of the purchase cycle.

Take for example the ZAGAT Survey, the "gastronomic bible" as it is called by the Wall Street Journal (Zagat, 2011A). The family business of Nina and Tim Zagat started in 1979 as a hobby with a simple premise that the opinions of thousands of regular restaurant-goers count for more than a few opinions of professional critics. Thus Nina and Tim built a large scale survey of 350 000 consumers about where to eat, drink and sleep around the globe. This was a unique approach to evaluating hospitality establishments, differentiating ZAGAT from the competition in the short term. Over the years, the ZAGAT brand has become a highly trusted source of restaurant, hotel and bars ranking and information, helping customers make informed decisions, and creating unique value for them. The reputation and strength of the ZAGAT brand enabled the company to expand its services into new categories and sub-categories relating to food and leisure, such as Top Live entertainment, Romance best bets, but also Top Golf courses and Top shopping places (Zagat, 2011B).

The business model behind ZAGAT is simple yet insightful. In addition to the hard-copy books that are specially designed to fit in a pocket, ZAGAT is also present on the web, where it charges membership fees for access to its restaurant ratings online. According to the Finance Business News, the company has more than 1 Million unique users every year. Recently, ZAGAT also launched a mobile application, for users on the go (Lieber, 2010).

The company created value for its customers by aggregating the information related to restaurant experiences of thousands of people, and relaying this information to millions of others. In product categories where the cost and risk of the experience is high, and where quality can often only be determined through experience, advance information as provided by Zagat is extremely valuable. Information relaying allows customers to lower their search and selection costs. And, it also reduces the risk of a bad restaurant experience.

This represents only one of many ways of reducing customer costs. A company can also aim at reducing customer costs by optimising the use of their product or service, as in the case of Orica, or lowering the costs of product maintenance or disposal illustrated previously in the examples of John L. Scott Real Estate and Zillow.com., as both companies not only help buyers search for and buy properties, but also help sellers to dispose of their properties profitably.

Naturally, exposing real estate consumers to the big picture of the real estate market also reduces the risk of them buying or selling at a loss. In the next section we examine and illustrate the second way in which the Big Picture creates value: by reducing risk.

3.2 Reducing Risks

Customer perceived risk is a subjective measure defined as “expectation of loss” (Stone & Winter, 1987; Mitchell, 1999). The loss expected can occur in multiple areas; performance risk, financial risk, time risk, social risk, and psychological risk (Ha, 2002). The first 3 categories of risk are related to the product itself, its price, performance, durability and ease-of-use. Social risk is the potential loss because the product fails to fit the social impressions one wants to convey or project. Psychological risk, on the other hand, relates to an experience of anxiety or psychological discomfort arising from a possible mismatch between the product and the buyer’s self image (Dholakia, 1997) but also worry and regret from buying or using the product (Ha, 2002).

Companies can create customer value by mitigating these risks. For example, they can mirror the aggregate picture of a particular reality to the customer and help them make better and faster purchasing decisions. A common example of this type of risk reduction is the many recommendation engines that have sprung up in conjunction with Internet retail (Schafer et al, 2001; Linden, et al, 2003).

Amazon, the largest internet retailer, for example, uses recommendation algorithms to personalize its online store to each customer. The Dot Com start-up pioneered the online retail experience and became a global brand within a few years of existence. It served 75 million active customer accounts and ships orders to more than 200 countries (Chaffey, 2008). There are many processes that underpin Amazon’s success, including the all-important recommendation engine that promotes cross-selling.

By aggregating data on such a large number of customers, Amazon is able to offer high quality recommendations in real time about what the customer might like based on what they put in their baskets, or what they are looking at on the site. This approach results in advantages for the customer and the company. First, customers’ search time is reduced. Secondly, and more importantly, the risk that they will make a wrong purchase is mitigated. As a result, the customer feels better served, and ultimately develops a trust relationship with the retailer brand and buys more (Chaffey, 2008).

The Big Picture within Amazon’s recommendation engine lies in aggregating and relaying information about products most frequently bought together (Linden et al, 2003). The more Amazon knows about the similarities and complementarities among their products through other customers’ purchases, the more it can use this information to predict the preferences of customers interested in a particular item and thus create customer value in terms of lowering selection- and transaction-related risks. Crucially, a benefit of using aggregate information is this snowballing feature: the more information is accumulated, the more accurate the recommendation is. And hence, the more value is created.

An example from INRIX, a leading traffic information provider, illustrates this principle. Founded in 2005 in Kirkland, Washington, INRIX intelligently combines predictive algorithms based on historical traffic data with real-time information to devise the fastest route to a destination desired by the

customer. The company's approach is different from its competitors' in terms of the variety of data sources used to predict traffic patterns. INRIX collects high-quality traffic information from more than 2 million GPS-enabled vehicles and mobile devices, road sensors and hundreds of other sources to develop a Big Picture perspective on real-time traffic conditions, as well as to feed the data into INRIX's prediction algorithm to observe traffic patterns over time. In addition, INRIX has struck partnerships with companies in the geospatial industry, such as Tele Atlas, DeCarta, Clear Channel, OPIS and others to integrate its traffic information with the available geospatial services. This enables the company to provide accurate real-time traffic information for more than 800 000 miles of roadways within the US and Canada, and about 400,000 kilometres of roadways in 18 European countries including Germany, France, UK and the BeNeLux region (Inrix, 2011, Microsoft, 2008).

In this case, aggregated information from many drivers with GPS devices is combined with information from other sources and processed to provide valuable information to every single customer.

4 The Big Picture Value

The examples above all create value from the Big Picture. But let's now delve into the different types of customer value created. We organize types of customer value along two dimensions: the beneficiary of the insight gained from the Big Picture and the reach of the unique value produced by the Big Picture. (See Figure 2: Value Creating Mechanisms of the Big Picture).

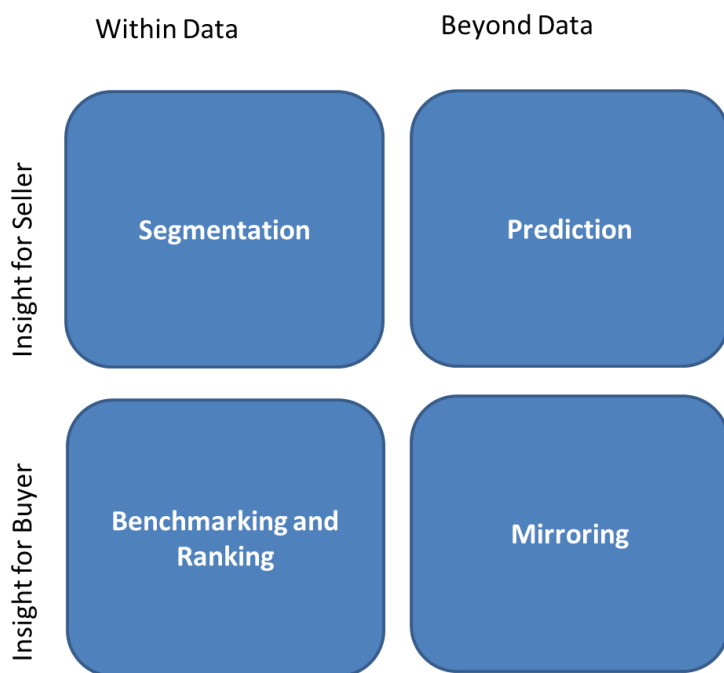


Figure 2: Value Creating Mechanisms of the Big Picture

If the information created from the Big Picture view is more important to the buyer than to the seller, it makes sense for the seller to relay or mirror this information onto their customers, as we have seen in the examples of INRIX, Amazon, and ZAGAT. In these cases, holding on to the information about traffic patterns, consumer preferences or best rated restaurants wouldn't be of much use for any of these businesses. On the other hand, sharing this Big Picture with their customers creates a hard-to-match competitive edge for all of them.

Conversely, if the insight created from the Big Picture is worth more to the company itself than to its customers, it can be used to make better business decisions or new products and services for customers. In this case the insight from the Big Picture needs to be further transformed into informed actions to create direct benefits for the customers beyond the aggregated data. We saw this above when Orica could predict the outcomes of explosions, it created a product with a guaranteed outcome.

The second dimension of our matrix relates to the reach of the unique customer value created. The Big Picture insights can be taken from the data and applied back to those same data points. We then say that the value creation mechanisms resides “Within the data”. However those Big Picture insights can also be used to generate new insights when applied to data-points not within the original Big Picture dataset that was utilised to construct these insights. We then say the value creation mechanism goes “Beyond the data”. The distinction resides in the reach that the value of the Big Picture insight has: it can remain within those who contributed data, or it can extend to observations outside the original dataset.

Take for example the social network for patients with chronic and life-changing conditions - PatientsLikeMe: The multifunctional interaction and information platform was set up in 2006 by three MIT graduates who saw an opportunity in the clinical research market. The platform is free for patients and offers several advantages: specifically, it facilitates interaction among medical patients, sharing their experience with various treatments, as well as providing peer support. Each patient has a profile that tracks their self-reported treatment history, and into which they enter the names of any medication they are taking, and note any side effects they experience. Information from the profiles is aggregated to provide statistical information on various treatments and medications for a particular diagnosis. For some patients, learning from experience of other members with the same diagnosis but more progressed has led to the increase of their life expectancy (Huijboom, 2009, Rollyson, 2008).

PatientsLikeMe collects information from hundreds of thousands of patients with various health conditions, aggregates their records and reflects them back to the same patients to learn from. Because the beneficiaries of the Big Picture value contribute their own data to create the Big Picture, we can say that the reach of the value extracted is *within the data* points. The examples of annual business school rankings published by the Financial Times and The Economist for business schools to see how they measure up against their competitors illustrate a similar point.

On the other hand, companies such as Orica or INRIX process the wealth of data they collect further to create a picture of reality that reaches beyond the individual data points upon which the Big Picture is based. Orica creates Big Picture value by observing the interaction of many parameters of a blast. When a new customer signs a “Contract for Broken Rock”, Orica derives a prediction on the amount explosives needed and the nature of the hole to be drilled for the new client based on the historical data from previous clients. Thus, the value of the Big Picture reaches beyond the data points that shaped it. Similarly, INRIX processes traffic information received from their sample of vehicles and other sensors to provide meaningful traffic information to their customers, many of whom are not a part of the sample the traffic situation is calculated from. For every customer passing through an area with dense traffic, the programme will automatically recalculate the optimal route and provide a correct indication of the arrival time based on the current traffic situation and its predicted development. This happens regardless of whether or not a particular vehicle’s GPS device is included in the sample of data points INRIX uses to create the Big Picture of traffic situation. The value produced is the same for every customer: a brief warning about traffic, but also the recalculated route and the new arrival time. Thus the value INRIX creates reaches *beyond the data* they collect.

With this classification we can begin to spell out what we can do with the Big Picture – in particular, we look at the mechanisms of value creation in each of the four cells represented by crossing the two dimensions: who (the buyer or the seller) benefits from the insight and the reach of the resulting value.

4.1 Mechanisms of value creation

The value created from the Big Picture lies in lowering costs or risks for the customers. This value is created as a direct consequence of the insight drawn from the Big Picture, regardless of whether it is utilised within the company itself or passed on to customers. The value may be generated by exposing the data to the buyer or the seller. Moreover, the benefits from Big Picture may be valuable within the group of entities contributing the individual pieces of the puzzle, or they may be reaching beyond. Based on these distinctions, we examine four distinct value-creating mechanisms (see Figure 2).

4.1.1 Segmentation

The Big Picture view used for segmentation is created by aggregating data of customers or other stakeholders to reveal latent similarities among them. These can be effectively used to segment the market and make your business' offer more targeted. Consider the example of Energex, a government-owned electricity network and one of the largest energy companies in Australia. The company operates in South-East Queensland, and serves about 1.3 Million households. However, this number is expected to reach 4.4 Million by 2031. To plan for the expected increase in demand for electricity while maintaining the quality of its services, Energex sets clear priorities for infrastructure investment.

Energex developed a business intelligence platform for smart metering that helps it plan for infrastructure development. The tool enables Energex to collect and centralize customer information. One benefit is to identify various energy profiles among their customers. Energex uses the information to provide projections of customer electricity usage and future development of the individual areas within their network. This concept, termed "Smart Grid" has also grown very popular in Europe, where the European Commission adopted a framework to introduce Smart Grids as a means to greater energy efficiency (European Commission, 2011). EANDIS, a Flemish distribution grid operator together with Infrax and PBE in Belgium initiated a pilot in smart metering in 2010 to explore the opportunities of the Big Picture (EnergyICT, 2010).

Being able to identify customer segments based on energy consumption and project future developments of urban and rural areas is an immense advantage to Energex as well as EANDIS, aiding efficient allocation of funds for network upgrades and new infrastructure development. Moreover, knowing the energy profiles of people living in particular areas helps the companies to minimize power cuts in areas of high power consumption or during peak hours. This new approach enables the companies to make better decisions about funds allocation and an increase in corporate reputation (Acxiom, 2011).

4.1.2 Benchmarking and Ranking

Benchmarking and ranking may be the most common mechanism of value creation through the Big Picture. Music charts, movie charts, best-seller lists, various rankings and information about average values of many parameters can be found everywhere. In this case, the company collecting the information is putting it in a meaningful order, or producing a statistic that is useful to its customers. This may include issuing rankings, such as the FT or Economist business school rankings, or the well-known Fortune 500 rankings. The insight created by benchmarking is a simple reflection of the aggregated data of top business schools or top US companies, i.e. the reach of the value produced is *within data* and does not extend to beyond the companies in the rankings. Over time, companies that provide do the benchmarking establish themselves as key influencers and benefit from the enhanced brand authority and recognition. Examples can be found in Financial Times, Business Week, Economist, Fortune 500 and many others. These information aggregators wield considerable power and influence in shaping the industry they benchmark. This is also true of ZAGAT, which creates value through benchmarking the restaurants it features in their guides. Its rankings allow restaurants to benchmark themselves against their competitors, ZAGAT Survey's value with respect to the restaurants can be defined as *within data*. However, the primary target group for ZAGAT culinary guides are consumers - restaurant goers, who are not in any relation to the restaurant data. Therefore, to them ZAGAT creates unique value through the mirroring process described in greater detail in the next section.

4.1.3 Mirroring

Mirroring represents another dimension of value from the Big Picture *beyond data*. In this case, the company mirrors or reflects important Big Picture reality to their customers, offering value that they cannot otherwise obtain. In contrast to the benchmarking and ranking value creation mechanism, in mirroring the value produced extends beyond the data points constituting the Big Picture. Consider the ZAGAT example introduced above. As discussed, ZAGAT creates value through benchmarking for the restaurants it features in its listings. The company collects information about each of the restaurants and rates them on multiple criteria. This enables any restaurant within the sample to compare itself to others. For consumers, who are ZAGAT's primary targets, ZAGAT creates value through the mirroring mechanism of reflecting other consumers' evaluation of restaurants to new patrons.

ZAGAT creates value by mirroring insights to the consumer as a standalone product. The value created by mirroring can also be provided as an enhancement to the current value proposition. Online fashion retailer Net-a-Porter uses mirroring as a way to inspire customers and help them during their purchase process. On Net-a-Porter Live, customers get a real-time view of the items that other women around the world put in their shopping bag (Net-a-Porter, 2011). Many websites employ a simple version of mirroring by displaying a counter indicating the most popular items on the site. More complex type of mirroring happens when the information that is reflected back to customers is customised according to what is relevant to them. This can be observed in examples such as the recommendation engines of Amazon. Taking the "Customers who bought this also bought that" feature, Amazon goes beyond simply creating value by displaying information on popular item combinations on

their website. The recommendation engine will filter out and reflect only data relevant to any particular customer. Hence, it will issue a recommendation to any one customer based on the items they are looking at on the site and offer complementary or similar products.

4.1.4 Prediction

Prediction, as the name implies, allows the company to use the Big Picture as a crystal ball to forecast events, just as Orica forecasts the outcomes of blasts. The company collects historical data on multiple parameters of a blast and uses these to calculate the optimal amount of explosive materials and the nature of the blast parameters to guarantee the desired outcome for any further blast. In this way, Orica creates value *beyond the data* – New customers can benefit from data of previous customers. To illustrate prediction better, consider the example of Otis Elevator Company.

Connecticut-based Otis Elevators is the world's largest manufacturer and operator of lifts, escalators and moving walkways. The company was founded in 1853 and grew to serve more than 200 national markets generating revenue of almost \$12bn in 2009 (Otis Elevator Company, 2010).

The core revenue stream in the elevator industry is the servicing of installed equipment. Over the years and due to the development of elevator technology, the elevator and escalator markets have become quite mature in providing the basic service (Niven, 1999). To stay ahead of the game in an increasingly commoditized market, Otis had to look for new opportunities.

The company decided to focus on metrics such as minimizing out-of-service time and on goals such as automating the maintenance procedures of lifts. As part of this initiative, Otis developed a sophisticated remote monitoring system. Its monitoring software continuously scans up to 325 different elevator components seeking anomalies and detecting any deteriorating components so that they can be preventatively replaced. But from our perspective, what is of interest is that Otis Elevators recognised the potential for aggregating elevator data to predict future breakdowns and faults. At any given time, the system is gathering and collating information from thousands of elevators. If a similar malfunction is detected in a number of the lifts, Otis can issue a corrective instruction for all lifts that might develop a similar defect and technicians are dispatched to replace problem components (Otis Elevator Company, 2003). Customers are not only spared the time and effort required to book a regular maintenance check, but the risk of an unexpected elevator breakdown is significantly reduced as well.

Interestingly, the more history the business has in producing these predictions, the more accurate they tend to be, and hence the more valuable they are. To illustrate further, Orica and Otis Elevator Company gather Big Picture data to be able to predict future events; size and nature of blast in case of Orica, elevator break-down in case of Otis Elevators. Because their predictions are relevant to blasts and lifts outside the observed sample, they provide value *beyond the data* that they initially collect. The insight from the Big Picture is utilised within the company, but it is transformed later into a direct customer benefit, such as trust and assurance, or cost savings.

5 Outcomes

The examples above illustrate that exploiting the Big Picture can help build sustainable competitive advantage. In this section, we answer the question: how does the Big Picture lead to sustainable competitive advantage? We begin with a definition of sustainable competitive advantage, and then identify criteria for a Big Picture competitive advantage to be considered sustainable.

5.1 Sustainable competitive advantage

The term competitive advantage is widely used and understood as “the unique position an organisation develops vis-à-vis its competitors through its patterns of resource deployments” (Hofer and Schendel, 1978; Reed & DeFillippi, 1990). Competitive advantage can ensue from a distinctive competence a company possesses and has power over, or be a result of sheer manifestation of luck (Reed and DeFillippi, 1990). Regardless of its origins, a competitive advantage is defined as a momentary phenomenon, wherein a company has an advantage over the other at the precise moment of measurement. To create a *sustainable* competitive advantage, firms have to ensure it “resists erosion by competitor behaviour” (Porter, 1985). This implies that firms attempt to establish barriers to imitation to preserve their competitive advantage in the long term. As argued by Lippman and Rumelt (1982), the most effective barriers to imitation are created when the competencies the competitive advantage is based upon are unclear to the rivals.

Existing research suggests three distinct characteristics of competencies that contribute to sustainability: tacitness, complexity and specificity. Tacitness refers to having best practices across a wide range of activities within the company, such as inventory control, production and so on. It can also stem from experience in a certain field, in which the company has the opportunity to learn and fine-tune its processes (Polanyi, 1967; Reed and DeFillippi, 1990). Complexity ensues from a unique combination of multiple skills and resources that are difficult to decipher. This is the reason, for example, that manufacturing firms are often secretive about their production facilities. Specificity is associated with unique long-term relationships between a company and a customer due to the company’s ability to serve the customer better than the competing companies (Reed and DeFillippi, 1990).

The Big Picture view, includes gathering data from hidden, neglected, or latent sources and aggregating them to offer unique insights into the market. We believe the competency a company acquires in this way fulfils the criteria for causal ambiguity and therefore cannot be readily imitated by competing companies. Examples of companies, such as Orica, Inrix and ZAGAT introduced earlier, but also many others provide evidence for this argument.

Orica, for example, possesses tacit, complex, as well as specific competencies in its services. The company has created a complex algorithm that determines the outcomes in terms of broken rock. The

algorithm is complex and difficult to reverse-engineer for other companies. Moreover, Orica has fine-tuned its operations over years of experience, and developed a tacit expertise in and the use and placement of explosives. This competency stems from the accumulation of learning-by-doing over a long period of time, and it is arguably difficult to replicate. It is also important to note that this sustainable advantage grows over time, as Orica continuously accumulates data based on every blast.

5.2 Network Effects and Increasing returns to scale

A competitive advantage built on the basis of the Big Picture is not only difficult to imitate, but can lead to further benefits such as network effects and voluntary lock-in by the customer. Network effects are observed when a company's product becomes more valuable as more users adopt it. A typical example is computer software, where Microsoft has for decades benefited from being the standard operating system and applications software for personal computers.

We argue that seeing the Big Picture and relaying back to your customers can result in a network effect. City Sense, a mobile phone application by Sense Networks illustrates this.

This application, as we saw, makes smart use of location information to monitor consumer behaviour by combining GPS data Taxi and Limousine Commissions in San Francisco and other major cities in the US with Google maps and Yelp. CitySense is able to identify the traffic in individual restaurants, bars, shops and other points of interest, providing app users with a "heat map" of social activities in the city, reducing their costs of venue search.

The application is also built to identify aggregate lifestyle segments. The seven identified segments are displayed in 7 different colours on the heat map, so the application doesn't only answer the question "Where is everybody?", but also "Where is everybody like me?" The app not only lowers the costs of search for the customer, but also the risk of choosing the "wrong" venue. In other words, users are able to identify restaurants they would like, events they would enjoy and people they share interests with in any city in which the application is available (Forrest, 2008, Poratta, 2008, Sense Networks, 2011).

In this case network effects occur naturally: the more members CitySense has, the more valuable is the information that the application provides, and the more precise the segmentation. The application is one of the pioneers in the emerging industry of people-centric sensors. As these services become more mainstream, it will be increasingly difficult for the competitors of CitySense to imitate the product because they will first have to overcome the barrier to entry of a large enough user-base to provide useful information. CitySense, with its lead, would have built an even larger user-base by then. Thus, competitors may replicate the product, but cannot match CitySense's downstream competitive advantage: its user base, and its understanding of the that user base. More members are attracted to the network, creating increasing returns to scale.

In the same vein, ZAGAT's competitive advantage over other gastronomic guides rests on the company's large network of individuals who regularly rate thousands of restaurants, bars and hotels for ZAGAT. The greater this network of critics, the more sound the ratings will be, and the more

restaurants will possibly be included in the guide. As a result, the ZAGAT survey produces greater value for each consumer. Moreover, as the network of ZAGAT-rated restaurants increased over the years, ZAGAT's rating became a reference point in the hospitality industry, creating a cognitive competitive advantage for the brand (Dawar & Goedertier, 2009), which is not easily replicated.

5.3 Lock-in Effect

Knowing specific information about your customers and using it to their benefit can also create a voluntary customer lock-in effect. This occurs due to the trust developed between the customer and the company, such as with Otis Elevators and Orica, but also simply due to the effect of cumulative data collection over a period of time. To illustrate, consider Netflix, the renowned online movie rental company with their innovative recommendation engine Cinematch. Like Amazon's recommendation engine, Cinematch is Netflix's engine for collaborative filtering, designed to ask every user after they have returned a movie, to rate it on a 5 point scale. Based on this simple rating mechanism Netflix's machine learning algorithm senses the user's profile over time and matches it against profiles of other customers to look for similar movie-watching profiles. There is a complex algorithm behind the recommendation engine, but all in all, it is based purely on a mathematical formula, and theoretically can be reverse-engineered (Gallaugher, 2008). So what makes Netflix the best-rated and by far the largest and fastest-growing movie rental company in the world serving more than 23 Million members in the US and Canada (Netflix, 2011A, Netflix 2011B)?

Clearly, Netflix's biggest strength is the data advantage it has accumulated as a first mover in collaborative filtering in the movie industry. By accumulating over two billion movie ratings over the years, Netflix's Cinematch is able to generate recommendations with such precision, that it is difficult for rivals to replicate. Recently, Netflix offered a prize to scientists and mathematicians around the world: improve the precision of our recommendations by 10%, and we'll give you a million dollars. Many top statisticians and computer scientists around the world took on the challenge. The winning team barely met the 10% criterion. And the system gets smarter with every additional movie rating, so the accuracy of recommendations increases as we speak, leading to accumulating competitive advantage.

Today recommended titles make up 60% of the clients' wish lists. The fact that Netflix's customers appreciate the company's services and recommendations is illustrated by the consistently low churn rate and the net promoter score[†] of 94% (Gallaugher, 2008). Moreover, customers tend to get more value from their relationship with Netflix the longer they use the service. Every time they are asked to rate a movie, the system gets to know their preferences and so creates better recommendations. This inevitably creates a voluntary lock-in effect - who would give up their ratings of some 200 movies in return for a dollar saved on a subscription with the competition?

[†] Net Promoter Score = the difference between the number of promoters, i.e. customers who are most likely to create a positive word of mouth for a company by promoting their products and/or services to other people and the number of detractors, i.e. people who are likely to create a negative word of mouth for a company by discouraging other people from buying products and/or services in question expressed as a percentage of total customer base. NPS is measured based on the results of a company's satisfaction survey.

5.4 Differentiated Product

Continuing with the Netflix example, the company now doesn't need to worry about being pushed into a price war – in fact, it just pushed through a 60% price increase! Despite the video rental industry's tough competitive climate, Netflix is able to withstand price pressures mainly due to the unique value of its product. In fact, in 2004 as Wal-Mart and Blockbuster entered the online video rental business with extremely low promotional offers, Netflix's churn rate fell below 4% - an all-time low (Sharma, 2004, Gallagher, 2008).

Netflix is not the only example of a company pursuing a big-picture strategy that is able to protect its margins. Orica, Otis Elevators, Amazon, John L. Scott Real Estate and many others are also facing fierce competition in their industries, yet are able to increase customer loyalty, escape commodity traps and fend off price wars.

6 Applying The Framework

We believe any company can create and reap the benefits of a Big Picture perspective. To aid practical application of our framework, we offer a step-by-step process for implementation.

6.1 Step1: Identify possibilities to create customer value

The first step is to recognize that every one of your customers carries information that is a piece of a larger puzzle. Where should you look? Ask yourself the following questions: What is the purchasing process of your customers? What are the stages? What is the information that is required or resides at each stage? What are the costs and risks that customers incur at each stage? How can you as a seller find information that reduces customers' costs and risks at each of the stage? Figure 1 provides an illustration of how companies can create value for their customers at each stage of the purchase process. We have found this emphasis on the buying process helps uncover hidden customer needs, and hidden uses of information. The example of PatientsLikeMe illustrates this.

The business model behind PatientsLikeMe is in analysing and uncovering insights from the information that patients contribute willingly into the community. This information is otherwise difficult to obtain, and often crucial for a correct administration of follow-up treatment. PatientsLikeMe also sells aggregate Big Picture information and insights to research institutes and pharmaceutical companies.

By looking at possibilities of creating value to patients diagnosed with a chronic disease beyond the purchase of a treatment, PatientsLikeMe created immense value to the patients as stakeholders, and has won a place in the market for patient data.

6.2 Step2: Scan the Environment for Data

The second step is to identify specific pieces of information that customers carry that can be aggregated to for a Big Picture. In principal, there are two types of data sources within the company's business environment (Smith & Raspin, 2008): (1) sources within the task environment including any data a company generates as a by-product of its normal operation; and (2) sources within the remote environment, including information sources such as data about socio-economic and technological trends, legal and political landscape (Smith & Raspin, 2008), as well as information acquired from harnessing the web (Day & Schoemaker, 2006), or other networks (Sheridan, 2009, Lazer, et al, 2009).

The breadth and variety of sources to be used for data collection depends on the company's intention to pursue a directed scan, or an undirected one. In a directed scan, the management seeks an answer to a specific question by actively scanning a limited number of data sources. In an undirected scan, the breadth of data sources and their variety is more extensive, as undirected scans involve more open exploration.

This categorization ties in with the previous step of analysing the customer purchase cycle to identify where the Big Picture can create value. If a company seeks to construct a predictive model for a particular process, it will conduct a directed scan of the variables known to be relevant. Conversely, if a company wishes to gain a wider perspective on underlying processes within its broad environment; undirected scanning involving a variety of data sources will be more suitable.

At the end of this second step, the management has gained a clear understanding of what kind of information will contribute to the Big Picture and where to find it.

6.3 Step 3: Aggregate and Analyse Data – what is it that you see?

Putting together data from various sources and aggregating them in a quest for the Big Picture will reveal a helicopter view on the variables observed. It is then the task of the management to consider what unique insight can be derived from the data, and what value it will create. Consider Brinker International, a restaurant chain operating some 1700 outlets in 27 countries.

The company operates in a low price high volume market for restaurants in which operational efficiency is core to their business. In the middle of the financial crisis in 2009, the company's tight focus on costs became even more pronounced when the company, suffering declines in profits, cut staff and closed some outlets. Brinker's CEO Dough Brooks saw that wasn't a way to keep the company profitable in the long run and decided to enhance the efficiency of its processes by investing in a business intelligence system that analysed large amounts of variables from staffing levels, daily revenues, and inventory levels per outlet to changes in items on the menu cards. Even though Brinker then had an insight into the company's internal processes, which enabled the company to predict sales and required staff levels, Brinker still felt that there were other factors external to the company influencing their sales figures.

To take it a step further, the company scanned the remote environment looking for correlations of external factors with Brinker's revenues. A result of this pan-organisational project was an algorithm pulling together internal company data, as well as data from outside the organisation, such as weather forecasts, petrol prices, and employment statistics to produce reliable predictions of future sales. These predictions enabled Brinker to adjust resource allocation, including marketing expenditures, promotions, staff and inventory levels, as well as menu offerings to meet the daily needs of their customers (Gallaughier, 2009, King, 2009).

6.4 Step 4: Use Big Picture Toolbox to select Value Creating Mechanism

The final step is to extract and exploit value from the data – drawing insight and turning it into value for the customer and the company.

As we have seen, the insight can be used to directly create value for customers, by sharing it with them, or it can be used to enhance products or services already sold by the company. In either case, the outcome the company is hoping for is either increased revenue from higher prices (because customers see greater value) or increased sales and loyalty because customers stay with the product in a competitive environment.

6.5 Step 5: Embed Big Picture thinking into the strategy of the company

To succeed in creating a sustainable competitive advantage based on the Big Picture, businesses must commit to continuously collect, maintain and refresh data from within the organization, as well as stay abreast of the information outside of the organization. Day and Schoemaker (2006) suggest that companies should dedicate resources to build their scanning competencies and make a clear allocation of tasks and responsibilities for data scanning within the company. However, arguably the most important point is that a company needs to be fully committed to scanning, aggregating and analysing data to create the Big Picture. Moreover, this is an iterative process that is constantly adjusted and refined as the company develops more expertise in the field.

A cautionary tale comes from the ZAGAT Survey. The company was caught off-guard when it failed to address the growing popularity of Web 2.0 applications and services. Relying on its powerful network of consumer critics, it neglected the potential of internet based crowd-sourced restaurant guides, such as Yelp, which started biting into its market share.

Yelp, the San Francisco-based free online guide provides any consumer an opportunity to rate and view ratings of any business that has a street address, but it quickly became known for its restaurant ratings. Within the first 2 years of existence, Yelp was already able to attract twice as many visitors to its website than ZAGAT with a 30-year history of rating restaurants. Moreover, within the same time-frame Yelp was able to cover close to 4 times the amount of restaurants in the New York City area as the ZAGAT Survey (Stross, 2008). Only in 2010 did ZAGAT react to Yelp's attack by signing a partnership with Foursquare, the location-based mobile game application capturing "the fancy of hip urbanities". The partnership is based on offering a "Foodie" badge to users checking into ZAGAT-rated restaurants frequently, encouraging more Foursquare users to use ZAGAT's guides. Also, once a user checks in, ZAGAT automatically provides them with information about best-rated items on the menu, or local specialities (Wortham, 2010). In the fast-moving world of internet competition, we will soon know if this partnership proves successful in warding off Yelp's expansion.

7 Conclusion

In this report we have outlined a new means of creating sustainable competitive advantage. The Big Picture builds on the opportunities presented by the flood of marketplace data now available to companies, to demonstrate that downstream competitive advantage is within the grasp of most companies. Companies' perspective on their markets and their ability to aggregate pieces of puzzles that reside with their customers present them with new opportunities to create value.

The report has presented a framework to understand the different types of value that can be created under the banner of the Big Picture, as well as a means to extract and develop the Big Picture.

Once companies start to see the Big Picture, it can be turned into additional services that increase the value proposition of existing products and services and strengthen the relationship with customers. It can also lead to entirely new products and services and new business. It can even be the source of new business models for start-up business. The unique helicopter view that companies possess of their customers is often an under-utilised resource that with the right value-creation mechanism can be deployed to create competitive advantage for the company.

It is important however to look beyond existing products and services to realize the full value of the Big Picture. Using the customer journey as the starting point, the business examines opportunities from a customer's point of view, rather than through the constraints of existing products and services. Companies that use the Big Picture continuously ask how they can reduce costs or risks for customers by utilising their unique view across customers.

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