E-service Safe Mining

- A competitive analysis for Zert AB
SUMMARY

The public sector in Sweden is in the process of becoming more efficient, standardized, and to increase the service towards the citizens and organizations. One of the focus areas is implementation of e-services, which would make information more easily to access as well as save resources and stimulate growth.

Starting new mining operations is challenging due to several factors. For the international investors a big problem is the language barriers and cultural differences. One of the common problems is the understanding of the Swedish legislation around safety and working environment. Finding information about the regulations is troublesome, since the system is very bureaucratic and there are several different authorities involved.

Zert AB is developing an e-service for the mining industry through a Vinnova research project. It aims to simplify the administration of building new mines, by connecting different authorities in a common service interface. This interface will also be adapted for being used by people from different cultures and languages, and making information and regulations easier to access. One ambition with the project is to develop the e-service in a way that it later on can be implemented in other industries and projects as well.

The purpose of this study was to help Zert AB to identify and define different kind of competition that this e-service is facing. A sub purpose was to define the customer and the customer value. Based on the findings we were also going to give some recommendation for future research.

To analyze the competition Porter’s five forces framework was used as a theoretical framework, and we used an iterative approach to the subject. A qualitative study was done, where interviews were conducted to gather the empirical data. Some secondary sources were also used to describe the current situation of public e-services in Sweden.

Two main customer groups were found; mining companies and authorities. The biggest source of competition was that the customers can do the work manually by for example calling the authorities, using search engines such as Google and subscribing to different newsletters. There seemed to be a general agreement that the e-service that Zert is developing is relevant. The only question mark was how much the e-service would cost, and if the added value it would give would be worth the investment.

In the end some recommendations for future areas research were given, based on the findings of the study.
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1. INTRODUCTION

In this first chapter of the study we will introduce the background to the choice of focus and purpose of this study. We will also present the demarcations we will use and how the disposition of the rest of the thesis will be in order to give an understandable overview.

1.1 Background

The public sector in Sweden is in the process of becoming more efficient, standardized, and to increase the service towards the citizens and organizations. One of the focus areas is implementation of e-services, which would make information more easily accessible as well as save resources and stimulate growth. This will create the possibility for individuals and companies to reach public services more easily and the administration process for authorities becomes more efficient. This electronic initiative was also taken by the European Council a few years ago.¹

The demand for metals is steadily increasing globally, and Sweden has an important role in the European Union considering that it almost have a 90% share of EU’s production of iron ore. This accounts for 1,6% of the world production². The biggest part of the mining industry is allocated in northern Sweden, and this is seen as an important issue by the EU-commission. EU is consuming 20% of the world production of metals, while only producing 3% of it. The increase of metal prices in the world has also led to more companies being interested in building new mines there. This is not just done by the big old Swedish mining companies, but also everything from new smaller ones to world leading actors.³

Starting new mining operations is challenging due to several factors. For the international investors a big problem is the language barriers and cultural differences. One of the common problems is the understanding of the Swedish legislation around safety and working environment. Finding information about the regulations is troublesome, since the system is very bureaucratic and there are several different authorities involved.⁴

With these factors in mind, the private company Zert AB is developing an e-service for the mining industry through a Vinnova research project. This service is aiming to solve the problems mentioned above. It will simplify the administration of building new mines, by connecting different authorities in a common service interface. This interface will be adapted for being used by people from different cultures and languages, and making information and regulations easier to access.⁵

There are many things to consider in a complex project like this, especially looking at the big amount of stakeholders. Zert AB is not developing the service to an easily defined customer, since it is a public service and not directly aimed at a specific entity. The service will not just benefit the companies using it to ensure the quality of their operations, but also the public sector by becoming more efficient, and the society by possible growth through an upswing in the mining industry in the region on northern Sweden. Without an easily defined customer,

¹ “Introduktion till kommunal E-SERVICE: Omvärldsbeskrivning och nuläget”
² Mining and semi-processing, Country Profile Sweden, The Economist Intelligence Unit Limited 2007
³ “E-Tjänst Säkra Gruvor: Projektbeskrivning 2005-02-27”
http://www.sakragruvor.se/projektbeskrivning.pdf
⁴ Ibid.
⁵ Ibid.
and the big amount of stakeholders affected by the project, understanding the competition becomes complex and of interest to research.

1.2 Research focus
What we will look into is exploring and defining the competition that the e-service, which Zert AB is developing, is facing. We will also look into two closely related areas which are defining the customer and the customer value.

1.3 Purpose of the research
The purpose of the research is to help Zert AB to identify and define different kind of competition that the e-service they are developing is facing. A sub purpose is to define the customer and the customer value. This will be done since understanding the competition is an important part of building strategy and defining new product specifications. Based on the findings we will also give some recommendation for future research.

1.4 Demarcations
To analyze the competition we have chosen to use Michael Porter’s Five Forces Framework, which is a well known model for studying the surrounding environment and the driving forces of competition, as the main lens. We are not going to compile a complete list of competitors, but rather identify different sources of competition. Our focus will be on the mining industry, and not so much on the ambition to proceed to other industries.

1.5 Definitions
The project The term we will use for the “E-service safe mining” project
The e-service The term we will use for the “E-service safe mining” e-service
Product In this study by product we mean goods and services

1.6 Disposition

1. Introduction
2. Theoretical methodology
3. Porter’s five forces framework
4. Service
5. Practical methodology
6. Empirical study
7. Analysis
8. Conclusions
9. Credibility of the research
2. THEORETICAL METHODOLOGY

This second chapter contains a discussion of our scientific choices in the topic. We will go through the choice of subject, our preconceptions and views on the topic, our perspective and approach, and finally discuss the choice of theories. After reading the chapter the reader will get a better understanding of the reasoning in the following chapters.

2.1 Choice of subject

This subject was introduced during a thesis introduction meeting at Umeå School of Business. A representative of the Lycksele section of Umeå University was presenting a project concerning implementation of an e-service in the mining industry, run by the company Zert AB. Since e-service is a growing business we thought that the project would be interesting to work with. After talking to some different people involved we got three different possible focus areas of the project defined. These were to define; the customer, the value of the project and the competition. Since competition seemed to be the least explored topic we decided that we wanted to contribute by putting our focus on that, with the other areas as a sub purpose. Even though we did the study for an external organization, we were the ones to define the research focus.

2.2 Preconceptions

Since researchers’ preconceptions can influence a study, it is important to be aware of them before initiating a study. Preconceptions are thoughts, impressions, feelings and knowledge a researcher has about the research subject. This means that the researchers’ backgrounds and experiences can influence the research, and we will thereby briefly explain them.

Leo Hansson and Lenitha Hansson are siblings that were born in the years of 1982 and 1983. They grew up in a small town named Bjurholm outside the city of Umeå in northern Sweden. The family had several computers during their upbringing, which gave them both a general foundation of computer knowledge.

Leo was during his upbringing interested in computers, and was an extensive user of the Internet. He has at the Business Administration program at Umeå School of Business mainly been studying subjects of management and entrepreneurship, and is now studying the Master’s Program in Management. During the years of study he had some extra jobs requiring use of big computer systems.

Lenitha took a year off during upper secondary school to go to the United States, where she was studying a year in High School. During her years of studies she has worked with different kind of part-time jobs, a few of them within the social services. This gave her some insights into problems with communication and accountability between the municipality and the county. At the time of this study she is in the end of her third year of the Business Administration program at Umeå School of Business, and has during the years of study been studying subjects like accounting, management and marketing.

Since we will have an interpretative and qualitative approach to the research, the preconceptions are considered an asset and not a hinder. Having this in mind our limited

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7 Ibid.
knowledge about e-service and public services might result in us missing out on some aspects due to not knowing what to look for. To compensate for this we will put more effort into gathering information from several different sources.

2.3 Our view of the topic
Since our assignment is broad and need to cover perspectives from several different aspects and stakeholders, what we will study will be different subjective interpretations. We do not find it desirable to try to come up with quantifiable truths. We believe that the result of this research will be our subjective interpretations of the empirical data that we will gather. Having this view will give a holistic understanding instead of isolated parts of the problem, which we believe is of higher interest to achieve the purpose of the research.

2.4 Perspective
The perspective we have chosen to use to look upon the competition is the one from the completed e-service point of view. By that we mean that our focus will be on the idea of the new product, the e-service for safe mines, and not on the company Zert itself. We will try to map out different kinds of competing forces rather than names of competitors. Since the e-service is a research project with many stakeholders we believe that this more neutral way of looking at the problem will be the most suitable.

2.5 Approach
When we started the work with this research, our knowledge about e-services and the mining industry were very limited, while our knowledge about competition was better due to us both having studied the business program at Umeå School of Business. Since the lens we were going to use for looking at the e-service was the one of competition, we started by building a theoretical framework about competition. It does not seem to be any research done at all in the field of competition for e-services in the mining industry, so we are entering new grounds. Due to this we believe that it is hard to exactly know where we are going, so we choose to use an iterative approach. This means that we will go back and forth between the empirical data and the theories depending on the findings we make. The grounded theory component of the iterative approach reflects in the analysis, which is based on the theoretical framework and the gathered empirical data. We will use the input we get from our different interviews to decide who to interview next, and what kind of questions to ask.

2.6 Choice of theories
When we started to look at theories about competition, we realized quite fast that the most frequently used source in the topic seemed to be from the author Michael Porter. More exactly, we found Porter’s five forces framework to be the most widespread theory. Because of this we choose to use Porter’s work as a foundation to the theoretical chapter about competition. We did also use a few other authors to verify Porter’s point of view, as well as provide us with a different perspective.

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8 Patel, R., & Davidson, B., p.30
11 Ibid.
After completing the theoretical chapter about competition we felt that some parts were missing. The product we are analyzing the competition of is a service, or more precisely an e-service. With this we reasoned that we also should have an additional chapter briefly explaining services in general, as well as a short explanation of the more specific e-services.

### 2.7 Secondary sources

The secondary sources that have been used in this study are from articles, literature and the Internet. The literature is mainly used to get the general knowledge of theories, whereas the purpose of the articles is more about getting detailed information. From the internet the used sources have mainly been the websites of the companies participating in the study. All literature is found in the University Library by using the search function ALBUM that is available at their website (www.ub.umu.se). When searching for articles the database Business Source Premier has been used, also this from the website of the University Library. For search parameters we used “peer reviewed” and “full text”. Numerous different keywords have been used when searching articles, both by themselves and in combination with each other. Some of the most frequent words were the following:

- Competition
- Porter
- Service
- E-service
- Definition

### 2.8 Criticism of secondary sources

A few of the used articles are published in the 80’s and the beginning of the 90’s, which might be considered relatively old. However, these articles have frequently been used as references in more resent published documents, which can be interpreted that they are a foundation to the research in this area. With this reason in mind we believe that these articles have a high reliability. A few of the referred parts are secondary references. In these cases we did our best to find the primary source, but with no luck. However, they were found in articles or literature written by well-known authors, and therefore we decided to believe that they were reliable enough to use. Finally, when searching for articles in the databases, we only looked for those who were ‘peer reviewed’, which means that they have been reviewed before being published, and should therefore be reliable.
3. PORTER’S FIVE FORCES FRAMEWORK

This first theoretical chapter introduces the reader to competition. Since this study is focused on Porter’s five forces, the five key aspects in the model are presented one by one, after a general introduction to competition.

In the field of business and economics, competition is about the effort of a company acting independently with the purpose to achieve dominance and gain a potential customer. Competition is contributions to some positive aspects, for instance that it encourages innovation, strives for higher efficiency, or higher quality, of the products offered. It may also put a pressure on price, which as well is beneficial for the customer.12

When formulating strategy the key aspect is to manage competition. As well as, to become successful when entering a new market it is of great importance to understand its environment, when looking at the aspect of competitive strategy. Assessing this competitive environment is the first step in a structural analysis. The company’s environment is including both social and economic forces, and is in general quite broad. However, the most significant aspect of the environment is the industry or industries in which the company operates. The structure of the industry strongly affects the creation of rules in the competitive atmosphere.13

Porter’s five forces is a well known model which has been used to a great extent by businesses and consultancies from the time it first was published in 1979. The model is used to study the surrounding environment and the driving forces of competition.14 Competition in an industry is depending on forces from the industry, substitutes, buyers, suppliers and new entrants15. These five basic forces create the fundamental parts in Porter’s five forces framework.16

Figure 3.1: Porter’s Five Forces Framework


16 Ibid.
3.1 Competitive rivalry

The first part of the five forces models is the industry competitors and the level of rivalry among existing firms. This is symbolized by the central box in the model. Differences in the level of rivalry are of interest for potential new entrants, as well as to current market participants. New entrants in an industry are seeking to understand what is coming in the future, and the current participants because they are involved in a changing environment. A general effect of an intense competitive rivalry between companies is reduced average profitability in the industry. The reason why rivalry occurs is often because one more companies either feel that they are pressured or that they see an opportunity to strengthen their current position. A number of characteristics in an industry are found to facilitate when determining the intensity level of rivalry in an industry.

- Number of competitors
- Industry growth rate
- Level of fixed costs
- Product differentiation
- Capacity level
- Competitors
- Exit barriers

A high number of competitors in an industry make it more likely that intense rivalry will occur. This for the reason that some companies may believe that they are a minor player and will not be noticed if they make a move. The second aspect, industry growth rate, shows that a slow growth in the industry is in general related to a stronger rivalry. This slow growth might create a fight to gain market shares, initiated by companies that are trying to expand. Furthermore, high levels of fixed costs create pressure on the companies, which regularly are resulting in rapid price cutting. As a fourth factor, the level of product differentiation has an effect of rivalry, or rather the absence of differentiation. This because a customer’s choice is, when a product is perceived as commodity, more influenced by price and service, and by this a heavy pressure on price and service competition is created. Rivalry is also dependent on the capacity level. Different pressures that lead to constant overcapacity are a contributing factor for a stronger competition in the industry. The sixth aspect of rivalry is the competitors. Diversified competitors, in for instance strategies, origin and personality, may create unstable rivalry. This because they have different goals and ideas of how to compete, and are constantly colliding with each other. Another point to mention is that foreign competitors often bring in diversity to the industry. As a last factor that characterizes intense rivalry in an industry is the exit barriers, the competition in an industry might be unstable when the exit barriers are high.

3.2 Threat of substitutes

There is not just rivalry within an industry; another aspect of competition is from related markets. The presence of good substitute products limits the potential profit by placing an upper limit for prices. These substitutes are represented by the box in the bottom of the model. One example of a substitute is that a train company might be a competitor to an

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19 Ibid., p. 36-37
20 Ibid.
21 Ibid., p. 38
airline. This because a potential customer to the airline may choose to travel by train as an alternative to the flight, with the reason that it gives the possibility to bring more luggages for example.

Substitutes do not only affect the industry in normal times, they may also reduce the profit in the most profitable and shining period. The price limit created by substitutes forces a company to either increase the quality or to differentiate the product more. There are two kinds of substitute products that are most important to look at. One of them is those that are right now in trend that improves their price-performance. The other one is those who are produced by industries that are earning high profits. Further, when considering substitutes the markets that need most attention are those who are narrow, with few rivals, or which it is difficult to increase industry supply quickly. Lastly, when trying to identify these substitutes, the aim is to find products that give about the same function for about the same people. A question to ask to find substitute products easier is:

“What set of products constrains the ability of firms in this industry to substantially raise their prices?”

3.3 Power of Buyers

This third aspect of competition is represented at the right in the five forces model. To be able to sell a product to a customer, it is of great importance to pay attention to what the buyers want. Customers can play the competitors against each other, and force the prices down as well as demand higher quality or more service. This obviously leads directly to a decreased profit for the company. Some characteristics of the market situation and the importance of sales and purchases can be used to determine how strong the power of buyers is. Some examples of when the power of buyers is strong are:

- Concentrated buyer group or high volumes of purchases
- Standard or undifferentiated product
- Significant part of total purchase
- Low profits
- High impact on quality of the buyer’s product
- Saves no money
- Threat of backward integration
- Availability of information

Looking at the first characteristic, it is shown that strong power from buyers may come from a concentrated buyer group or high volumes of purchases. A relatively large purchasing volume, compared to sales, makes it important to retain the business with the customer. Also, a standard or undifferentiated product gives power to the buyer. When the customers have the alternative to use other suppliers, they can use that argument to play the companies against each other. A third aspect is if the product is representing a significant part of total purchase for the buyer. In this case the customer will put energy to find favorable prices and thereby become more price sensitive. In a similar way, buyers that have low profits have a high motivation in finding lower prices to decrease its purchasing costs. The customers are as well

23 Oster, S. M., p. 40
24 Ibid.
more price sensitive when the supplier’s product has high impact on quality of the buyer’s product. Another aspect that is concerning price sensitiveness is the question if the customer will save money when buying the product. If it saves no money then the customer is not that willing to buy. Price sensitive customers create a strong bargaining power, because they are motivated to put the energy on finding a better alternative. Also, threat of backward integration is a sixth factor that can be used to determine the power of buyers. The buyers can use the argument that they might produce the product themselves as a bargaining point. As a final characteristic, the power of buyers increases with the amount of information the customers possess. Availability of information about things like market conditions, supplier cost and what offers other buyers get, is contributing to the power of buyers.

3.4 Power of suppliers

Suppliers, which are represented at the left in the model, are in about the same way as buyers affecting the competition. Just as buyers, some characteristics of the market situation, and the importance of sales and purchases, can be used to determine how strong the power of suppliers is. These characteristics are to a large extent the opposite of the factors that are influencing the power of buyers. Some examples of when the supplier group is powerful are:

- Few companies and concentrated market
- Unique product or switching costs
- Treat of forward integration
- Small part of total sales
- Government

Starting with the aspect of how the market affects the power of the supplier group, it is stated that a strong power is created if the supplier market is dominated by a few companies and is more concentrated than the industry is sells to. When the company does not have that many suppliers to choose from, it gives the suppliers the possibility to have a strong influence on price and quality. Next characteristic of supplier power is the product. If it is a unique product or switching costs exists, the cost for changing suppliers are built up and the power is strong. This is because it makes it difficult to play different suppliers against each other. Furthermore, a probable threat of forward integration prevents the ability to improve the conditions of purchase. A fourth aspect is if the company is representing a small part of total sales for the supplier. In this case the company, as customer to the supplier, will not be able to have an influence on the price; simply because the supplier has numerous of other customers and the company is therefore not an important customer. Finally, in some situations the government might have an impact on the power of suppliers by different policies.

3.5 Threat of entry

The last aspect in the framework of the five forces, represented at the top of the model, is the threat of new entrants. When a new competitor enters the market it brings in new capacity and often substantial resources. This new player does also have the desire to gain shares of the market. How serious the threat of new entries is depends on the barriers that are present, and the reaction from other existing competitors. If the barriers are high and a strong reaction

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28 Ibid., p. 40
29 Ibid.
from competitors is expected, then the threat of new entries is not to be considered serious.\textsuperscript{30} Some indicators for that a strong reaction from existing companies would meet the new entrant are if the industry has a history of strong reactions, if the companies have good resources to fight back, or if the growth in the industry is slow and a new entry would depress the sales of the existing companies\textsuperscript{31}.

The different entry barriers can be divided into six major sources:\textsuperscript{32}

- Economies of scale
- Product differentiation
- Capital requirements
- Cost disadvantages independent of size
- Access to distribution channels
- Government policy

As a first barrier that a new entrant is facing, is if an industry is characterized by \textit{economies of scale}. These economies hinder new entrants by forcing them to either enter in a large scale or to accept cost disadvantages. To enter in a large scale may lead to strong reactions from existing companies. This means that neither of the options is considered to be desirable. Economies of scale can be in all kinds of functions in a business, for instance in production, research and development, marketing, or distribution. It can both be related to an entire functional area or to a specific operation or activity.\textsuperscript{33}

Further, when looking at the \textit{product differentiation}, already established companies have for a certain amount of time shaped a brand identification and as well as customer loyalty. Brand identification is created by advertisements, customer service and product difference. Being first in the industry does as well have an impact on the identification of the brand. The investment of building a brand name is quite risky and the new entrants have to spend to a large extent to overcome existing distributors and the customer loyalty.\textsuperscript{34}

The barrier of \textit{capital requirements} is about the need to invest a large amount of financial resources to be able to compete with other companies. Capital is not only needed for production, but also for other start-up costs like customer credit and inventories. Moreover, even though major corporations have enough resources to enter a new industry, fields like computers and mineral extractions have a large requirement for capital. This has a negative effect on the number of entrants in other industries.\textsuperscript{35}

When looking at the next barrier, \textit{cost disadvantages independent of size}, there might be some companies that have a certain cost advantage that its potential rivals do not possess. To mention is that these advantages are without the concern of size and attainable economies of scale. As an example of an advantage is the experience and learning in a company. With time, the organization gets more knowledge and experience of the different things they are working with, and this brings down costs for the company. Some other examples are an advantageous

\textsuperscript{30} Porter, M. E. (1980), \textit{How Competitive Forces Shape Strategy}, p. 36
\textsuperscript{31} Porter, M. E. (1980), \textit{Industry Structure and Competitive Strategy: Keys to Profitability}, p. 32
\textsuperscript{33} Ibid., p. 33
\textsuperscript{34} Porter, M. E. (1980), \textit{Industry Structure and Competitive Strategy: Keys to Profitability}, p. 32-33
\textsuperscript{35} Ibid., p. 32
location, proprietary technology by patent or secrecy, and the access to the most favorable raw material sources.36

New entrants are moreover affected by their need of secure distribution channels. The already existing competitors might have tied up channels by long term relationship, high quality, or sometimes even exclusive contracts37. Also, if the channels are limited and many of them are tied up with existing competitors, it results in a difficult entry into the industry38. If this barrier is high enough it sometimes results in that the new entrants have to create their own distribution channels.39

A last barrier that new entrants might face is the aspect of government policies. Consciously or unconsciously government can limit or eliminate the possibility for new entrants to an industry, by controls like licensing requirements or by limits on the access to raw material. Some examples on industries that the government restricts entry in are trucking, railroads, broadcasting, liquor retailing and freight forwarding. Government policies do also have social benefit with controls like air and water pollution standards, and regulation as well as product safety. However, these often have indirect consequences for entrants that are easy to oversee.40

All of these entry barriers are constantly changing along with changing conditions in the industry. The reason for changes in barriers can both be a result of large events outside the control of the company, as well as strategy decisions made by the company. As a final point, there are some companies that have the resources or skills that make it possible for them to overcome these entry barriers more easily than others.41

39 Ibid.
40 Porter, M. E. (1980), Industry Structure and Competitive Strategy: Keys to Profitability, p. 34
41 Ibid., p. 35
4. SERVICES

As this study is looking at competition in a product which is a service, this second theoretical chapter provides the reader with general knowledge about services. More specifically is the service an e-service, which means that we will also present some basic theories of e-services.

When explaining service in general it is about actions, performance and processes. The concept of service and the service sector may seem quite easy, although it is not that easy. Over time the definitions have been discussed a lot, and a numerous have been changing. Even though an official definition does not exist, the following one is one that is used.

“All economic activities whose output is not a physical product or construction, is generally consumed at the time it is produced, and provides added value in forms (such as convenience, amusement, timeliness, comfort, or health) that are essentially intangible concerns of its first purchaser.”

It is easy to make the mistake of believing that service is just about customer service. To go into the subject a bit deeper, service can be further explained by dividing into four different categories.

- Service industries and companies
- Service as products
- Customer service
- Derived service

The first aspect, service industries and companies, are those who have service as their core product. The service sector consists of different kinds of service industries, for instance finance, transportation, education, government and information services. Service as products is different kinds of intangible products. They can both be sold by pure service companies and non-service companies. Examples from service companies may be a hairdresser or consulting, and from non-service companies wrapping in a store or home delivery. The third category, customer service, is the service that is provided to support the core product in a company, which usually is not charged for. This may be for instance an employee helping customers in the store, or a call centre provided from the company. Finally derived service is another aspect of service. This suggests that service is about delivering a value to the customer and that even goods are actually a service provided by goods.

Moving further in the matter of services, the discussion of the difference between goods and services comes. This question has been debated for over two centuries and has not yet reached consensus. However, there is a general agreement that a difference between the two of them exists. These differences can be divided into the following four different characteristics,

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44 Zeithaml, Et al., p. 4-5
45 Ibid., p. 4-6
tangibility, standardization, production in relation to consumption, and perishability, which are to be studied in Table 4.1.

Table 4.1: Goods vs. Services

<table>
<thead>
<tr>
<th>Goods</th>
<th>Services</th>
<th>Resulting implications – Services</th>
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<tbody>
<tr>
<td>Tangible</td>
<td>Intangible</td>
<td>Cannot be inventoried.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cannot be easily patented.</td>
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<td></td>
<td></td>
<td>Cannot be readily displayed or communicated.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pricing is difficult</td>
</tr>
<tr>
<td>Standardized</td>
<td>Heterogeneous</td>
<td>Delivery and customer satisfaction depend on employee and customer action.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Quality depends on many uncontrollable factors.</td>
</tr>
<tr>
<td>Production</td>
<td>Simultaneously</td>
<td>Customers participating in and affect the transaction.</td>
</tr>
<tr>
<td>separated form</td>
<td>production and</td>
<td>Customers affect each other.</td>
</tr>
<tr>
<td>consumption</td>
<td>consumption</td>
<td>Employees affect the service outcome.</td>
</tr>
<tr>
<td>Non-perishable</td>
<td>Perishable</td>
<td>Mass production is difficult.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>It is difficult to synchronize supply and demand with.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cannot be returned or resold.</td>
</tr>
</tbody>
</table>

Source: Zeithaml, Et al., p. 22

Another difference between goods and services is that with services it is quite difficult for a customer to make a comparison of features and prices, which makes price competition a challenge. Probably price comparison is only possible to carry out in very standardized services, dry cleaning for instance. Further, pricing that is competition-based can be used as an anchor for a company’s prices. This is usually done either when the service is standardized between the different suppliers, or if it is oligopolies with a few large suppliers.

4.1. E-service

Along with these past years rapid development of technology the Internet has come to facilitate a category of services. A numerous new internet-based companies have been established, as well as the possibility to offer customers additional services to current products. And, as it seems the limit for technology services is still far from reached. Some other things that these new technologies have brought to business are the possibility to become more accessible, convenient and productive. Basic functions and transactions are much easier as well as the availability of information. Technology has also provided a way to more easily reach out to the world. Internet has made it possible for traditional companies to get access to customers that have been too hard to reach because of geographical reasons and market barriers.

47 Zeithhaml, Et al., p. 4-6
48 Ibid., p. 435
49 Ibid., p. 522-523
50 Ibid., p.15-16
When moving further in the matter of e-services it might seem like it is just an electronic service, and the same aspects as a traditional service should be applied. An e-service is similar to the traditional when looking to the description of actions, performance and effort. However, an e-service do also have similarities with goods since they are deliverable, have channels, as well as they are not as intangible, inseparable, heterogeneous, and perishable as the traditional services. These four aspects are in traditional services challenges. However, in e-services they do not exist or are at least much easier to overcome. Looking in an angle of marketing, it is stated by service marketers that have moved from traditional services to e-services, that they have found it to be fewer obstacles and more opportunities for revenue. The e-services are also, when it comes to business models, contributing to strategic advantage in many different ways, for instance in mobility, interactivity, and interchangeability.52

Moving further to study how customers evaluate the quality of websites. Four dimensions have been identified concerning evaluation of the core service and three dimensions in the matter of services recovery.53

Core dimensions:
- Efficiency
- Fulfillment
- Reliability
- Privacy

Recovery dimensions:
- Responsiveness
- Compensation
- Contact

Studying the core dimensions a bit deeper, the first aspect is **efficiency**, about how easy the customer can find what they are looking for and information of the product in the least possible effort. When it comes to **fulfillment** it is important that the service promises are correct and that the products are available. The third dimension, **reliability**, is regarding the technical functions of the website, especially how available it is and if it is working correctly. **Privacy**, the last aspect of core dimension, is concerning the assurance that data and credit information is secure and not shared when using the website. Moving further to the recovery dimensions in the quality of websites, **responsiveness** is concerning the capability to provide information when a problem occurs, having a process of how to handle returns as well as to have guarantee available online. The second aspect, **compensation**, is about to which extent customers receive their money back and are compensated for distribution costs. **Contact**, the final dimension of quality describes the importance of service agents being available for the customer, either by the internet or by phone.54

As a last point to mention is the matter of trust. A major difference between e-services and the traditional services is the lack of social presence. This may hold back the development of trust in the service and its provider. Human interaction is thought to be a critical aspect when building trust. The level of trust is also affecting the growth rate, which means that it is an important aspect to have in mind.55

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53 Zeithaml, Et al., p. 121-122
54 Ibid., p. 122
5. PRACTICAL METHODOLOGY

In this second methodology chapter we will describe how we practically performed the study. We will explain our research methodology, how we selected respondents, how we performed the interviews and critically analyze our sources.

5.1 Research methodology

Since the topic we are studying is unexplored and of relatively complex nature, we chose to do a qualitative study of the subject. This also goes in line with the purpose of the research, which is to identify and define different kind of competition, which are interpretations of different stakeholders rather than something measurable. This view is supported by literature saying “qualitative research tends to be concerned with words rather than numbers”.

Our main source of empirical data was gathered through semi-structured interviews. By that we mean interviews that have interview guides with open ended questions on somewhat specific topics to be covered. We also gathered some complementary information from written project plans and different websites. After having conducted all the interviews and gathered the primary data, we decided that it would be interesting to gather some more information about the future of e-services in the Swedish authorities. This we did by collecting secondary data from the internet. We used information from a publication called ‘municipal e-services’ from the IT-department of the Swedish municipality and county council associations, and the section for ‘e-services in the public sector’ at Vinnova’s website.

As mentioned in Chapter 2, we had an iterative approach to the subject. This means that we let one interview lead to another and the answers in one to the questions to the latter, depending on the findings we made. We thereof went back and forth between the empirical study, the interview guides and the theoretical framework. We believe that this was the best way to go about since we neither knew what kind information we would get or where to get it. We started by interviewing the CEO of Zert AB, Annica Eklundh, to get an overview of the project and some leads about where to go next.

There was another person writing a thesis about the same project as us, but with the focus on customer value instead of competition. Since these topics are closely related in some sense, as well as her focus being one of our sub purposes we decided to do the interviews together. This was not just practical for us, but also more convenient for those we had to interview. If we did it separately we believe that there would have been a risk that the respondents could forget to mention some things since they already mentioned it to the other group. They might also have become less eager to participate. Another possible outcome could have been that the first interview could have made them reflect more on the subject, making the second interview more detailed. In the end our decision was to do it together. We did not perceive that this shifted the attention away from our focus in a negative way.

5.2 Selection of respondents

Since Anna Norberg was the one that introduced the topic to us, we started by giving her a call to get the contact information to Annica Eklundh. We also asked her if she knew about any other potential people to interview about the topic. Here we will present some

57 Ibid., p.343
background to the choices of respondents. We will include short information about the respondents and their organizations, since we believe that it is important for understanding the choices, even though it could be considered as empirical data.

5.2.1 Annica Eklundh, Zert AB
Annica Eklundh is the CEO of Zert AB since three years ago, so she was the logical person to start with. She has been working at the company since 1995, and she is a part owner. She has a master’s degree in business administration, with focus on finance and marketing. Zert is a company working with safety issues and industrial risk assessment. We wanted to use the interview with her as the foundation and starting point of the empirical studies.

The complete interview guide can be found in Appendix A.

5.2.2 Anders Brundin, Dragon Mining
We were recommended to interview Anders Brundin by both Anna Norberg and Annica Eklundh. He is a part of the senior advisory board of the project, but also the manager of environmental and safety issues for Dragon Mining since November 2003, when the project had not even started. This means that he has been a part of the whole process of starting a mine. He also got a professorship in chemistry at the University of Linköping, and is still doing some teaching in industrial process optimization.

Since Dragon Mining is an international company with a newly started mine in Sweden, we thought that the company profile suits our intentions. Since Anders Brundin is a part of both Dragon Mining and the senior advisory board of the project we thought he would be a very good respondent since he would have extensive knowledge about our topic. He could give us another involved person’s perspective on the project as well as the perspective from a potential customer’s perspective due to his role in Dragon Mining.

The complete interview guide can be found in Appendix B.

5.2.3 Sofia Waaranperä & Kenneth Nordström, LKAB
During the interview with Anders Brundin we were told that the two big Swedish players in the mining industry did not seem to have any interest in the project. These two are LKAB and Boliden. We found this interesting and decided to contact them to see what they had to say. After surfing their web pages we found the phone number to the person responsible for mining rights in the environment section. After calling there explaining our purpose we were forwarded to Sofia Waaranperä who is responsible for external environment. She agreed to an interview and wanted to bring Kenneth Nordström who used to work with the issues we were interested in.

Sofia is 27 years old and has been working at LKAB since 2004, starting as project manager in external environment. She is now after her maternity leave substituting as environmental manager since a few months back. Kenneth has been working at LKAB since 1976. He has a degree in mineral engineering. He was working in the mining section until 1989, when he joined the external environment department as an environmental engineer. 1993 he became

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58 Interview Annica Eklundh, 2007-04-21  
59 Interview Anders Brundin, 2007-04-21
the environmental manager of LKAB, and was doing that until the summer 2005. He is now working in the department with energy issues and CO2 emission rights.\footnote{Interview Sofia Waaranperä & Kenneth Nordström, 2007-05-02}

The complete interview guide can be found in Appendix C.

\subsection*{5.2.4 Ylva Ågren, environmental protection section, Västerbottens Länsstyrelse}

To get perspectives from different potential stakeholders of the service in development we wanted to interview one of the involved authorities. During the interview with Annica we got to know that Länsstyrelsen both is a potential customer as well as one of the authorities the mining companies have most contact with. It will also be a part of the pilot that will be developed in the project.

Ylva has been working about one and a half to two years effective time at Länsstyrelsen. She is mainly working with mines, and then both with supervising existing mines as well as trial of new initiatives. Before she has been working with water labs and she got an engineering degree in technical biology specializing in external environment.\footnote{Interview Ylva Ågren, 2007-05-02}

The complete interview guide can be found in Appendix D.

\subsection*{5.3 Interview guides}

Before every interview we designed an interview guide consisting of questions based on the theoretical framework and possible leads from previous interviews. The interview guides consisted of different categories and open ended questions. The intention was to use the guide as a support during the interviews, and not a strict script to follow. This way of doing interviews is supported by the concept of semi-structured interviews\footnote{Kvale, S., (1997), "Den kvalitativa forskningsintervjun", Lund: Studentliteratur, p.121}.

\subsection*{5.4 Interview method}

All the interviews were booked by calling the person we wanted to interview personally. We presented ourselves and the purpose of our resource topic, and told them that we would like to interview them for about 30-40 minutes. We also said that we would record the interviews on a tape recorder. We did not have to push any of the respondents to get the interviews; they all agreed to participate without any problems. This might have been due to us trying to present the purpose of the research in a way that made them see how it could benefit their own goals\footnote{Patel, R. & Davidsson, B., p. 70}.

All the interviews were done by physical meetings, except with Sofia and Kenneth at LKAB, since they worked too far away to be practically possible. Their interview was done by a conference telephone call. The interview with Annica was done at her workplace in Lycksele, and there were no interruptions or disturbances. The interview with Anders was conducted at the Umeå University facilities in Lycksele, according to his suggestion. He offered to do that since he is living in Lycksele and he is very familiar to the place. This interview also had no interruptions or disturbances. The interview with Ylva took place in a conference room at her workplace in Umeå, also with no interruptions or disturbances. All

\footnotesize{\footnote{Interview Sofia Waaranperä & Kenneth Nordström, 2007-05-02} \footnote{Interview Ylva Ågren, 2007-05-02} \footnote{Kvale, S., (1997), "Den kvalitativa forskningsintervjun", Lund: Studentliteratur, p.121} \footnote{Patel, R. & Davidsson, B., p. 70}
these locations are in line with what Bryman suggests about where to conduct an interview.⁶⁴ Since we could not have a physical meeting with Sofia and Kenneth we arranged conference telephone equipment at Umeå University. They had a speaker telephone on their side as well. There were some initial technical challenges with the sound, but it was dealt with in a quick and efficient way. Even if we would have preferred to do all the interviews face-to-face we feel that the telephone interview was satisfactory. Phone interviews also have some advantages besides the practical aspect, such as the respondents being less affected by the characteristics and presence of the interviewers³⁵.

During all the interviews the three of us were all present. One person was driving the interview, one as main support to fill in with possible follow up questions, and the third person sitting quiet only observing. We recorded the interviews on a tape recorder and on a mobile phone, just in case there would be any problems. Before we did so, we asked the respondents again if it was fine with them. To make a more comfortable atmosphere we introduced ourselves and our study and had some small talk before we begun. This is important in order to encourage the respondent to participate and persist with the interview.⁶⁶ All the respondents were offered the possibility to be anonymous, except Sofia and Kenneth whom we forgot to ask. Instead we offered them after the interview. We used the interview guides as a base for the questions during the interviews, but were flexible and used follow up questions in order to get the most out of them. They all took about 30-40 minutes.

After the interviews we sat down with the interviewers and discussed the interview. We summarized our notes and impressions, and discussed how open the respondent was with his or her answers. To get the most out of the interviews we also transcribed all the interviews so we could read through the answers repeatedly while writing down the empirical results. Recording and transcribing interviews has many benefits such as helping our memory which is naturally limited and more detailed analysis of what is being said.⁶⁷ After the transcriptions and the empirical chapter were written, we sent them to the respondents for them to read through and comment if they believed we had misunderstood anything. We received some clarifications and updated data, which were valuable for the accuracy of our interpretations of the transcriptions.

5.5 Criticism of primary sources

Our main criticism of the primary sources is the lack of them. We had a last interview booked with an international mining company that did not happen. After missing the interview we got promised a new interview the week after, that did not happen as well, and then it was too late. This would have gathered an interesting perspective, since one big identified need that the e-service is planned to deal with is the one of language and cultural barriers. We were also interested in interviewing Sveemin, which is a central organization for the mining industry, since they were referred to at several occasions. They said that they were extremely busy and that they did not think that they knew enough to add any value to our research though. After getting passed around some we gave up.

We believe that the respondents we did get were qualitative and added a lot of value. They represented several stakeholder groups, so we think that we got a broad enough perspective for the study even if we would have liked more respondents. We got perspectives from the

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⁶⁴ Bryman, A., Bell, E., p. 348
⁶⁵ Bryman, A., Bell, E., p.129
⁶⁶ Ibid., p. 122-123
⁶⁷ Ibid., p. 353
project owner, a small foreign owned start-up mine, one of the biggest mining companies in Sweden and one of the main involved authorities. Two of the respondents were also members of the Senior Advisory Board of the project, which consists of experienced people from all the stakeholder groups. This means that we indirectly also got some of their perspectives, since they have been discussing the project together. Another question is how it influenced the respondents that we were three persons doing the study. We do not believe that this made any notable negative impact on the study, since they were all authorities and within their own environment. None of the questions could, in our opinion, notably reflect negatively on them personally, which reduces the risk of them answering in a way to project a more positive image of them. The questions were mainly focusing on their opinions on external factors such as laws and regulations and their perceptions of the value of the e-service. One exception is Ylva from Länsstyrelsen though, since she is a part of the system that the e-service will try to make more efficient.

All the interviews went smoothly and the respondents seemed to be open and without hesitations to answer the questions. Many of the answers were also quite extensive, even though the questions were short, which is a good sign. One potential problem might be our inexperience in doing interviews as well as the mining industry, which could lead to missing some signs. On the other hand it was compensated by it being three of us to do the observations.

The phone interview was not as smooth as the other ones, which could have influenced the answers in a negative way. The respondents being two appeared to be supporting each other, by asking each other questions and filling in when needed. It was probably also good moral support for them to be two to deal with the interview situation. On the other hand it could also have been limiting and they not being able to be as open as if they were alone. Qualitative interviews are also the type of interviews where it is most common with multiple respondents simultaneously. We forgetting to offer them the opportunity to be anonymous did probably not influence the outcome notably, since they did not have to think more than a second about it when we asked them after the interview.

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69 Kvale, S., p. 134
70 Kvale, S., p. 136-137
5.6 Method for analysis
To structure the analysis we used a framework based on Porter’s five forces framework, and the purpose of the research. We went through and analyzed our empirical data according to each of the headings and our theoretical framework.

Figure 5.1: Structure of the analysis

Main purpose, competition

- Threat of entry
- Power of Suppliers
- Competitive rivalry
- Power of buyers
- Threat of Substitutes

Sub purpose

- Customer
- Customer value
6. EMPIRICAL STUDY

This chapter presents the empirical data of the study. We will start by giving a general presentation of the advance of public e-services in Sweden and the e-service safe mining project. After that we will present the organizations our respondents are representing and finally the answers from them structured under four different categories.

6.1 The advance of public e-services in Sweden

Here we will present the information we gathered about the future of e-services in the Swedish authorities. We will present secondary data from a publication called ‘municipal e-services’ from the IT-department of the Swedish municipality and county council associations, and the section for ‘e-services in the public sector’ at Vinnova’s website.

6.1.1 The Swedish municipality and county council associations

In the theoretical chapter about e-service we mentioned that the new technologies can make business more accessible, convenient and productive. This is also touched upon in the publication ‘municipal e-services’ from the IT-department of the Swedish municipality and county council associations, which says that e-service is about continuing the long term work with making the public administration more effective.72

There are three different terms in Sweden for electronic services; e-service, e-government, and e-administration. E-service is about providing the opportunity to access electronic services, mainly over the Internet, for the citizens. To make this possible e-administration is needed, in order to make the administrative systems able to handle the generated data during the contact with the citizens. The last term is e-democracy which is ways to stimulate dialogue between politicians and citizens in the virtual environments.73

Figure 6.1: Electronic services

![Diagram of electronic services]

Source: ‘Introduktion till kommunal E-SERVICE’, p.2 – figure translated by authors

73 Ibid., p.2
There is a term called the ‘24-hours authority’ within the public administration. It is about different ways to provide services over the Internet around the clock to the citizens. The vision is that only one contact should be needed with the authorities, even for complicated matters that usually demand to contact multiple authorities. The government has given the office of state the assignment to stimulate the development, by for example driving collaborative projects.\(^{74}\) One ambition is that, as long as it is cost effective, all services should be provided electronically.\(^{75}\)

### 6.1.2 Vinnova

Vinnova, a government authority, have as their general purpose to contribute to an increased growth nationally. The more specific area of responsibility is innovations which are connected to research and development. They execute this by financing the motivated research which is needed by a competitive business world and healthy society. In addition to this is VINNONA working to strengthen the essential networks that contribute to make this work possible.\(^{76}\)

One area that Vinnova has a focus on at the moment is e-services in the public sector. This focus program comprise of the public administration (authorities, municipalities, county council, etc.) as well as those companies which deliver IT solutions and knowledge–based services. Cost efficiency in the administration is a key aspect, this by interactive e-services. The effect of this is an increased demand for development of new IT-based products. During the years of 2004 to 2006 Vinnova have announced for projects concerning innovative development in public e-services across-boundaries and public e-services across-boundaries for companies.\(^{77}\)

Some examples on researches areas in ongoing projects right now are:

- “E-society and the Companies”: A pilot project about developing e-services which can be used by companies to perform different matters at the municipality. It is supposed to develop and document a methodology which can be spread to all the municipalities in Sweden.\(^{78}\)
- “Process driven e-services for industry development in the municipalities”: This project has the purpose to improve and make the communication concerning permissions, applications, supervision, and information between the municipality and its companies easier. The service will integrate and connect different e-services in order to decrease the handling time for different applications.\(^{79}\)
- “E-service Secure Mining”: The project which this study is about. An e-service which purpose is to make it easier to start, run, and shut-down a mine.

\(^{74}\) "Introduktion till kommunal E-SERVICE: Omvärldbeskrivning och nuläget", p.3
\(^{75}\) Dahlberg, L., 24-timmars förvaltningen – Hur långt har vi kommit?, www.statskontoret.se/upload/2667/etjanstdahlberg.pdf, p.3
\(^{76}\) "Om Vinnova", http://www.Vinnova.se/Om-Vinnova/
\(^{79}\) "Processdrivna e-tjänster för näringslivsutveckling i kommuner", http://www.Vinnova.se/misc/Vinnova-projekt/Projekt---Listhuvud/Processdrivna-e-tjanster-for-naringslivsutveckling-i-kommuner/
The administrative services in the public sector of today is possible to accomplish and available in a more efficient way. This will be created by a research that is cross-disciplinary and technical development, involving for example researchers at the universities, research institutes, as well as concerned companies. Processes will become more efficient and IT-support will contribute to an easier communication with authorities. An additional aspect is that this will also create possibilities for international participants, which increases the market and its opportunities as well as provides new products and technical solutions.80

6.2 The e-service safe mining project

The project started after the idea of it was appointed in a competition for research money through Vinnova in May 2006. The idea was founded from Zert’s long experience in the complexity of the issue. They have been working a lot with the pulp & paper industry, and the mining industry is even more complex in terms of laws and regulations. Annica estimates that there are around 30 different laws which demands documented risk assessment for the mining industry.81

The research project is three years long and up until now contained a feasibility study where they have been looking through how they can create something that can support the start, the operations and the shutdown of a mine. The life cycle of a mine is usually 10-15 years. The different phases of the life of a mine have specific problems, and Zert will try to identify and deal with as many as possible of them.82 The e-service is also intended to be developed in a way that makes it possible to also be implemented in other industries and projects.83

Since this is a Vinnova project Zert is only the product owner, while the municipality of Lycksele is the project owner. In order to run a Vinnova project you need to have an established network of both stakeholders and researchers who supports the idea.84

The project got the following partners:85

Zert AB, Annica Eklundh
Umeå University, regional office in Lycksele, Anna Norberg
Municipality of Lycksele, Lilly Bäcklund/Eva Wiberg
Dragon Mining Sweden, Anders Brundin
Lappland Goldminers, Karl-Åke Johansson
Umeå University, Ladokenheten, Ove Lundberg
The organization Georange, Lennart Gustafsson
The authority of work environment, Stockholm, Rune Andersson
The municipalities of Malå, Norsjö, Sorsele & Åsele
SUAB, Storuman

After the research project is over the prototype and the pilot will be evaluated, in order to decide if the full scale e-service should be launched.86

81 Interview Annica Eklundh, 2007-04-21
82 Ibid.
84 Interview Annica Eklundh, 2007-04-21
86 Interview Annica Eklundh, 2007-04-21
6.3 Information about the respondents’ organizations

To create a better understanding of the respondents’ perspectives, we will here present their organizations. Information will not just be taken from their answers in the interviews, but also from other sources such as their websites.

6.3.1 Zert

Zert is a small private company located in Lycksele in northern Sweden. It is providing consultancy services and systems for production of the technical documentation for products, production facilities and working environment. The main areas they are working with are safety issues and industrial risk assessment. They are the product owner of the e-service and responsible for its development.

6.3.2 Dragon Mining

“Dragon Mining Limited is an Australian Stock Exchange (ASX) listed company with a gold mining and exploration business focused in the Nordic region of northern Europe.”

Dragon Mining in Svartliden is 80% owned by Dragon Mining Limited and 20% by those who found the deposit. Dragon Mining Limited bought the rights to the deposit in 1999, and in August 2003 the permission to start was granted. Anders started working in November 2003, and the mine was brought into production in March 2005. Svartliden Mine was the first integrated mine and treatment plant to be developed under the new Swedish Environment and Mining Acts.

6.3.3 LKAB

LKAB is an international high technology mineral group with about 3500 employees in 30 companies spread in 15 countries. It is a world leading producer of refined iron ore products for steel production, and a growing supplier of mineral products. LKAB is fully owned by the Swedish government.

Sofia and Kenneth are working in the external environment section under the Total Quality Management department. TQM has about 200 employees and 10-12 of them are working with environmental issues.

6.3.4 Länsstyrelsen

Sweden is divided into 21 counties, and all of them got a county administrative board and a county governor. Länsstyrelsen is the Swedish word for county administrative board. It is a coordinating governmental authority with responsibility for supervision and service. It is also a place to turn for appealing to a higher authority.

87 “Om Zert”, www.zert.se/default.asp?id=1657
88 Interview Annica Eklundh, 2007-04-21
90 Interview Anders Brundin, 2007-04-21
92 Ibid.
93 “Kort om LKAB”, http://www.lkab.com/?openform&id=2E42
94 Interview Sofia Waaranperä & Kenneth Nordström 2007-05-02
95 “Om Länsstyrelsen”, http://www.lst.se/lst/
Ylva is working in the environmental protection section of Länsstyrelsen, mainly working with mines, in the county of Västerbotten. In the mining area they are, among other things, working with visiting mines to inspect if the decided guidelines concerning the environment are followed, or if there are any other problems. They are also working with different kinds of permissions and applications. The mining companies are obligated to consult Länsstyrelsen in different issues.\textsuperscript{96}

\section*{6.4 Information from the respondents}

To structure the answers from the respondents we decided to use four different categories. Every category have an own heading, and under each of them the answers from each of the respondents connected to the heading will be presented. We are not going to use the categories from the theoretical framework, since we believe that it would be hard to do so without going into the analysis. This is because of the ambiguity of the subject.

\subsection*{6.4.1 Preconceptions of the e-service}

Under this heading we will present the respondents’ preconceptions of the e-service. By that we mean what the respondent knew about the e-service before the interview, and how they would describe their interpretation of it.

\subsubsection*{6.4.1.1 Annica Eklundh, Zert}
Annica says that the ambition of the e-service is to deal with the information problems in the different phases of the life cycle of a mine. At the moment the main function of the service is to search for all kind of information concerning laws and regulation that applies to the start-up, operation, and shut down of mines. It is also supposed to help with increasing the transparency in the official administration of the different required processes.

\subsubsection*{6.4.1.2 Anders Brundin, Dragon Mining}
Anders says that the e-service is about bridging the difficulties that he, among others, has been facing mainly in the area of laws and regulations concerning the mining industry. Some key issues are how to find the right information and knowing where to find it. Everything has become more complicated since the Environmental Act was changed after year 2000. More responsibility has been transferred to companies and individuals. Now you need to be very knowledgeable in the area since you do not only need to know how and where to find information, but also the kind of information you need to look for. For example when you start a mine you have to find out what kind of laws and regulations that applies. The authorities do not tell it to you; you need to find it out by yourself. It can be anything from knowing what kind of regulations there are from the authority of working environment, to knowing what kind of permissions you need to have if you want to store flammable chemicals. The e-service will be able to tell you things like this if you for example enter the chemical you are using, and then it will show the rules that apply. Another thing the e-service will help with is being able to track an administrated matter in and between the different authorities.

\subsubsection*{6.4.1.3 Sofia Waaranperä & Kenneth Nordström, LKAB}
Sofia and Kenneth did not know anything about the e-service since before. Kenneth has heard the name some time, but nothing more than that.

\textsuperscript{96} Interview Ylva Ågren 2007-05-02
6.4.1.4 Ylva Ågren, Västerbottens Länsstyrelse

Ylva has got a short introduction of the e-service at a seminar she attended, and she has checked the web page. She says that as she understands it the e-service will be about gathering information about laws and to follow matters through different authorities.

6.4.2 What alternatives are there?

Under this heading we will present the perceived alternatives to the e-service that the respondents see, and what kind of competition there are.

6.4.2.1 Annica Eklundh, Zert

The first thing that comes to Annica’s mind is to lift the telephone and call all the different authorities by yourself. Another possibility is to hire a consultant that can do the job for you. She does not think that there are any consultants that can cover all the needed areas though, but they might be able to tell you where to look further. Another source of competition would be that customers do it the old fashioned way. That means that they could gather material and information, translate it if needed, and then interpret the laws by themselves. Many of the international companies that are coming here are really big and know everything about mining; it is only the knowledge about the Swedish system that is missing. The only direct competition as Annica sees it would be other technologies. She does not know of any similar e-services, and if there were she does not think that they would have received any research money.

6.4.2.2 Anders Brundin, Dragon Mining

Today Anders is manually working with what the e-service will be able to help with. He is for example subscribing to updates from the nature conservation authorities, or just searching through Google or the different authorities’ web sites. This is easy, but is mainly working due to him knowing the different areas that need to be watched. He also gets informal information through talking to the people from different authorities coming for inspections and other visits. Without good channels it is a big challenge to remain updated. Another way of getting information is through the organization for the employers in the Swedish mining industry, Svemin. They provide news about updates in the legislation that concerns mining operations. Anders believes that the bigger companies like LKAB and Boliden probably have staffs who are working with regularly following the changes.

About competition Anders says that Vinnova is running a program with several different e-services. None of the others is as specialized in mining though, since the level of complexity of it is so high. It is even worse for the foreign mining companies. The translation function has competition from Google though, which can produce a quite understandable translation. One problem as he sees it with the translation is that the foreign companies might need to double check the translation anyway, to make sure that nothing is missed.

6.4.2.3 Sofia Waaranperä & Kenneth Nordström, LKAB

In order to stay updated with the laws and regulations Sofia said that they have a consultant hired that updates it for them once every six months. They also get ongoing updates through an e-service called Miljöbokhyllan, meaning the environmental bookshelf, which sends them weekly updates about what is happening within different environmental laws. They also have different periodicals circulating, and a lawyer that can enlighten them about legal issues. In general Kenneth does not think that they have any difficulties working with the different laws and regulations. He says that questions around new laws are very often discussed in Svemin, so it is a good channel for getting updated on what is going on.
About to follow different matters through the authorities Kenneth says that it is something they are doing closely. The authorities are setting official referral times that can be used to follow them, and they have ongoing contact with their handling officer at Länsstyrelsen. Kenneth says that working with the authorities goes really well, and he cannot get to think about something that is missing.

6.4.2.4 Ylva Ågren, Västerbottens Länsstyrelse
As Ylva sees it, the biggest alternative to using the e-service would be that organizations choose to do the job by themselves. They already have the information gathered, and internal environmental organizations to support it. This can be a barrier for spreading the e-service unless the organizations feel that it is worth paying for getting the information gathered in one source. About getting updated on changes in the laws and regulations, Ylva says that there are many alternatives since the information is public. There are different subscriptions about new laws that you can register for, and she thinks that two of those services are named RixLex and Notisum. Google is also a good tool for finding just about anything.

6.4.3 Needs and thoughts about the e-service
Under this heading we will present the expressed needs and thoughts of the respondents about the e-service and its market.

6.4.3.1 Annica Eklundh, Zert
Annica says that the main need the e-service needs to fill is the one of finding the right information. There is a big amount of authorities that the mining companies need to work with, which means that it can be a challenge for them to gather information from both the legal frameworks and the demands from the authorities. This is especially hard for the new, much smaller, mining companies compared to the traditional ones that are big enough to build communities. A small mining company can have 40-50 different sub-contractors and suppliers, and they can have just as much legal responsibility as the mining company. This is not easy to understand; where to turn, where to find information, which laws apply, what has to be done and when. Annica also says that the authority for work environment will have to cut down more than 30% of their resources, which might lead to them having a hard time answering questions to the same extent as they use to. Then it would be interesting if the e-service could act as an electronic administrator.

Annica sees several different groups of customers; mining companies, land owners, the municipalities and different involved authorities. Land owners might be interested in knowing what is happening with the prospecting done on their land, the municipality in being able to provide the service, the authorities in order to make their work more effective, and the mining companies for easier access to information. For international companies the translation possibilities can be valuable, but even more the localization and the semantic interoperability.

Annica believes that the common interest of all the stakeholders is the access to information. To them the e-service will be an intelligent information mass that they can use depending on their needs. She also says that Zert does not know anything at all about how much the customer would be willing to pay.

6.4.3.2 Anders Brundin, Dragon Mining
Anders believes that both the industry and the authorities have a need for an e-service like this. Clearer flows of information will ease up the work for the authorities. The need is especially big for the foreign companies, since they might not know much about the Swedish
conditions. Both language and culture can be a barrier. This is something he has experienced personally since he had to act as an interpreter in the beginning of the project, since the authority refused to speak English. One example he experienced is the requirement of doing a safety report half a year before you start a mining project. This report concerns toxic chemicals and different risk analyses. Other news is that it from the European Union is coming new directives regarding waste. These are still not processed in Sweden, which means that it is not known how it will affect the mining industry yet. This is another example of information that has to be monitored.

Anders believes that Dragon Mining has a need for this e-service. It would make them need to hire less people, as well as making the work easier and cheaper. The main advantages would be to be able to follow the administrated matters through the authorities, as well as getting into all the laws and regulations, especially looking at the arrival of the new Environmental Act. He does not see any disadvantages with it. All sizes of mining companies have a need for a service to search for information, even if the specific needs might vary. Despite this the two big mining companies LKAB and Boliden have not shown any interests in the project according to Anders. They think that they already have all the knowledge they need, but then their knowledge about this e-service is not that extensive yet. Even if they have a lot of knowledgeable people working in this area already, this e-service might help them to reduce their workforce and make the work more efficiently.

About the reliability Anders believes that you always need to be on your guard. He wants to control the information by checking the original documents of the laws and regulations. His confidence in the service is high. One alternative to the e-service is working with consultants, but they can be slow and you might not get the information you need in time if you are in a hurry.

Another piece of information that Anders finds important is that he believes that even with the e-service basic background knowledge is needed. You need to understand how the Swedish Environmental Act and the Swedish authorities work in order to be able to use the e-service efficiently.

In the future Anders believes that there will come more of this kind of e-services, giving the example of Google that came from nothing in no time.

*6.4.3.3 Sofia Waaranperä & Kenneth Nordström, LKAB*

Kenneth thinks that the idea of the e-service sounds very interesting. If some specific question shows up you would know that you can probably find the information you need in the e-service. He says that the need is probably the biggest in smaller companies though, which does not have the same kind of resources as LKAB and some other bigger mining companies. Both Kenneth and Sofia think that the e-service would be interesting even for them. Having all information gathered in one place instead of having to use multiple sources would make things easier. The possibility of following different matters through the authorities would also be interesting.

One example of a potential need as Kenneth sees it is when new staff is recruited. Then it could be convenient to refer to different sites and e-services. It takes some time for new employees to get into the routines. About the reliability of the e-service Kenneth’s and Sofia’s only concerns are who is updating and administrating it. There would not be any problems with the confidence about the service if they use it for a while and sees that it works and is
updated. Kenneth also says, that they for an example read all the newsletters without always thinking about where the information comes from. It is taken as being truthful.

Kenneth suggests that it would probably be a good idea if the e-service could provide information about the times for handling of different matters. He thinks that this can be hard to know for the small start-up companies. Sofia thinks that it would be good if the e-service could provide check lists for what to think about when you for example have to fill in a report for environmental consequences. Other issues as Kenneth see it around these issues is resources and the speed. Sometimes things need to go very quickly, and then the speed of execution is of main importance.

6.4.3.4 Ylva Ågren, Västerbottens Länsstyrelse
Ylva thinks that the e-service can be useful, especially since there are many startups in the industry at the moment. She thinks that older companies might have all the necessary information already. Having all laws and regulations gathered at the same place can be useful, and being able to get a better grasp of the process up until you have all the necessary permissions can be an advantage.

On the question if she believes that Länsstyrelsen might have a need for an e-service like this, she says that “of course it can have some advantages”. They probably already have access to everything that the e-service provides, but then from a lot of different sources. The main advantage about the e-service would be to have everything about mines gathered in the same place. As it is now different people at Länsstyrelsen are working with different areas of the mining industry, and they have meetings every now and then to get an overview. With the e-service they could also have the opportunity to use it for general information. Generally in Sweden, there are just a few counties with Länsstyrelsen having to work with mines. The only disadvantage with the e-service, as Ylva sees it, is that it might lower the level of innovation. Everyone might start using the templates, and not think outside of them. It is just a minor risk though.

Concerning expectations of the e-service Ylva would like, if it was possible, to get an understanding about how far the different prospecting and startup projects have come in the processes of starting the mines. As it is now it is hard to get this overview, since there are about 50 prospecting permissions on every mine that starts, and it is a long time between a permission being granted and a mine is up and running.

Regarding the reliability of the e-service Ylva sees no problem as long as she sees that it is functioning and regularly updated. She thinks that it has to be clear from the e-service that the material is updated in order to make the users feel safe. Either way, she does not think that the e-service will be able to replace the contact with the mining operations and consultants. What it can do is to speed things up.

Ylva does not think there are any other e-services on the way in the mining industry. She thinks that the waste industry for example already has some developed. On the authority side there is something called the supervision and regulations council, which has gathered laws and advice.

About foreign companies starting mines in Sweden Ylva says that it is coming more and more of them, but still not that many. Those normally have some sort of Swedish organization in place though, even if the company is registered in another country. She cannot think of any
coming mines that do not have anyone with a Swedish background involved. It is not a problem having discussions in English if a foreign company wants to talk with Länsstyrelsen.

**6.4.4 Finance and costs**
*Under this heading we will present the respondents view of financing the project and the costs for the different stakeholders to use the e-service.*

**6.4.4.1 Annica Eklundh, Zert**
If it is decided to launch the e-service after the research project is over Annica is not sure exactly how it would be financed yet. One possibility is that it could be an interesting service from the authorities’ points of view, and then they might end up being the customer. Another possibility is that the mining companies will be interested to use it to complement their existing processes for handling information. If so, then the question is how much they would be willing to pay for it. One issue is that e-services many times are financed by advertising and that might not be a good idea in this case. Annica says that the reason for this is that it might be considered unethical from the customers’ points of view that a public service use advertising to finance the costs. When the service is developed and up and running everyone that wants to get information is supposed to pay for it.

**6.4.4.2 Anders Brundin, Dragon Mining**
About paying for the service Anders says that he is indirectly already doing that by being a part of the project. Concerning some kind of subscription fee, he does not know what to think yet since it is not decided how high it would be. How much it would be worth to pay would have to be considered by evaluating how much time and effort it would save to use it. What he would pay for is what the e-service already is planning to cover.

**6.4.4.3 Sofia Waaranperä & Kenneth Nordström, LKAB**
Sofia says that they would consider paying for this kind of e-service, depending on the price for it. Both information search and to follow different matters through the authorities are of interest.

**6.4.4.4 Ylva Ågren, Västerbottens Länsstyrelse**
The main issue, as Ylva sees it, about paying for an e-service like this is that they most probably already got access to all the information it will be able to provide from other sources that they already are paying for. The question would then be if they would be able to pay for getting the information gathered in the same place just for the mining industry, which is not that big compared to the other areas they are working with. In the end it would probably come down to what the price tag will be. What she could imagine paying for is to get an overview of the activity in the county.
7. ANALYSIS

To tie the parts of the study together we will in this chapter analyze the empirical data gathered from our iterative study. We will start to present an analysis of our sub purpose, the customer and customer value, as it sets the foundation to our main purpose, competition. After that we present our analysis of the competitive forces in Porter’s framework.

As we mentioned in the methodology chapter we will use a framework based on Porter’s five forces framework, and the purpose of the research, to structure our analysis. We will go through and analyze our empirical data according to each of the headings in the figure below.

**Figure 7.1: Disposition of the analysis**

Main purpose, competition

- **7.5 Power of Suppliers**
- **7.2 Competitive rivalry**
- **7.3 Threat of Substitutes**
- **7.4 Power of buyers**
- **7.6 Threat of entry**

Sub purpose

- **7.1.1 Customer**
- **7.1.2 Customer value**
7.1 Customer and customer value

Our sub purpose with the research was to define the customer and the customer value. This is important, since it is hard to analyze the competition without knowing the customer. Thereof we will briefly analyze them here before we start to analyze the competition.

7.1.1 Customer

Since one part of our sub purpose was to define potential customer groups, we will here elaborate on that based on our empirical data. First we will present a table of the potential customers that the respondents mentioned, and then elaborate about the defined groups.

Table 7.1: Customers

<table>
<thead>
<tr>
<th>Respondent</th>
<th>Potential customers mentioned</th>
</tr>
</thead>
</table>
| Annica Eklundh, Zert | • Mining companies  
                           • Authorities (Länsstyrelsen, authority for work environment)  
                           • Municipalities  
                           • Land owners |
| Anders Brundin, Dragon Mining | • Mining companies, especially foreign ones  
                                   • Authorities |
| Sofia Waaranperä & Kenneth Nordström, LKAB | • Mining companies, especially small ones |
| Ylva Ågren, Länsstyrelsen | • Mining companies, especially start-ups  
                                • Länsstyrelsen |

Mining companies – This is a main customer group since the e-service is based on their needs. It was also the group that all the respondents emphasized.

Municipalities – Annica mentioned that municipalities can be a potential customer, since they could be interested in providing the service.

Authorities – Both Annica and Anders emphasized that the e-service could make the work for the authorities more effective. Ylva also believed that the e-service can be of interest for them at Länsstyrelsen.

Land owners – Annica was the only one that mentioned the land owners as potential customers, with the argument that they might be interested in knowing about what is happening with the prospecting initiatives on their land.

Out of these potential customer groups we believe that the mining companies and the authorities are of the highest interest to analyze further. The land owner group is just of minor interest, since their needs are simple and their purchasing power relatively low. The municipality is just an indirect potential customer since their interest lies in the e-service being provided in the region.

Further analysis about the customer will be done under the next heading, 7.1.2 Customer value.
7.1.2 Customer value

Since this was only a sub purpose we did not intend to find a method to measure the customer value. What we will do is to identify different perceived valuable areas, of the e-service, from our respondents.

Table 7.2: Customer value

<table>
<thead>
<tr>
<th>Respondent /perceived customer value</th>
<th>Mining companies</th>
<th>Authorities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annica Eklundh, Zert</td>
<td>• Find the right information more easily&lt;br&gt;• Increase transparency in the official administration&lt;br&gt;• Translations for foreign companies</td>
<td>• Find the right information more easily&lt;br&gt;• Make work more effective</td>
</tr>
<tr>
<td>Anders Brundin, Dragon Mining</td>
<td>• Find the right information more easily&lt;br&gt;• Increase transparency in the official administration&lt;br&gt;• Makes work more effective, and need less people&lt;br&gt;• Translations for foreign companies</td>
<td>• Make work more effective</td>
</tr>
<tr>
<td>Sofia Waaranperä &amp; Kenneth Nordström, LKAB</td>
<td>• Find the right information more easily&lt;br&gt;• Gather current information flows into one source&lt;br&gt;• Increase transparency in the official administration&lt;br&gt;• Reduce time for training new employees&lt;br&gt;• Increase speed of execution</td>
<td></td>
</tr>
<tr>
<td>Ylva Ågren, Länsstyrelsen</td>
<td>• Find the right information more easily for new companies&lt;br&gt;• Gather current information flows into one source&lt;br&gt;• Creates a better understanding of the whole process of starting and running a mine</td>
<td>• Gather current information flows into one source&lt;br&gt;• Easier for people with different responsibilities to get an overview of the big picture&lt;br&gt;• Tracking activities in the region</td>
</tr>
</tbody>
</table>

As seen here, there seems to be a consensus about the value of finding the right information more easily. The mining companies are also pointing out the increased transparency, by being able to follow different matters through the authorities, as something valuable. For the bigger organizations, the possibility to gather information in the same source also seems to be valued, considering that they already have multiple sources covering most of what they need.

Now when we have some insights into the customer and the customer value, we will go into the analysis of the competition. Then we will try to see what is competing with the e-service about how to satisfy the needs of the customers.
7.2 Competitive rivalry
As mentioned in the theoretical chapter, the first part of the five forces models is the industry competitors and the level of rivalry among existing firms.

Considering that an e-service for coordination of information for the mining industry is a niche product, we have not found, and do not believe that there are any competitors with a similar product. Looking at this, we would like to say that the competitive rivalry is non-existent. This reasoning is from the perspective of the e-service specializing on safe mining.

If we look at the perspective of the research project as such, the situation is a bit different. Since one ambition with the project is to develop an e-service that can be transferred to any sector, competitive rivalry occurs among the projects with the same ambitions. As mentioned under paragraph 6.1, efforts are made to make the public administration in Sweden more effective by stimulating the development of e-services. Vinnova has a focus program about the development of e-services in the public sector, which is supporting research in the area. Here, Zert is only handling one project out of many. The whole list of research projects can be found on Vinnova’s webpage.

7.3 Threat of substitutes
Moving further in the framework the theoretical chapter is explaining substitutes as the competition from related markets. It might be products which give about the same function

All the respondents could picture some different substitutes to this e-service. These can be studied below in relation to the respondents and are further discussed one by one divided into the four following areas: consultants and lawyers, authorities, Google, and different kinds of updates and subscriptions.

<table>
<thead>
<tr>
<th>Respondent</th>
<th>Mentioned potential substitutes</th>
</tr>
</thead>
</table>
| Annica Eklundh | • Consultants  
• The authorities |
| Anders Brundin | • Google – also translation  
• The authorities and their websites  
• Svemin – i.e. updates  
• Updates form nature conservation authorities |
| Sofia Waaranperä & Kenneth Nordström | • Consultants & lawyers  
• The authorities  
• Miljöbokhyllan (the environmental bookshelf) – E-service  
• Svemin – i.e. new laws  
• Different periodicals |
| Ylva Ågren | • Different subscriptions about new laws – i.e. RixLex & Notisum  
• Google |
Consultants and lawyers
Getting help from an external, such as a lawyer or consultant, is one alternative to be enlightened about legal issues and to stay updated with the laws and regulations. Consultants should be able to perform all the work for you as a substitute to the e-service. However, in Annica’s opinion, they can probably not cover all the needed areas. In some cases they might just be able to tell you where to look further. Moreover, hiring an external is a cost for the company that might be a quite high amount.

Authorities
From the authorities it is possible to get a great amount of information. Also, Kenneth says that, different matters can be followed by their referral times and ongoing contact. Some different ways of dealing with the authorities is from informal talks at visits, their websites, subscribing to updates, and talking to them over the phone. The respondents’ experiences differ from working very well to some language problems. Although, using the authorities as a substitute to the e-service means that you have to do all the work yourself.

Google
As Ylva said, Google is a good tool for finding just about anything. Here all kind of information, laws, and regulations is to be found, as well the possibility to translate to and from different languages. Basically everything you need can be found with this service. However, this can only be used effectively when knowing what to look for and when translating might it sometimes be necessary to double check the information. An additional point is that the service Google is for free to use.

Different kinds of updates and subscriptions
The last area of substitutes is including different kinds of periodicals and subscriptions. Some examples of these are Miljöbokhyllan, RixLex, and Notisum. From them weekly updates and other happenings with different environmental laws can for example be received when signing up for it. A problem might be to know which are available, where to find them, and which of these to sign up for. Updates can also be received from Svemin, the central organization for the mining industry, where new laws and current issues often are discussed.

The compound threat of substitute
Among all of these potential substitutes, consultants are the only ones that can provide a solution that covers all areas that the e-service is supposed to do. All the others are just substitutes to different parts of the e-service, and have to be combined in some way with each other to perform all of the things that the e-service will have the possibility to do.

The strongest competitive substitute, as we see it, is that the customers tailor makes an own solution through all the small substitutes to the different parts. Consultants are an option, but it is the most expensive alternative, and cost is an essential issue to consider. When setting a price on this e-service a key thing is to evaluate the substitutes for the price, quality, and amount of energy they take to use. These alternatives will as mentioned in the theoretical framework set the upper limit for prices of the e-service.

Further, none of the substitutes are right now in trend or from high profit industries, which are the two kinds of substitute products that are most important to look at. On the other side, the industry consists of basically no rivals, which are the kind of market that need the most attention. This can be interpreted as they, in this meaning, are somewhat important to keep an eye on.
7.4 Power of buyers

As stated in the theoretical chapter is it of great importance to pay attention to the buyers to be able to sell a product. Customers can have the power to force down prices, demand higher quality or more services. How strong power they have is determined by some different characteristics. In this case the power of buyer is analyzed from these different aspects.

Concentrated buyer group or high volumes of purchases
Since the potential buyers just are the companies and the authorities, the buyer group is to consider quite small, in our opinion. However, according to Ylva, there are many start-ups in the mining industry at the moment. This to some extent concentrated buyer group may contribute to the power of buyers, although we do not believe that it has a significant influence. To continue with the second part of the statement, high volume of purchase, this is not the case in this situation. The product is a service which in general is not always possible to sell in different volumes. Although, in this case this will depend on how the payment will be constructed. If there for instance is a monthly subscription fee then there will not be possible with different volumes, only if one customer buys more than one subscription. This could for example be one company or an authority that purchases subscriptions to different sections, which will still not be many. If it, on the other hand, is a fee depending on how much is used from the e-service then the level of purchased volume will differ more. However, this will probably still not become significantly high volumes. To summarize, this aspect may have an impact on the power of buyers when looking at the concentration of the buyer group.

Standard or undifferentiated product
As this product is an e-service for safe mining, we for certain believe that it is a rather differentiated product. The e-service in itself may be a bit undifferentiated, especially when the e-service industry is growing quite rapidly right now. Also according to Anders beliefs, it will come more of this kind of e-services, in particular when having the development of Google in mind. However, as this e-service has a focus on safe mining, this product is considerably differentiated, because as far as we know any similar e-service does not exist. This means that this product does not have any particular influence on the power of buyers.

Significant part of total purchase
When buying a product it is not really the price that matter, to be more precise is it the relative price that are to be considered. And, as we indeed believe, the total purchases for a mine are rather big. However, as Kenneth stated, the smaller companies have less resources compared to the big companies. This may be resulting in that the small mines are more price sensitive, and are then contributing to a higher power of buyers. Although, this will still just be a fraction of the total part of purchase and will not, in our opinion, have a major influence on the power of buyers. Also the authorities have a big amount of total purchases, as we believe. Then, even though it might not even be close to the same level as the mining company, it is relatively high enough to not be a significant part of total purchase. To sum it up the customers total purchases are big enough amount to not stimulate the power of buyers.
**Low profits**
In a similar way, the customer’s profit may affect the power of buyers. However, the companies in the mining industry have a quite high turnover, which means that they are not that price sensitive and will not have an effect on the power of buyers. The authorities on the other hand, is financed by the government and do not really have a profit, as we see it. This means that it is kind of hard to analyze. Considering this, our conclusion is that the level of profit does not have an influence on the power of buyers.

**High impact on the quality of the buyer’s product**
Starting with the impact this service might have on the quality of the mining companies’ products, we cannot see any direct impact. Although, if looking at more indirect impact, this e-service may by making it easier to get the right information, improve the quality of the internal products, such as the quality of the environmental protection section’s recommendations to different construction plans etc. This impact on internal products may then have an indirect positive impact on the products to their customers. In a similar way, this service may have an indirect impact on the products offered by the authorities. The e-service will have an internal impact which is contributing to a positive impact on the quality of their products. Also looking at the respondents thoughts about the quality of the e-service, most of the core dimensions of quality mentioned in the theoretical framework was covered. Efficiency was stated as a main expectation and benefit of the e-service, and fulfilment and reliability was stressed as important factors for the usefulness. However, having in mind that it is just an indirect impact, this impact is in our opinion not a high impact and will not then have a significant impact on the power of buyers.

**Saves no money**
This aspect states that if the customers do not save money on buying the product, it might lead to an increased power of buyers. In this case the customer is probably saving money. Anders, for instance, stated that this service would make the companies need to hire less people, because the work would become more easy and efficient. A reduced workforce would lead to lower costs. This could both make a rather big difference in a big mining company that have quite many employees working with this matter, and for a small mining company that might not have that many resources. The authorities would probably become more efficient as well, which are somewhat relevant if they will have to cut down their resources with about 30 %, as Annica is mentioning. Also in the case of changing staff the customer would save money, because transfer of information to a new employee would become easier if the information is gathered in one place. Our assumption regarding saving money with the product is that all customers in general will save money with this product, which means that it will not influence the power of buyers.

**Threat of backward integration**
A customer that can use the argument that they can produce the product them self is increasing the power of buyers. All the respondents did in some way express the possibility to do the work themselves instead of using this e-service. They ask for information from other people, gather material and information, interpret the laws, regular contact and informal talks with the authorities, and if being a foreigner translate everything by themselves. This is especially easy for older companies that might already have all the necessary information and an internal environmental organization to support it. However, if doing the job themselves it is of great importance to have good channels to remain updated and the customer in general have to use some other product as a substitute. From this we can conclude that the threat of backward integration is increasing the power of buyers.
Plenty of information
This aspect is, in our opinion, mostly concerning the international companies. Because, as Annica is pointing out, even though they might have basically all knowledge of mining, their knowledge about the Swedish system may be quite low. As a foreigner it might be hard to understand the Swedish conditions, the language and our culture. This may as well, for instance, include knowledge of the conditions in the mining industry and what options they have when working with laws and regulations. A foreigner may also have a lack of information if they are trying to talk to the authorities and they not are willing to, or does not have the knowledge, to communicate in English or in some other language known to the foreigner. This may result in low information which means that it will not contribute to the power of buyers. However, concerning the Swedish companies, we are not sure about their level of information. They might have a quite clear idea of most of the alternatives, those they are using or have used, but maybe they do not know about a few others. If the way they are working at the moment is working quite well, they might not see a reason to look for other options. Anyhow, we still believe that they have enough information to have an impact on the power of buyers.

The compound power of buyers
When adding up all the different aspects, we believe the power of buyer is not significantly strong. However, some of the points are good to keep an extra eye on. The most important aspect is the threat of backward integration, along with available information and concentrated buyer group.

7.5 Power of suppliers
Another part of the five forces model is the power of suppliers. This is about how the suppliers can affect the competition in the market.

Looking at Zert being a consultancy company providing services, we believe that there are few suppliers of any notable significance in the value chain of the e-service. The major input to the value chain of the e-service would be the gathered information about laws and regulations, which is public information provided by the authorities. Because of this, we think it is hard to say that the suppliers have any considerable affect on the competition, even if the power is strong. This reasoning is from the perspective of the e-service specializing on safe mining.

If we look at the perspective of the research project as such, the situation is a bit different. One ambition with the project is to develop an e-service that can be transferred to any sector. Since efforts are made to make the public administration in Sweden more effective by stimulating the development of e-services, there might turn up other projects that will compete about becoming the prime solution on a national level. In this case the government and authorities might have a strong influence on the competition that is out of Zert’s control.

7.6 Threat of entry
The last part of the five forces model is the threat of entry. This part is analyzing the barriers for a new player to enter the market, and the reactions from existing competitors.
To analyze the threat of entry we will go through the factors presented in the theoretical chapter about the five forces framework, one by one.

**Economies of scale**
We believe that the scale of production is of low importance, since the capacity for delivery is only limited by the capacity of the hardware in an e-service. Producing 20 search outputs will not cost more than producing 40. With the relatively small market, we do not think that the need for hardware will be considerable enough to provide economies of scale. This reasoning is from the perspective of the e-service specializing on safe mining. If we look at the ambition of developing an e-service that can be transferred to any sector, the barriers are also low since there are no major players yet. This can on the other hand change with time.

**Product differentiation**
From the product differentiation perspective we believe that the barriers of entry might be in Zert’s favor. Even if a competitor enters the market with a similar e-service, Zert’s e-service will have had time to build customer loyalty and brand identification. The potential competitor will need to come up with an offer good enough to make the customer willing to risk switching from a well known supplier. This is also reasoning from the perspective of the e-service specializing on safe mining. If we look at the ambition of developing an e-service that can be transferred to any sector, we do not believe that there are any significant barriers of entry from a product differentiation perspective.

**Capital requirements**
At this moment we believe that the barriers of entry due to capital requirements are moderate. Developing a technology dealing with the same general issues as the e-service by Zert from scratch would require a considerable amount of money, adding to the barrier of entry. Already existing technologies deciding to spread to a new context, the mining industry, would as we see it most probably be a lot less costly. If these technologies exists already we do not know, but our initial reaction is that they do not. The reasoning behind that is that the problem is very Sweden specific, and the research project is receiving financing from Swedish authorities. This would not happen if other strong technologies already existed.

**Cost disadvantages independent of size**
Due to this we believe that some barriers of entry might be created by Zert, from their long experience of the issues the project is working with. Since they already started the development of the e-service, they will also have a head start in experience of running this kind of service. This barrier is for the mining industry. On a general level there might be several companies with extensive experience in e-services, and possibly public e-services.

**Access to distribution channels**
This perspective can provide strong barriers of entry in Zert’s favor. Since there are few players in the market, Zert has the opportunity to build strong relations with a big part of them. If the customers get tied up by licenses and familiarity with the e-service and the people working with it, they might get reluctant to changing to a competitor. Potential entrants to the market will probably have a hard time getting market shares unless they have a superior offer. This benefit will diminish outside the mining industry, at least in the short term.
**Government policy**

Since different authorities are important stakeholders in the project, *government policies* can be an important factor to consider. Since the research projects around public e-services are heavily financed by different authorities, it might be hard for a competitor to get funding for a similar project to what already exists. There are few reasons for them to invest money in an e-service for the mining industry, if there is already one up and running. This might also apply when going outside the mining industry, but most probably not to the same extent.
8. CONCLUSIONS AND DISCUSSION

In this chapter we will answer the questions of our research focus and the purpose of this study. We will also finish the chapter with some recommendations for further studies.

Looking back at our purpose of the research,

The purpose of the research is to help Zert AB to identify and define different kind of competition that the e-service they are developing is facing. A sub purpose is to define the customer and the customer value. This will be done since understanding the competition is an important part of building strategy and defining new product specifications. Based on the findings we will also give some recommendation for future research.

we will here try to present the conclusions of the study.

The main competition as we see it is the threat of backwards integration, which means that the customers decides to do the work manually. This means that the customer will use a big range of alternatives that are substitutes to different parts of the e-service. Some of these are:

- Google substituting big parts of the search functions
- Authorities can be called, and their websites checked
- Consultants and lawyers can be consulted
- Subscribing to different newsletters and updates

Since this is the normal routines, it might be hard to change the behavior unless providing really strong arguments for the e-service. The only direct competition, at least in the short term, is to use consultants. In the long term other e-services can provide competition, since e-service is a national focus area for making the public administration more effective.

Looking at the ambition of transferring the e-service to other industries, there are some other e-services in development that can compete. This has not been a focus of our study though, so it could be recommended to be looked into further.

The main identified customers are the mining companies and the authorities. Other identified customers were the municipalities and landowners. We would also like to add a customer that was not discussed; which is consultants. With this e-service it will be easier even for consultants to get a better overview of the area, which has not been the case up until now. Consultants mastering the e-service could provide a powerful option for dealing with the issues that the e-service is addressing.

There seemed to be a consensus among the respondents of the study, about the value of finding the right information more easily. The mining companies also pointed out the increased transparency, by being able to follow different matters through the authorities, as something valuable. For the bigger organizations, the possibility to gather information in the same source also seemed to be valued, considering that they already have multiple sources covering most of what they need.
8.1 Recommendations for further studies

Now when the study is over we would like to recommend some areas that we think would be of interest to study further.

- **How much the customers would consider paying for the service**
  All the respondents seemed to agree on the relevance of the e-service, and they would all consider using it if the price was right. We would like to suggest researching this further, in order to make a financial feasibility study comparing the necessary investments with the willingness to pay of the potential customers.

- **Perspectives from international companies**
  Since our interview with the international mining company was cancelled, we would like to suggest gathering some perspectives from international mining companies. This is the segment which is identified as having the most needs, so getting their perspectives could add some nuances to the identified needs that the e-service should work with.

- **How to design the e-service interface**
  We would also like to suggest a thorough study of how the e-service interface should be designed. Some of the respondents made some statements about what the e-service should show them to make it trustful. This area is also discussed in our theoretical chapter about e-services. The mentioned recovery dimensions could be of interest to look into.

- **Evaluate the development of public e-services**
  Since an ambition of the project is to develop an e-service that can be transferred to any industry, it would be of interest to make a competitive analysis in that area as well. Both the development from a country perspective and other research projects in the area could be looked into. This was unfortunately not possible to fit into the timeframe of this study.
9. CREDIBILITY OF THE RESEARCH

As a last chapter of this study we will discuss the validity and intersubjectivity of our research, as well as its practical applicability. These credibility criterions underlie how trustworthy the result of this study is.

The purpose of the research was to help Zert AB to identify and define different kind of competition that the e-service they are developing is facing. A sub purpose was to define the customer and the customer value. Based on the findings we were also going to give some strategic recommendations.

Since we have used a qualitative method for the research, we have chosen to use the criteria validity, intersubjectivity and practical applicability to assess the fulfillment of the purpose of the research.

9.1 Validity

In a qualitative study it is important to gather empirical data and information that covers as many perspectives and qualities as possible to reach validity in the conclusions. Also, theoretical saturation is when gathering more empirical data will not add any new information to the developed concepts or theories. This means that doing more interviews, or gathering more data, will not add any more value to the research.97

We do not believe that we have managed to get a complete theoretical saturation, since we only managed to do four interviews. If we did not lose our interview with the international mining company, we think that the level of saturation would have been satisfactory, since complete theoretical saturation is really hard to achieve98. Even if we did not manage to reach saturation, we do not believe that our conclusions would have changed notably if we would have managed to gather more empirical data. Also, having in mind that two of our respondents have participated in the Senior Advisory Board meetings of the project, we believe that the quality of their input is high. This, combined with the main purpose of the research being to define the competition on a general level, we believe that the level of validity is satisfactory for the purpose of the research.

9.2 Intersubjectivity

Intersubjectivity means that the interpretations the researcher present, should be accurate enough to be accepted by other researchers as well as the studied reality.99

To deal with this we sent both transcriptions and the empirical presentations to all the respondents. We received a few clarifications, which have led to an increased intersubjectivity. Since we did the interviews together with another researcher, we believe that her reading through our interpretations has been beneficial since she had firsthand experience with the studied reality. We also recorded the interviews on tape, which we later transcribed, which should have led to our interpretations being less influenced by our opinions and preconceptions. During the time of the research we also had our supervisor to have a general overview of our progress.

97 Johansson Lindfors, p. 165-166
98 Ibid.
99 Ibid. p. 166-167
9.3 Practical applicability

The fact that the research was initiated by a wish from the project is as we see it a good sign of practical applicability in itself. It means that there is an identified need of the topic of the research. Practical applicability cannot be determined before it is used in practice\textsuperscript{100}, but we will share our beliefs about it.

We believe that there probably is some practical applicability of the research. By interviewing different stakeholders of the project, we have confirmed some perceived needs from the project, as well found some new ones. Our main contribution, as we see it, would be an increased understanding of the perspectives of the stakeholders and potential customers. We also believe that this research will be a good foundation for further market research and evaluation. How much of the conclusions that can be transferred to other industries than mining is hard to say, but we believe that there should be many similarities. This, since the Swedish systems for the public authorities is the same.

\textsuperscript{100} Johansson Lindfors, p. 167-168
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Respondents

Brundin, Anders manager for environment and security at Dragon Mining
Eklundh, Annica CEO at Zert AB
Waaranperä, Sofia LKAB
Nordström, Kenneth LKAB
Ägren, Ylva, Västerbottens Länsstyrelse
Appendix A – Interview guide Annica Eklundh, Zert

Bakgrundsinfo
Kan du presentera dig själv kortfattat?
Kan du berätta om bakgrunden till projektet ”E-tjänst Säkra Gruvor”?
- Varifrån kommer idén? (egna företaget? Spec. person? Utifrån?)
- När?

Projektet & e-tjänsten
Kan du kort beskriva tjänsten?
Kan du berätta om projektet?
- Identifierade behov
- Hur ska e-tjänsten utformas? /Vad ska den innehålla?
Har ni en affärsidé för denna e-tjänst?
- Vad är den?
Har ni en vision för denna e-tjänst?
- Vilken?
Hur har de olika parterna kommit in i projektet?
Vad är företagets relation till de olika parterna? (spec. myndigheterna)

Marknad
Vad ser ni för marknad för denna e-tjänst?
- Finns fokus på någon del av marknaden?
**Kunder**

Hur gör era potentiella kunder nu?
- Finns det olika alternativ?
- Vad finns det för problem
- Hur löser man dessa

**Konkurrens**

Vad för slags konkurrens har ni?
- Vad?

Vilka konkurrenter har ni? (Myndigheter, Konsulter? säljer liknande tjänst, hjälper igenom snårig lagstiftning, översätter dokument etc.)

Vilka är era konkurrensfördelar?
- Bättre i den här tjänsten
- Differentiering

**Finansiering**

Efter projektets slut hur ska e-tjänsten finansieras? (bidrag, sälja tjänsten)

Är det tänkt att någon ska betala för e-tjänsten?

- Vem/Vilka?
- Vad ska de betala för?

Vi skriver om nyttan/behovet samt konkurrenensen till denna tjänst.

- Är det någon speciell frågeställning som Zert vill att jag ska titta på gällande nyttan/behovet av denna tjänst?

- Vilken del av konkurrenensen känner du är minst utforskad?

Är det något vi har glömt?
Appendix B – Interview guide Anders Brundin, Dragon Mining

Bakgrundsinformation

Kan du presentera dig själv kortfattat?
Kan du berätta om företaget kortfattat?

E-tjänsten

Hur kom ni in i projektet ”E-tjänst Säkra Gruvor”?
-Varför?
Kan du kort beskriva tjänsten?
Finns behov för en e-tjänst av detta slag?
-Vad ser du att det finns för behov för en e-tjänst som denna i gruvbranschen?
-Vilka ser du kan ha behov av en sådan tjänst?

Dagsläget

Hur gör ni i dag? (följa lagar, ansökningar etc)
Vilka vänder ni er till om ni behöver hjälp med information? (Myndigheter, Konsulter??? säljer liknande tjänst, hjälper igenom snårig lagstiftning, översätter dokument etc.)
Finns det flera alternativ?
Finns det något som saknas i dagsläget?
- Vad?
Har ni behov av en tjänst som ”E-tjänst säkra gruvor”?
-Vilka?/ Varför inte?
Ser ni några fördelar med en tjänst av detta slag?
- Vilka?
Ser ni några nackdelar med en tjänst av detta slag?

Vilka?

Skulle ni kunna tänka er att använda er av tjänsten?

Vad har ni för förväntningar på denna tjänst?

- Innehåll?
- Design för att passa er?

Hur är er inställning till tillförlitligheten av denna typ av tjänst?

Hur ser ni på framtiden för denna tjänst/denna typ av tjänst? (konkurrens?)

*Finansiering/Kostnader*

Skulle ni kunna tänka er att betala för en e-tjänst som denna?

- Varför/Varför inte?

Vad skulle ni kunna tänka er att betala för?

Är det någonting som vi har glömt?
Appendix C – Interview guide Sofia Waaranperä & Kenneth Nordström, LKAB

Bakgrundsinformation
Kan du presentera dig själv kortfattat (bakgrund/utbildning och vad du gör på företaget)?

Kan du berätta om företaget kortfattat?

Dagsläget
Hur gör ni för att tillgodogöra om lagar, regler, anvisningar och standarder som ni behöver följa?

Hur gör ni för att hålla er uppdaterade om vad som gäller?
  - Vilka verktyg finns för att göra detta?
  - Hur organiserar ni arbetet för detta? (vilka personer, hur många)

Vilka vänder ni er till om ni behöver hjälp med information?
(Myndigheter, Konsulter? säljer liknande tjänst, hjälper igenom snårig lagstiftning,
översätter dokument etc.)
  - Finns det flera alternativ?

Har ni alltid jobbat på detta sätt?
  - Vilka förändringar har gjorts, när, varför?

Finns det några svårigheter för er?
- Vari ligger dessa?

Vilka myndigheter har ni kontakt med?

Finns det ett samarbete med myndigheterna?
- Vad består detta i?

Har ni möjlighet att följa ärenden?
- Hur gör ni?

Finns det något som saknas i dagsläget?
  - Vad?
  - Finns det något som skulle förenkla arbetet för LKAB?

Vilka områden har du insyn i bland lagar, regler anvisningar och standarder? (miljösäkerhet,
arbetsmiljö etc.)
E-tjänsten
Känner ni till projektet ”E-tjänst Säkra gruvor”?

Om ja: Kan du kort beskriva tjänsten?

Om nej: Vi beskriver tjänsten!!

Finns behov för en e-tjänst av detta slag?
- Vad ser du att det finns för behov för en e-tjänst som denna i gruvbranschen?
- Vilka ser du kan ha behov av en sådan tjänst?

Har ni behov av en tjänst som ”E-tjänst säkra gruvor”?
- Vilka?/ Varför inte?

Ser ni några fördelar med en tjänst av detta slag?
- Vilka?

Ser ni några nackdelar med en tjänst av detta slag?
- Vilka?

Skulle ni kunna tänka er att använda er av tjänsten?

Vad skulle ni förvänta er av tjänsten?
- Innehåll?

Hur är er inställning till tillförlitligheten av denna typ av tjänst?
- Hur är tilltron till tjänsten?
- Jämfört med tilltron till en konsult?

Hur ser ni på framtiden för denna tjänst/denna typ av tjänst? (konkurrens?)

Finansiering/Kostnader
Skulle ni kunna tänka er att betala för en e-tjänst som denna?
- Varför/Varför inte?

Vad skulle ni kunna tänka er att betala för?

Är det någonting som vi har glömt?
Appendix D – Interview guide Ylva Ågren, Västerbottens Länsstyrelse

Bakgrundsinformation

Kan du presentera dig själv kortfattat (bakgrund/utbildning och vad du gör inom organisationen)?

Kan du berätta vad gruvsidan på Länsstyrelsen gör?
- Vad är era vanligaste ärenden?
- Vilken information kan man få av er?
- Vad upplever ni att gruvföretag har för problem?

E-tjänsten

Känner ni till projektet ”E-tjänst Säkra gruvor”?

Om ja: Kan du kort beskriva tjänsten?

Om nej: Vi beskriver tjänsten!!

Finns behov för en e-tjänst av detta slag?
- Vilka ser ni kan ha behov av en sådan tjänst?
- Vad ser ni att det finns för behov för en e-tjänst som denna i gruvbranschen?

Har ni behov av en tjänst som ”E-tjänst säkra gruvor”?
- Vilka?/ Varför inte?

Ser ni några fördelar med en tjänst av detta slag?
- Vilka?

Ser ni några nackdelar med en tjänst av detta slag?
- Vilka?

Skulle ni kunna tänka er att använda er av tjänsten?

Vad skulle ni förvänta er av tjänsten?
- Innehåll?

Hur är er inställning till tillförlitligheten av denna typ av tjänst?

Hur är er inställning till tilltron för denna tjänst?

Hur ser ni på framtiden för denna tjänst/denna typ av tjänst? (konkurrens?)
Finansiering/Kostnader

Skulle ni kunna tänka er att betala för en e-tjänst som denna?
- Varför/Varför inte?

Vad skulle ni kunna tänka er att betala för?

Är det någonting som vi har glömt?