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**Identifying needs and buying behaviour for material analyses services by  
SMEs dealing with tangible products in Northern Bothnia region**

A quantitative study

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Degree in International Business  
Oulu University of Applied Sciences

## ABSTRACT

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This thesis was developed in order to help the commissionaire, the Microscopy and Nanotechnology Centre at Oulu University (MNT), acquire a better understanding of the current state of the market for material analyses services in Northern Bothnia region. The main purpose of this research paper is, by using applied marketing research tools- a quantitative survey, to collect as much information possible about the customers who are purchasing material analyses in the region. The main research areas have been value creation and customers' satisfaction, regular customer behaviour and information channels used in the purchasing process.

The background analyses included a theory review of B2B marketing and the organizational behaviour in specific. Moreover a SME framework has been drawn, also the buying behaviour in organizations and the value creation has been discussed to provide to the reader a theoretical fundament for the research to come.

The conveyed survey managed to successfully attract respondents in order to provide valid answers to the preliminary objectives. The main conclusions have been made in reference with the building ideal material analyses service and in considerations with the future trends on the market. A material service provider that is fast, reliable, cooperative, versatile and experienced has been stated to be the most desired research partner. Furthermore, as outsourcing seems to be the future trend in the area, the importance of heterogenic service provider has been described. There is still a demand for further analyses in the area of start-up material analyses research and the exploration of the decision making in regards with buying behaviour.

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SME, material analyses services, business to business marketing, organizational behaviour, value creation, regular customer behaviour, quantitative research

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# 1 INTRODUCTION

After the financial crisis of 2008, followed by the European debt crisis, the revival of the Finnish economy has been heavily linked with the rise of the entrepreneurial spirit. The growth and business development of small and medium sized enterprises (SMEs) have been considered as a major factor for the improvement of the employment climate, thus contributing for the enhancement of the overall state of the economy. Unfortunately, SMEs face considerable problems in their product development processes due to the lack of knowledge and financing. According to the study by the European Commission (Rebuilding Europe's Competitiveness, 2014) "to be successful, businesses need to constantly utilize new knowledge for developing new products and services, or for establishing new business models that enable them to reach the market in more efficient ways. This is particularly true for small and medium enterprises, which are among the largest generators of jobs in Europe but often face difficulties in accessing and absorbing the necessary knowledge to develop new products or models, or to get financing to scale up their operations."

The European Union funded project Unelma is aiming at bringing together the two parties who can be truly beneficial to each other in the product development process – the universities' material analyses laboratories and the SME's dealing with tangible products. According to the Microscopy and Nanotechnology Center at Oulu University (MNT), there is potentially huge amount of resource base to be used in the area of material research available for the businesses. On the other hand the unawareness of the existing of such possibilities to the SMEs is damaging the condition and worsening the future perspectives for such laboratories to improve their research. One reasonable solution would be to improve the cooperation between the university laboratories and the product development branches of the companies.

Unfortunately little is known by the research facilities about the current needs for material analyses and the purchasing behaviour of the SMEs dealing with

tangible products. The demand for such research has been the most critical factor behind this study, as the modern business environment is changing more frequently and drastically than ever. This paper focuses mostly on gaining initial overall understanding of the purchasing patterns of the companies in the past and examines the data in attempt to provide insight about the material analysis plans of the SMEs in the future. The quantitative study conducted with the use of a questionnaire deals with questions in the area of service quality and satisfaction, type of service purchases and the importance of various factors for the purchase, B2B relationships and the use of information channels. This research is not aiming at being complete at collecting information about the current market, but is mainly directed to gather general data dealing with the buying behaviour of the companies in the studied area.

With the help of literature review the author aims to build the fundament for the researched topic. Consequently, the questionnaire data will be analysed to make conclusions on the behalf of the commissionaire for the further marketing approach related to the improving of the mutual cooperation. Last but not least, based on this research we would be able to state what the SMEs have done in the area of material research and probably grasp their future plans for such analyses.

The conclusions based on the practical investigation would be a good starting point for further research in the area, as such is definitely needed to improve the connection between the scientific centres and the growing business enterprises. Furthermore, the area of university and business collaboration has heavily been discussed recently, and any applied research in the area would be appreciated.

## **1.1 About Unelma project**

Unelma is a project undertaken by the Microscopy and Nanotechnology Center (MNT) from Oulu University, Kemi-Tornio University of Applied Sciences, Luleå University of Technology, Oulu University of Applied Sciences (OUAS) and Swerea Sicomp are the main partners in the collaboration. Unelma aims at creating novel high-tech services and working operational concepts that will be based on the research facilities of the partnered universities. The Project's main funding was provided by the Interreg IV A Nord Programme, Norrbotten County Administrative Board, Regional Council of Lapland. (Unelma project plan summary, 2012)

The main task of OUAS is to communicate its expertise in the service development and ultimately influence the improvement of the industrial business activities in the region. Among the main goals of the project is reinforcing the collaboration between the small and medium enterprises and the universities' material analyses laboratories from the Northern Bothnia region (Unelma project plan summary, 2012)

There has been clear signals that the SME companies are not well informed how to efficiently exploit the resources of the universities and the research institutes in their everyday operation. The thesis aim is to identify the most important needs of the companies in materials analysis and imaging and also try to estimate the needs of the potential customer companies. (Unelma project plan summary, 2012)

## **1.2 Research Purposes**

The purpose of this research paper is, by using applied marketing research tools, to help the commissioner (MNT) acquire better understanding of the SMEs' current and future needs in material analyses in their product development and everyday business operations. The quantitative study is based on questionnaire, which would be obtaining customers' insights into the ideal material analyses

service. The findings may be useful reference for a discussion topic that could compare to what extend the available services from the university laboratories match the SMEs' necessities.

### **1.3 Scope of Research**

This thesis is going to cover the SME customers' buying behaviour in B2B relationships concerning material analyses. The survey has been focussed at gaining answers to questions connected to the past, present and future purchasing situations that the respondent have experiences. Furthermore the questionnaire attempts to discover and identify any repeating patterns or buying preferences in the materials analyses choices made or to be made by the SMEs.

The knowledge of the commissionaire for the current state of SMEs demand, buying behaviour and selling channels preferences consequently are limited at this moment. Therefore the purpose of this research has been to mainly gain information and help the researcher to familiarize with the target group customers' preferences. The limitations in this study are concerning the depth of the research, as the main emphasis here have been to achieve information flow towards the commissionaire and conceivably discover buying behaviour patterns, rather than execute a complete marketing research for the specific area of business.

### **1.4 Methodology**

The main practical research tool for this paper has been a questionnaire consisting of 19 questions which were sent via e mails to a quota of participants. The quota consists of 413 companies, chosen from the Northern Bothnia region, complying to the criteria of being SME dealing with tangible products. 358 participants' addresses were acquired using the Fonecta business services for purchasing particular companies' information. The following criteria for the



acquisition were being followed: position in the company- managing director or product development manager, location - Northern Finland and Northern Sweden, also Pirkanmaa near the city of Tampere and industry sectors – mining industry, chemical industry, manufacturing industry and scientific research and development. The remaining 55 e-mails were taken from the OUAS's own company database.

The minimum response number was considered satisfying at the rate of around thirty participant replying to the online questionnaire. The Webropol software was used for the preparation of the online survey and also for the further analyses and the presentation of the results.

The research was conducted with the help of the statistical practical tools – questionnaire and statistical analysing software and for the better understanding of the matter a short description of the type of research performed could be of great assistance to the reader. The quota size and the measurement methods used in this paper indicate that the researcher is using the quantitative research methods to reach to conclusions.

In social science the methodical pragmatic examination of social phenomena using statistical, mathematical and numerical data is referred as quantitative research. With the development of a mathematical model, a theory or a hypothesis relating to the occurrences the objective of the research could be reached. The procedure of measurement is fundamental to quantitative research, since it delivers the essential link between the practical reflection and the mathematical expression of quantitative interactions. (Quantitative Research, 2014)

Quantitative data is analysed with the assistance of statistics and includes any data that is in numerical form. The aim of the researcher is to reach an unbiased (unprejudiced) result that can be generalized to some extent larger population. (Quantitative Research, 2014) The use of quantitative research methods in the marketing field is referred as quantitative marketing research and involves the application of questionnaires and scales. On one side the respondents answer

the survey, while on the other the marketers would attempt to understand the demands of the individuals in the market by using the obtained data. This could help them create further strategies and marketing plans to improve the researching party business activities. (Quantitative marketing research, 2014)

The theory review has been based on books and internet articles dealing with B2B marketing, business buying behaviour in business organizations and a short description of the SME's framework. The chosen topics have been helping the researcher strengthen his understanding about the research topic and provide a good background for the survey analyses and conclusions.

## **2 THEORETICAL FRAMEWORK OF B2B MARKETING AND ORGANIZATIONAL BUYING BEHAVIOUR**

### **2.1 SME's Framework**

As the study includes a quota of participants, subordinate to the criteria to be SMEs dealing with tangible products, a short description according to the European Union (EU) law for the small and medium enterprises could be considered suitable. The importance of the SMEs for the economy is evident, since the 23 million of them represent 99 percent of all the enterprises, provide about 75 million jobs and are a key source of entrepreneurial skill and innovation. (European Commission, 2014)

SME stands for small and medium sized enterprises and the factors defining a company being an SME are the number of employees and either turnover or balance sheet total. A company is labelled micro when the number of personnel is less than ten and the annual turnover or annual balance sheet total does not exceed two million euro. A small enterprise employs less than 50 people and has no more than ten million in turnover or as balance sheet total. If a company has employed no more than 250 people and has made a turnover not exceeding 50 million or balance sheet total of 43 million, this enterprise is medium according to the EU commission definition. (European commission/Enterprise and industry, 2014) Since the annual turnover and the balance sheet total is data which is not always available to access for the researcher, the participants in this project have decided to perceive the personnel number as the main factor for an enterprise size recognition and consequently for the entering in the survey quota.

The mobilization of talent and the rise of entrepreneurship have been considered among the main factors that can contribute for the rebuilding the European economy and the Finnish one in particular. The improved collaboration between industry and science could reap great benefits for the overall economic

development and therefore the Unelma project targets SMEs as the target group for potential future cooperation. (Rebuilding Europe's Competitiveness, 2014)

## **2.2 Introduction to Marketing**

For the purposes of this study, a brief introduction to the terms marketing, marketing research, business to business marketing, and value creation has been necessary to build the thesis's theoretical background and improve reader's understanding for the discussed topic. As a part of common marketing research practices, the survey questions are focussed on the business to business relationships and could support the value creating for the customers to come in the material analyses sphere of marketing.

Marketing could be seen as the relation between the society's demand for products and its monetary forms of response to it. (Marketing , 2014). According to Philip Kotler (Kotler, 2003), "Marketing is typically seen as the task of creating, promoting, and delivering goods and services to consumers and businesses."

Demand is what marketers are trained to recognize and they could attempt to control the level, timing and composition it. Consumer, business, global and non-profit markets have been the four most distinctive fields of operation for the professionals in the marketing sector. Marketing mix often refers to the set of tools that marketers use to provoke the reactions that are desired from their target markets. (Kotler, 2003)

For the marketers, the information about the customers' preferences and their current buying behaviour and equally the market and the competitors present state, could occasionally be acquired by performing marketing research. The main characteristics of a good marketing research should include the use of the scientific method, creativity, various research techniques, precise model building, cost-benefit analyses, a reasonable balance between scepticism and belief and an ethical focus. The process of marketing research could usually include various patterns for the execution of it. First the researcher should define the problem

and the research objective and should develop a research plan. Then the collecting, analysing and presenting the data is necessary. Finally, the research approach and research instrument should be chosen from the various opportunities available. Also the sampling plan and contact method decisions could be requiring the researcher's attention. Information could be of great importance for conducting a successful business and marketing research could be considered as one of the most efficient methods to bring the consumers' buying behaviour data closer to the companies operating on the researched market. (Kotler, 2003)

Since the university laboratories perform services a short description of the service marketing characteristics could be beneficial for the researcher. The five main characteristics of a service are lack of ownership, intangibility, inseparability, perishability and heterogeneity. A service is provided for a certain time therefore the lack of ownership is evident, it is also intangible and inseparable from the service provider. A service is developed and used almost simultaneously and impossible to be stored in any possible way making it perishable product. At last, the impossibility to make a service identical to the previous or the next one is characterizing the service product as heterogenic. Understanding these main features and principles of the service creation, delivery and appreciation by the customer, assists the service analyses' research in attempt to be easier for the reader to comprehend (Characteristics of a Service, 2014)

### **2.3 Business to Business Marketing and Value Creation**

To further understand how the core marketing principles relate in the B2B markets, we are required to identify the main characteristics of the B2B marketing and compare it to consumer marketing to make the differentiation more vivid in the reader's mind. In general, business markets involve all the companies that acquire goods and services for the creation of their own products and services. It could be stated that these markets involve fewer but greater clients than the average consumer markets. The business customers make purchases of considerably larger values while having complex considerations from economic, technical and financial point of view. (Business marketing, 2014)

The derived demand is one of the main characteristics of the business markets. It is the direct connection between the need for products for industrial use and products for consumer use. Because of that correlation the business marketer should always monitor the demand from the households on a global scale to be able to identify the current buying behaviour. Furthermore the fluctuating of the demand could even stimulate the business marketer to influence the end consumer's purchases with the development of a marketing program. At last the price sensitivity should be considered when estimations about the state of the markets are made. Some consumer markets are characterized with elastic demand while others are inelastic in demand, so the B2B relationship will be driven in accordance with the specifications of these factors. (McDonald, 2013)

The chart below summarizes the main characteristics of the B2B and B2C (Business to Customer) marketing, while making it easy to comprehend the differences between the two:

<b>Business-to-Business</b>	<b>Consumer</b>
<b>Market Structure</b>	
<ul style="list-style-type: none"> <li>• Geographically concentrated</li> <li>• Relatively fewer buyers</li> <li>• Oligopolistic competition</li> </ul>	<ul style="list-style-type: none"> <li>• Geographically dispersed</li> <li>• Mass markets, many buyers</li> <li>• Monopolistic competition</li> </ul>
<b>Products</b>	
<ul style="list-style-type: none"> <li>• Can be technically complex</li> <li>• Customized to user preference</li> <li>• Service, delivery, and availability very important</li> <li>• Purchased for other than personal use</li> </ul>	<ul style="list-style-type: none"> <li>• Standardized</li> <li>• Service, delivery, and availability only some what important</li> <li>• Purchased for personal use</li> </ul>
<b>Buyer Behavior</b>	
<ul style="list-style-type: none"> <li>• Professionally trained purchasing personnel</li> <li>• Functional involvement at many levels</li> <li>• Task motives predominate</li> </ul>	<ul style="list-style-type: none"> <li>• Individual purchasing</li> <li>• Family involvement, influence</li> <li>• Social/psychological motives predominate</li> </ul>
<b>Buyer–Seller Relationship Expectations</b>	
<ul style="list-style-type: none"> <li>• Technical expertise an asset</li> <li>• Interpersonal relationships between buyers and sellers</li> <li>• Significant info exchanged between participants on a personal level</li> <li>• Stable, long-term relationships encourage</li> </ul>	<ul style="list-style-type: none"> <li>• Less technical expertise</li> <li>• Nonpersonal relationships</li> <li>• Little information exchanged between participants on a personal level</li> <li>• Changing, short-term relationships encourage switching loyalty</li> </ul>
<b>Channels</b>	
<ul style="list-style-type: none"> <li>• Shorter, more direct</li> <li>• Organization involvement as part</li> </ul>	<ul style="list-style-type: none"> <li>• Indirect, multiple relationships</li> <li>• Little/no customer supply chain involvement</li> </ul>
<b>Promotion</b>	
<ul style="list-style-type: none"> <li>• Emphasis on personal selling, dialogue</li> <li>• Most communications invisible to the consumer</li> <li>• Consumer seldom aware of business-to-business brands and companies</li> </ul>	<ul style="list-style-type: none"> <li>• Emphasis on advertising, monologue</li> <li>• Companies compete for visibility and awareness by consumer market</li> </ul>
<b>Price</b>	
<ul style="list-style-type: none"> <li>• Complex purchasing process or competitive bidding, depending on purchase type</li> </ul>	<ul style="list-style-type: none"> <li>• Usually list or predetermined prices</li> </ul>
<b>Demand</b>	
<ul style="list-style-type: none"> <li>• Derived</li> <li>• Inelastic (short run)</li> <li>• Volatile (leveraged)</li> <li>• Discontinuous</li> </ul>	<ul style="list-style-type: none"> <li>• Direct</li> <li>• Elastic</li> <li>• Less volatile</li> </ul>

Figure 1: Business to Business versus Consumer Marketing Summarizing the Differences

Source: *Business-to-Business Marketing, Analysis and Practice* (Vitale, 2011)

The drawn comparison above suggests that the B2B marketing could be considered as much more complex and relationship driven market than the B2C market. As it was stated by Philip Kotler (Kotler, 2003), "Compared to consumer

markets, business markets generally have fewer and larger buyers, a close customer-supplier relationship and more geographically concentrated buyers.”

The product in B2B is usually customized according to the customer's preferences. The delivery, service and the availability is at utmost importance, and the purchase is for other than personal use. The product in business to business markets differentiate from the consumer markets in its technical complexity and the sophistication of the purchasing process.

The buyer in B2B on the other hand is task motivated and professionally trained to recognize the company's needs and find the best solution corresponding to them. He is functionally involved at many levels in the enterprise of business, possessing reasonable technical expertise knowledge and is prepared to build stable long term relationship with the seller.

The value creation for the business customers could be considered as business marketing. According to Robert Vitale, Joseph Giglierano and Waldemar Pfoertsch (Vitale, 2011), “Business marketing is the process of matching and combining the capabilities of the supplier with the desired outcomes of the business customer”. Furthermore the creation of value from business customers for their own customers should be completely comprehended by the business marketer, as it would be necessary for him or her to describe how the value he delivers would increase the value for the customer's customer. Also as the B2B relationships could be seen as a constant chain of interactions between the whole lines of production, with each participant adding value to the final product, which could create a behavioural situations that are much more complicated than the ones occurring on the consumer market. (Vitale, 2011)

The creation of value is the core of every selling proposal and the meaning and specifics of the value creation in the business to business environment is utterly important to be understood in resonance to the goals of this paper. In general a business customer's value would be characterised by the complete valuation of the current relationship with a supplier throughout the experienced benefits and the sacrifices made. The benefits could be commonly divided to core and add-on



benefits. For example core benefits could be the product quality and an add-on benefit would be a value added customer's service. On the other hand the sacrifices include the purchase price, the acquisition costs, such as the ordering cost, and the operations costs, which might help reduce the total cost in case there is more defect free component's shipments for example. (Business marketing, 2014)

According to a study of almost 1000 purchasing managers conducted in United States and Germany by Ajay Menon, Christian Homburg and Nikolas Beutin, there were three factors of utter significance in the creation of customer value in B2B relationships- add-on benefits, trust and reducing the customer's cost. The add-on benefits could help the clients differentiate between the competitive offers from the suppliers, because almost all of them performed well on their core benefits. Secondly trust was considered as having stronger impacts than the benefits from the core characteristics of a product. Lastly reducing customer's cost was considered as an important cornerstone for a supplier choice, for example on time delivery would be helping the producing organization make on time manufacturing and reduce their operational costs. The result illustrated that in nowadays B2B relationships the price should not be the only factor in consideration when making purchasing decisions and the marketer could make better value propositions based on the statements stated by the research. (Hutt, 2010)

Value proposition is the term commonly used in B2B marketing for the products, services, ideas and solutions that a marketer presents to the customers in attempt to help the company meet its performance goals. Usually successful marketers and suppliers build their proposals around the few known elements that matter the most to the target companies. (Hutt, 2010) The current paper is therefore studying the current trends and behaviour concerning the material analyses in product development to help the university laboratories ultimately improve their offerings to the possible customers. Furthermore the demand for material analyses could be a subject of research, as it is considered discontinuous and derived and hard to clearly identify by the research facilities themselves. Also B2B emphasizes on the buyer-seller relationship as the one most influential

factors for the purchasing behaviour, so a sturdy literature review concerning the organizational buying behaviour would be adequate.

## **2.4 Buying behaviour in organizations**

Organizational buying is combining the inputs from various individuals with different professional specialities on every level in the company. The diverse set of needs which could be satisfied are under the direct consideration to certain stakeholders who also validate for best possible purchasing outcome. Rarely one person is fully accountable for an organizational purchase decision. The necessity for communication between the stakeholders in the process is requiring for the participants to ensure the establishment of good understanding about the needs of each one of them simultaneously. Usually the term buying centre is used for the collection of individuals with a contribution in the purchasing decisions. (Business marketing, 2014)

In specialized literature there have been two major models describing the organizational buyers' decision process: a stepwise model and a process flow model. A stepwise model includes eight main steps describing the process:

1. Problem recognition
2. General need description
3. Product specification
4. Supplier/source search
5. Proposal solicitation
6. Selection
7. Make the transaction routine
8. Evaluate performance

The limitations of this model are related to the fact that the buying process is simultaneous not sequential and also it is not taking into consideration the relationship and loyalty as an influencer in the decision making. Also what could

have been included in the model would be the needs of the organization and the professional and personal needs of the participant in the purchasing process. (John, 2014)

A process flow model on the other hand could be considered as better presenting the overlapping between the tasks and also the lack of strict borders, making it straightforward example for new task purchases. The model consists of four stages: definition, selection, solution delivery and endgame. (Vitale, 2011)

In the definition stage the buying centre focus its attention to the organizational needs and the options available for best satisfying these demands. A key term in this stage is the problem recognition which could be defining the rest of the decision process. During the problem recognition the task handed could be categorized as new task, straight rebuy or a modified rebuy. These three cases could be measured by time and effort consumed for managing them. A new task could be considered as the hardest one to manage as it would need a complete problem examination and investigation of the proposed alternatives. A straight rebuy is the less time consuming as it usually is a reorder of a previous product. In between, there should be the modified rebuy which is a condition familiar to previous situations but there could be the need for a better examination of the alternatives available. (McDonald, 2013)

During the definition stage, the product specification could be seen as the effort of the purchaser to simplify the need description, regardless of its complexity and assisting the buyer with the choice between the various competing proposals. It could be stated that product specifications functions as an internal brand in the same way as international brand reassures customers about quality in consumers markets. (McDonald, 2013)

The selection stage is usually defined by the issuance of a request for proposal and request for quotation, evaluation of different offers, initial selection of supplier, negotiations of purchasing terms and contract specifications. These steps could occur at random order or simultaneously but the ending of the stage would be the order or contract formulation. Usually, the total costs should be the

most important measure for the purchase, as the buyers are searching for the best total offering and capabilities. (Vitale, 2011)

The solution delivery stage begins with the process of delivery of the product and ends when the purchased item or service is distributed and approved by the customer. This stage could last more than the two first phases combined, depending of the amount of customization needed by the purchasing organisation. The logistics of the two parties merge in this stage and the result could be closely observed by the buying organization, as the following business relationship would be depending on the delivery impressions. (Vitale, 2011)

The endgame is the evaluative part of the buying process. The purchaser performs standardized audits or “scorecards” to review the suppliers according to the same standards, while the supplier tries to reignite buying interest by augmenting the selling proposals to meet the changing needs of the customer. (McDonald, 2013)

According to Phillip Kotler (Kotler, 2003), “Organizational buying is the decision-making process by which formal organizations establish the need for purchased products and services, then identify, evaluate, and choose among alternative brands and suppliers.” The role of the buying centre has been broadly debated in the specialized literature, especially the role the main participators in it such as the initiators, users, influencers, deciders, approvers, buyers and the gatekeepers. For a marketer to be able to stimulate these parties his or her awareness of the environmental, organizational, interpersonal and individual factors should be comprised. (Kotler, 2003)

The importance of the human factors in business decisions has been a subject to many discussions and because human beings are involved in the buying process, the most rational choice might not be the consequence of the negotiation. For example, there could be just a small group of suppliers that match the cultural, interpersonal, value and relationship demands of the buying organization, while in general there could be numerous group of providers capable of delivering the basic objective demands needed by the same

organization. The same supplier complying with the previous mentioned criteria would be much more favoured by the members of the buying organization, than the one relying only on the capabilities and features of its core product. Furthermore the revision of the facts surrounding the deal are often done only because there have to be revised and they are arranged in a way to help justify the decision that the member of the buying centre want to make. (Vitale, 2011)

Usually the focus on marketers participating in B2B process is to create customer loyalty. Uncertainty can be avoided by creating long-term contracts, the financial and emotional investment by both parties contributes to the success of the cooperation and factors such as commitment and trust are seen as decisive for building long-lasting business relationships. (Vitale, 2011)

### **3 SURVEY RESULTS**

The survey included 413 participants, from who 33 answered to the questionnaire, which is an eight percent reply rate and generally good feedback percentage having in mind that the survey was executed online, via e-mail. Still the process of gathering the desired 30 responses took more than two months' time, since the procedure of sending the survey and waiting for the replies was time consuming.

The main factors behind the successful attraction of participants have to be explained with the fact that there was a prize raffle for a 150 euro Ikea gift card. Contributing factors were also the amount of 2174 e-mails sent to the respondents and the well written cover letters in native to the respondents languages- Finnish and Swedish.

The original questionnaire and the cover letters in Finnish and Swedish can be found as Appendix 1, 2, 3 accordingly and the results of the survey as Appendix 4. The result presentation has been divided into four main categories, following the focus of the questions, in order to ease the reader into grasping the information and create a systemized and subordinate description of the outcomes. Furthermore the results were summarized at the end of every chapter, in order to pinpoint the major findings from the survey.

### **3.1 Background information about the participants and past experience with material analyses**

The chapter clarifies the background of the participants in the matter of their professional background and also clarifies the parameters of the companies they represent. Furthermore the past experience in the area of material analyses has been studied to present a good background picture for the future analyses and conclusions in this paper.

The majority of the respondents were from micro, small and medium companies, which is positive, as our target group should have matched that criteria. A total of 28 replies came from such enterprises, while 4 were from large enterprises.

A total of 22 respondents came from a company older than 10 years, as the average age of the enterprises represented by them was 36 years of age. There were 10 enterprises aged between 5 and 10 years and one between 2 and 5 years old.

Most of the respondents were from the business development and the product development unit of their companies-9 and 8 accordingly. There were 12 respondents who could not match the proposed option and answered “other”, with the majority of them being CEO or part of the management. Three of the participants were from the material research team of the companies and one from the marketing unit.

The industry branches in which the recipients were doing business varies, as dominant areas of business were the electronics, development of new tangible products and surface treatment (Figure 2). The answer “other, what” have gathered different industries, while there was not a particular prevalent answer (Appendix 5).

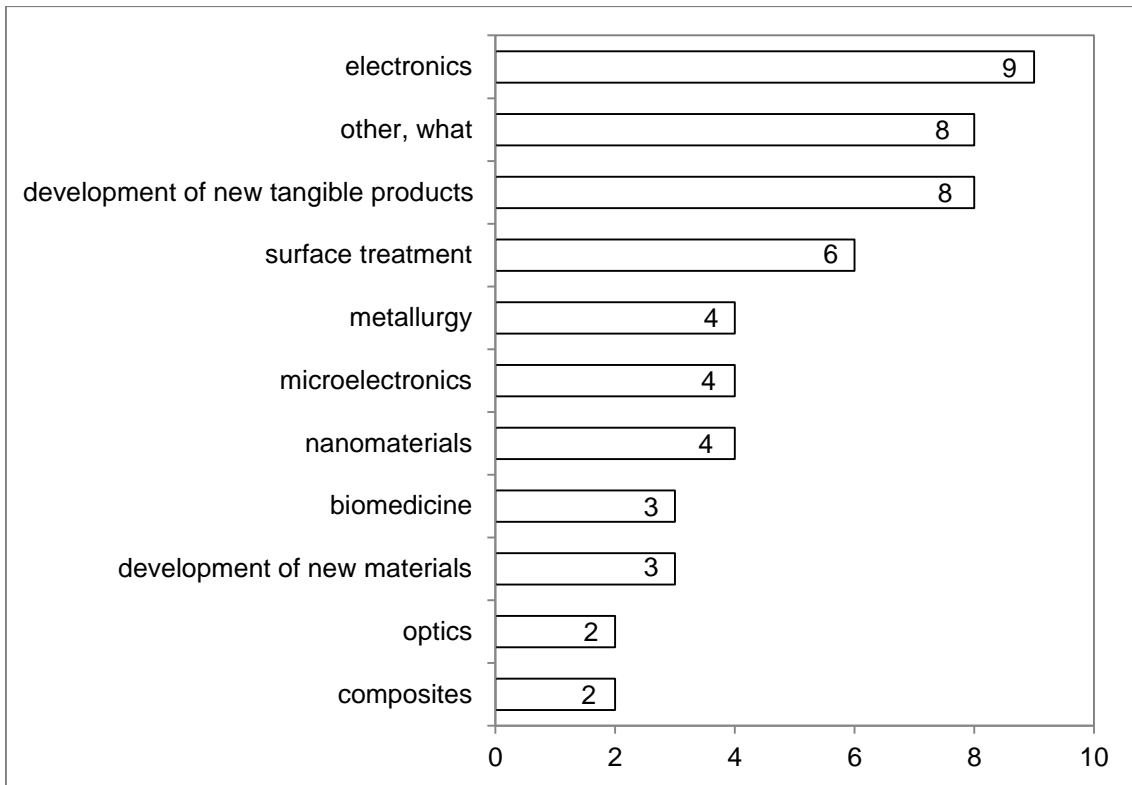


Figure 2. Participants' division in accordance with the industry branch they operate in (n=31, more than one answer possible)

Most of the answering companies have had experience with material analyses as 23 of the respondents gave positive answer to the question that examines the past experience regarding the topic. On the other hand, seven participants have never used or considered using material analyses in their product development and three were considering having such in the near future.

The average purchased amount of services in the area of material analyses per year was 161 times as 23 respondents were using such every year while 7 have not purchased such services on a year bases. The highest amount of purchases of material analyses accounted to 3000 times per year. The average amount of such purchases was about 10 times a year as stated by 14 of the participants in the survey.

A prevalent amount of answers came from companies using mostly own research facilities and sometimes others- 12, while 11 have been doing the opposite, using



mostly others research facilities and sometimes own ones ( Figure 3). Still seven participants have been outsourcing the material analysing to external companies and only two have been focussing on own research facilities.

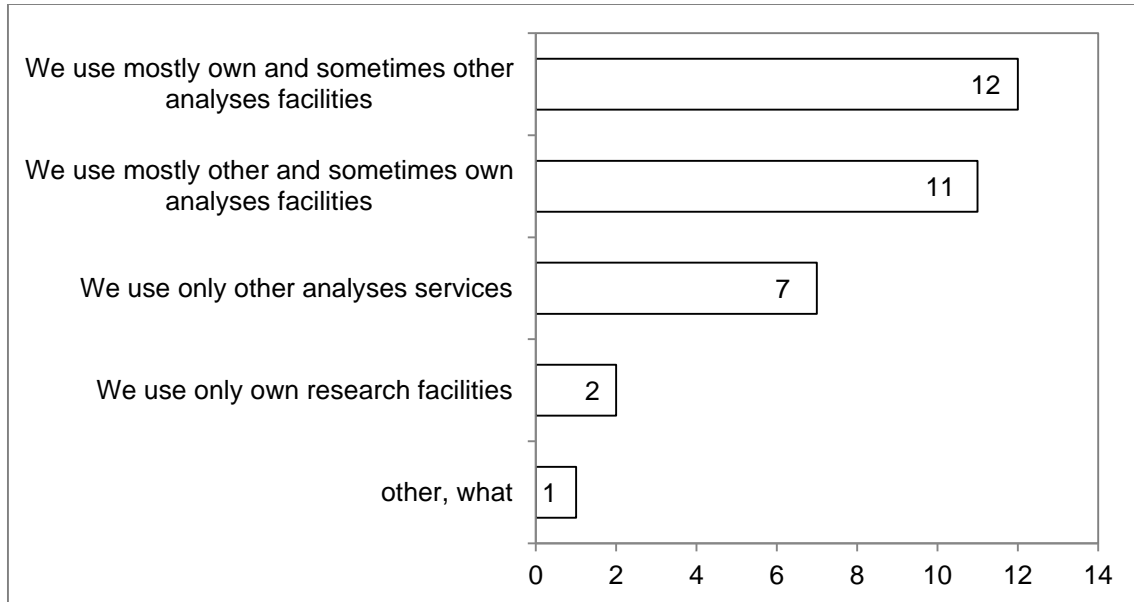


Figure 3. Own or others' analyses facilities usage (n=33)

A total of 23 were analysing the material properties of their products, followed by 11 responses concerning the testing of failure and damage of the materials and 10 responses dealing with surface investigation. The specifics of the material analyses is available for reference in Appendix 5.

To summarise, the average respondent of the conveyed survey was from small or medium enterprise, older than 10 years, dealing with business development or product development. Furthermore the average participant was doing business in the area of electronics or dealing with the development of new products, have already had substantial experience with material analyses and have been using own and others research facilities depending on the occasion.

### 3.2 Factors in material analyses that affect the value creation and the overall customer satisfaction

In this chapter the weight of different factors helping in the creating of value and bringing customer satisfaction have been presented. As shown on Chart 1, the most critical features of a material analyses provider in regards of customer's satisfaction have to be the quality of the service and the building of trust between the two parties. These two have been followed by the ease of access of the service, the time of execution of the project and the price of the service respectively. The least important factor to consider was the location of the material analyses provider. In the "other, what" option two respondents mention the importance of the expertise and the quality system in use.

	1 = Unimportant	2 = Slightly important	3 = Important	4 = Very important	5 = Critical	Total	Average
quality	0	0	2	16	15	33	4.39
trust	0	0	2	19	12	33	4.3
ease of access to the service	1	3	4	19	6	33	3.79
time for execution of service	0	5	6	16	6	33	3.7
price	1	1	16	13	2	33	3.42
other, what	1	0	0	1	1	3	3.33
location	5	10	10	7	1	33	2.67
Total	8	19	40	91	43	201	3.66

Chart 1. Importance of different factors for the choice of analyses service provider (numbers represent number of respondents that have chosen the option, n=33)

The worst problem that can arise during the analyses process will be to present to the customers unclears results. 15 respondents indicated that this will be the most unwanted factor during the service process, while seven emphasized on the speed if the service (figure 4). Communication problems, irresponsive service, going over the planned budget and bureaucracy were also picked among the options with four, three and two respondents respectively choosing the latters.

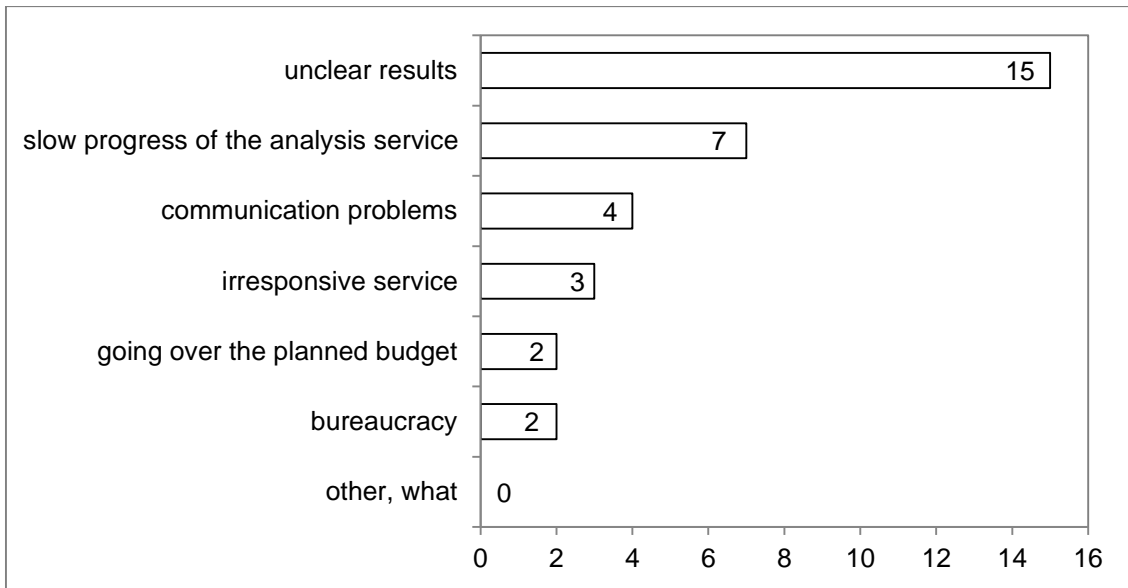


Figure 4. Unwanted factors in the process of material analyses (n=33)

Still in general the overall satisfaction from the projects in material analyses from the past is good with 18 respondents choosing this option. Nine were left with very good impressions from the research process and two had excellent overall satisfaction. None of the participants had ever experienced poor or fair level of service in the studied area.

When the participants were asked to describe with own words the ideal material analyses service, the most common descriptions were dealing with the adjectives fast, reliable, cooperative, versatile and experienced. Furthermore there were emphasises on the active cooperation and the ease of access, especially the possibility to be able to purchase everything at one place, also called one-stop-shop, which could ease the customer access to all the needed services and save time and trouble.

To summarize, the most valued attributes of a material analyses service, according to the participants in the survey have been quality and mutual trust, followed by time and ease of access to the service. On the other hand the least desired attributes have been in regard with unclear results from the analyses and slow execution of the service. Still in general, the total satisfaction is generally good reaching excellent, with expressed desire for improved cooperation and

organising one stop shops which can help the customer purchase all the needed services at one place.

### 3.3 Regular customer behaviour and purchase considerations for the future

In this chapter the behaviour of the customers in regards with the regularity of the purchase of services from the same material analyses provider will be examined. Also the consideration for the future usage of such services has been determined and will be observed in the end of the chapter.

A majority of the respondents were using three or more material providers regularly (Figure 5). Eight participants have used only one service provider while six two service providers. Five participants have not been using the same provider regularly.

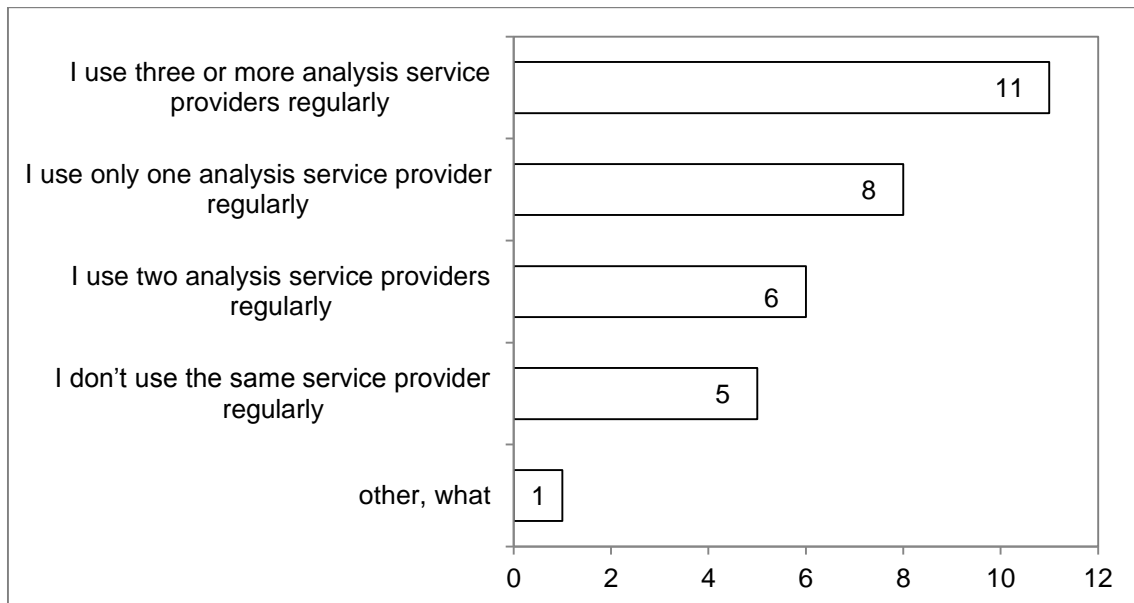


Figure 5. The use of regular material analyses service provider (n=31)

Most of the respondents have been using their regular material analyses provider more than 10 times in total, as shown in Figure 6. A total of 8 participants have

had experience with the same service supplier 4-7 times, while 4 have had eight –ten times or 2 two or three times regular business with a provider. Three stated that do not have a frequent analyses provider.

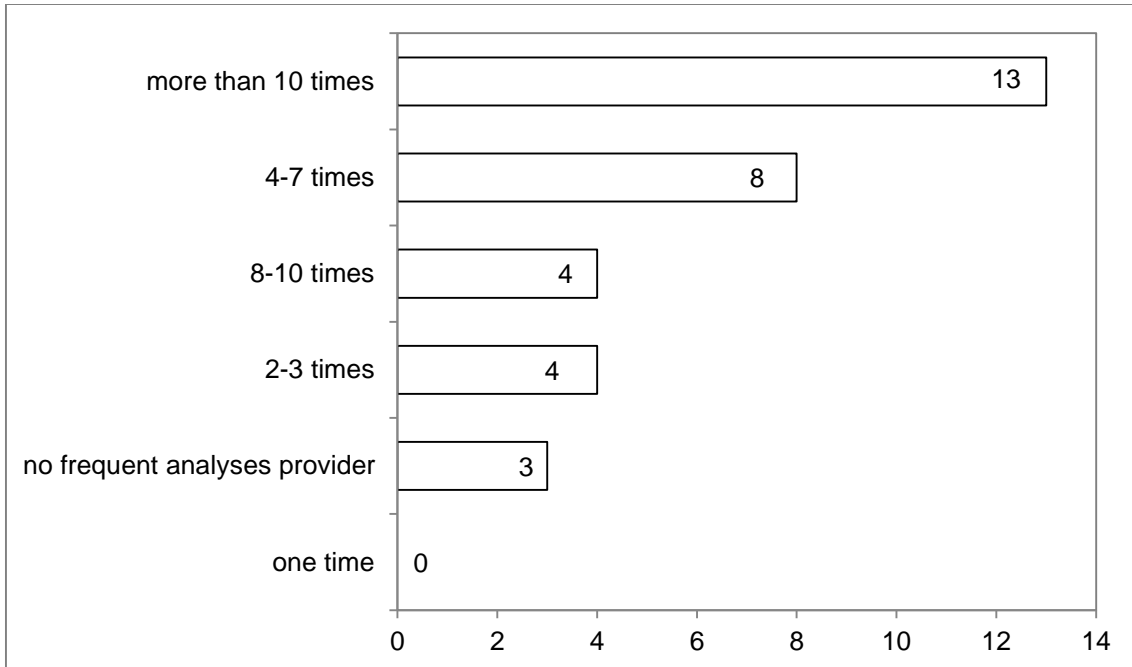


Figure 6. Regular analyses service provider usage (n=32)

When asked would the survey respondents would prefer to work with the current service providers or consider new ones, 12 of the respondents stated that they are always open for new partner possibilities to be discussed (Figure 7). Seven of the participants stated they will consider a new provider for the future, while the same amount of people indicated they rather have the current provider. Five people stated the project leads to a provider choice, while two were definitely looking for new material analyses provider.

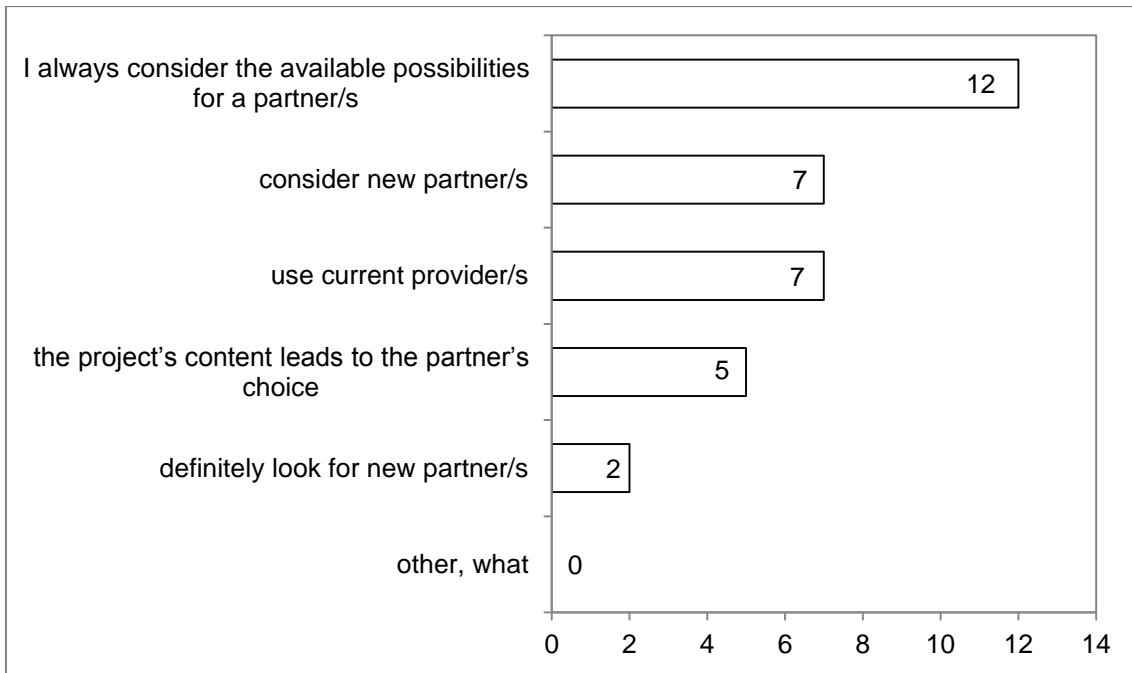


Figure 7. Current or other material analyses provider considerations (n=33)

The majority of the answers stated that the participants have primarily used private material analyses laboratory (Figure 8). Still 23 respondents were recognized with the university laboratories, while 16 were focused on their own analyses facilities. Few respondents mentioned the VTT research centre, TTL, the city hall laboratory and institutes.

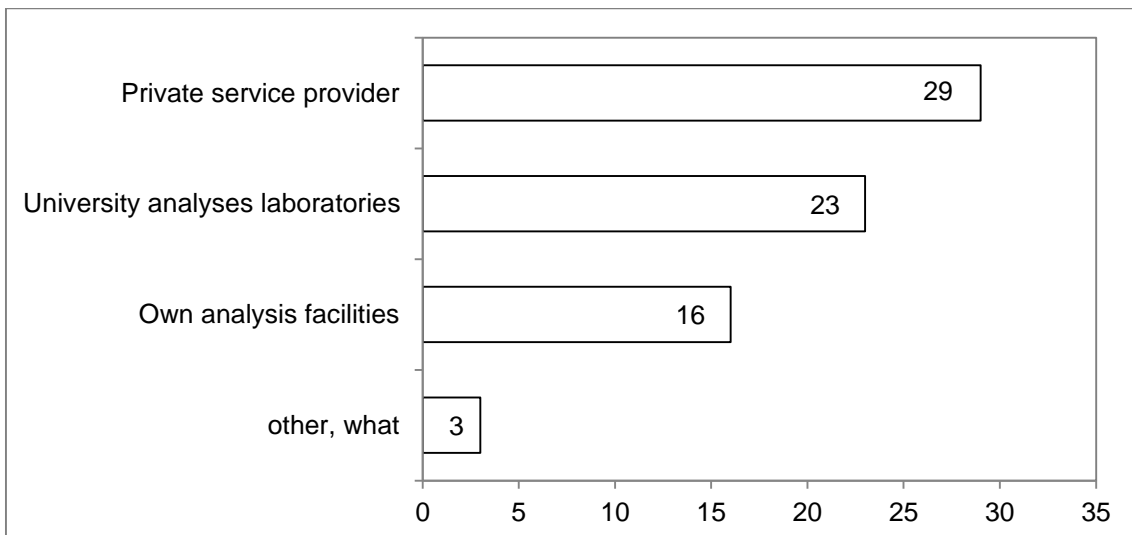


Figure 8. Past experience with different laboratories (n=31, more than one answer possible)

Eleven respondents were planning to outsource the research to another company in the future (Figure 9). An equal amount of participants were planning to focus on own laboratory or to use university one. Summarizing the answers of “other, what” option, the most prevalent has been in reference with focusing on creating a better set of providers in the future, capable of covering all the various needs some of the organizations have.

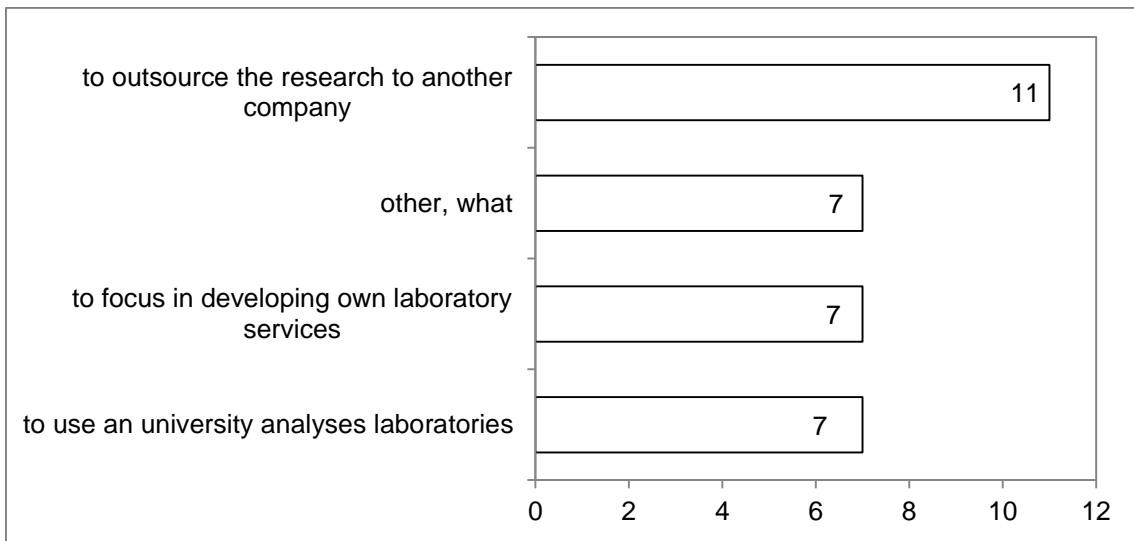


Figure 9. Material analyses future considerations (n=32)

In general we could conclude that the participants have been using a multiple set of material analyses providers, but still using regularly the same one for more than ten times. On the other hand, most of the repliers keep their doors open for new opportunities of material analyses research partners in the future. Most of the participants have been familiar with private and university laboratories, while a half of the respondents have been using their own laboratories. Furthermore there have been clear indications that the participants prefer to outsource the research, but still more than the half of the respondents are dwelling whether to invest in own laboratories, use university laboratories or look for increasing their partners' portfolio.

### 3.4 Information channels used in the purchase process

The current chapter introduces the participants' information channels use for gathering information about possible purchase of material analyses services. The most trusted and prevalent channel to gather information for a material analyses has been word of mouth recommendations as 27 respondents indicate (Figure 10). Still the Internet was used by a majority of the participants as 20 answers were collected. The other options were not so popular, as only direct mails and phone calls gathered almost 30% of the participants' choices, while conferences, fairs and specialized magazines were fairly used for the specified purposes. Under the "other, what" option the respondents stated that using local contacts and R&D partners have helped them gather information.

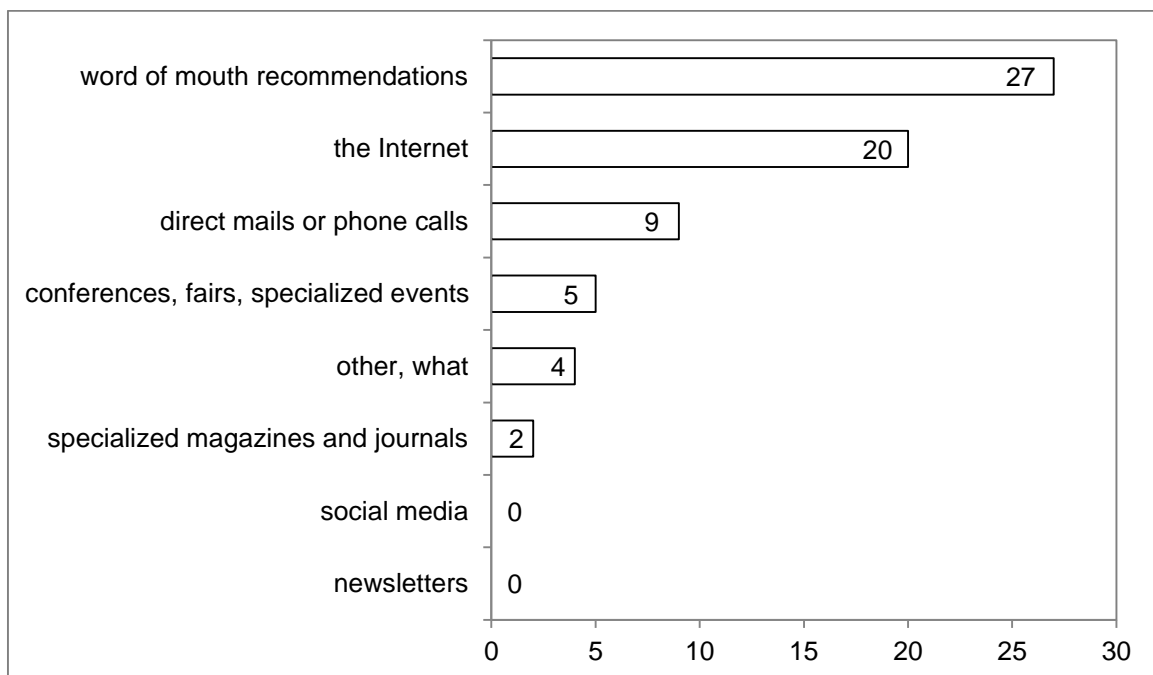


Figure 10. Information channels used for a service purchase (n=33, more than one answer possible)



The same tendencies for the information channel usage for the future were observed (Chart 2). The most prevalent answers were again word of mouth and the Internet, followed by conferences, fairs, specialized events and direct mails and phone calls. The less trusted information channel will be the social media, followed by newsletters and specialized magazines and journals.

	1=Definitely not	2=Probably not	3=Maybe	4=Probably	5=Definitely	Total	Average
word of mouth recommendations	0	0	5	14	14	33	4.27
the Internet	0	3	7	9	14	33	4.03
conferences, fairs, specialized events	0	6	13	12	2	33	3.3
direct mails or phone calls	1	7	13	5	7	33	3.3
specialized magazines and journals	2	11	10	8	2	33	2.91
newsletters	4	8	19	1	1	33	2.61
social media	8	9	15	1	0	33	2.27
Total	17	44	82	51	40	234	3.09

Chart 2. Information channels usage considerations for the future

## 4 CONCLUSIONS

The survey was a successful attempt to give good preliminary picture of the material analyses needs and buying behaviour of the companies positioned in the Northern Bothnia region. The participants could be described as fairly experienced in the area of the research and therefore their statements about the researched topic could be considered as significant measure about the current state of the market.

One of the major conclusions that can be made based on this survey is that the analyses functions have been dispersed in own, university and private research facilities as the needs of the research and the established relationships with partners have been the driving force behind the choices of material analyses premises. Still, while the most common choice for a research partner has been a private supplier it was followed by a university laboratory, which is a positive result as the Unelma project is focussed on expanding an already existing university influence. Furthermore the future trend seems to be that more and more companies would prefer to outsource the services, rather than focus on own research facilities, which could be seen as a great opportunity for the university facilities to attract more customers.

Another interesting observation has been the desired service attributes. According to the participants in the survey the most important attributes of a material analyses research is its quality, followed by the preferences of a clear result and easy access to the service. Trust was also highly valued, as it is a highly valued quality in the Scandinavian countries. Although the overall satisfaction from the material analyses providers is good, there could be recognised the need to improve the speed of the service and the friendly user interface of the research package for the customers. Furthermore the direct connection between the customer and the provider should be established and nourished in order to create the feeling of mutual trust and delivering the best possible quality to the customer. A material analyses provider that is fast, reliable,

cooperative, versatile and experienced could be seen as the most desirable partner at this particular moment.

On the other hand the survey have exposed that the material analyses market could be considered as not so price and location sensitive. Furthermore the option for going over the budget in the research was not so undesired, meaning that as far as the research is good in quality and fast and reliable the budget could be adjusted. These are all particularly pleasing news for the commissioner to comprehend, since the focus in the future of the own service investments could be positioned on the factors that are pleasing the customer rather than keeping a cheap price margin and trying to stay within the budget on particular project.

Many of the respondents have considered the outsourcing of the research to other parties, which is a positive trend for the university laboratories, as they should get encouraged to build better customers' relationship and establish good range of services that can lead to a complete outsource of the research on the behalf of the customer.

Another interesting fact from the survey results was that a majority of the respondents were using the same provider more than 10 times, which could lead to the conclusion that once a relationship between a customer and a service provider is built, it would lead to a significant amount of material analyses researches. Furthermore having in mind that the major part of the respondents was purchasing about 163 material analyses services per year, the regular customer relationship becomes at utmost importance for the service provider.

The dominant type of analyses used by the respondents was the material researches, while it was mentioned that customers prefer provider with multiple expertise. It could be then concluded that a laboratory providing mostly material researches would be most useful, but a wide range of research partners would be a significant addition to its product portfolio, as it would suit the customers best.

The most common way to reach the customers was a word of mouth, which unfortunately is hard to be controlled directly from the service provider. On the other hand, it could be stated that building an excellent service becomes prior to the universities, since that can lead to a good stream of information towards the possible customers. Moreover, the Internet was the second best choice as a commonly used information channel. Therefore a significant amount of attention and resources should be spent on developing a user friendly internet site, which could be highly informative and provide the so called one stop shopping opportunities for the customer.

In the conveyed survey a fact that could be considered negative was the current age of the companies that participated, as only one respondent was aged between two and five years old and everyone else was coming from an older company. This means that we could not manage to grasp the current and future customer behaviour trends of the start - ups that have been decisive part of the business life of the region. Start-ups have been considered as the future driving force in the local business development and therefore their opinion could have been important to the commissioner.

## 5 RECOMMENDATIONS AND FURTHER DISCUSSION

Judging by the conclusions drawn from the survey, few recommendations could be made for the commissionaire's service development in the future. Most of the respondents were open to new possibilities for a material analyses providers, which is an encouraging fact for the university laboratories. Moreover, the usage of various service providers simultaneously suggests that the market of material analyses services is pretty much heterogenic in nature, as the needs of the companies are various and it is hard to be satisfied by one supplier.

Firstly the reach of the customers has to be done with the use of Internet and direct phone calls. What has been pleasing is that Unelma has already been targeting an improvement of the MNT centre's internet site, which could contribute in reaching a wider customer base. Still a greater effort should be made on making possible a one stop shop for material analyses services purchase, combined with a user friendly interpretation of the research process and the possible product portfolio.

Secondly the speed and the quality of the service should be impeccable, as only a pleased customer would get encouraged to spread the word of mouth about the university services. Furthermore the need of various material analyses leads to the conclusion that a wide network of partners could provide a better satisfaction of the customer. The partner network is crucially important in order to provide the one stop shop service.

Thirdly the desire of the respondents to outsource the service could be seen as a good opportunity by the commissionaire, as the readiness for providing such type of complete service on MNT's behalf could affluence the attraction of customers. Furthermore, the high percentage of own laboratories researches performed by the participants in the survey, combined with the desire to outsource is leading to the conclusion that supporting an own laboratory is not of

great benefit, therefore there could be sensed the need for a trusted partner to outsource to.

Last but not least could be stated that creating actively a network with the other research organizations in the area could be of great advantage for all the participants in the market of material analyses services. The reason behind such a recommendations is the fact that there is no clear signal from the participants that they are focusing on a single option for material analyses services, whether using own research facility, private or universities' one, as most of the participants have used all of the available options on the market. Because of the nature of the research, being complicated and resource demanding, and also the supply of the providers being focussed on particular area of analyses, why there could not be a single universal material analyses provider. Therefore an active and beneficial network of multiple analyses services providers could be the most rewarding model for the participants on the market of material analyses.

In that reference a much deeper research could be conveyed in order to determine the full depth of the market for material analyses services in the product development sector in the region. More information should be collected on a specific group of product developers- the start-ups, to be able to determine their positions on the material analyses market. Certain questions from this survey have been giving good insight of the market, like what makes a service good and what not, information channels, service quantities, regular customer behaviour and future considerations. On the other hand more research could be done in the area of B2B relationships, decision making and customers' behaviour on the market to be able to draw more conclusive statements about the market of material analyses.

To summarize the conveyed survey managed to satisfy the starting goals of this project, without conveying any particular disappointments or breakthroughs. It has been able to provide a necessary insight of the current state of material analyses market and could be used as a beneficial starting point for further research on the topic. Further discussion on the subject of start-ups and their needs for material analyses could be useful in regards with the current

companies' development in the Northern Bothnia region. Furthermore an extended research on the decision making and the need for outsourcing in the area of material research could be conveyed in order to provide a good theoretical background for any marketer doing research in that area.

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## APPENDIX 1

### Questionnaire

Identifying needs and buying behaviour for material analysis services by SMEs dealing with tangible products in Northern Bothnia region

1. What is your company's size? (current personnel)

- micro (1-9 person/s)
- small (10-49)
- medium(50-249)
- large(more than 250)

other, what

\_\_\_\_\_

2. How old is your company?

- less than 2 years old
- between 2 and 5 years old
- between 5 and 10 years old

older than 10 years, how much exactly

\_\_\_\_\_

3. Is your work position in the company in one of the following departments:

- business development department
- product development department
- marketing department
- selling department
- material research department
- other, what

\_\_\_\_\_

4. Does your company operate in an industry branch that includes development of new materials in product design? Please choose the option/s which best describes the area of your current operations

- development of new materials
- development of new tangible products
- surface treatment
- composites
- nanomaterials
- electronics
- microelectronics
- metallurgy
- optics
- biomedicine
- other, what

\_\_\_\_\_

5. Have you ever used or do you think you will be using material analyses in your product development?

- yes
- no
- maybe, in what period yrs.

---

6. Approximately how many times have you ordered/purchased material analyses with your current company?

---

---

---

7. Do you mostly use own research facilities or you choose the services of other organization?

- We use only own research facilities
- We use mostly own and sometimes other analyses facilities
- We use mostly other and sometimes own analyses facilities
- We use only other analyses services

other, what

---

8. Which of the following describes best your material research needs?

Analysing material properties, please specify what

---

Surface investigation, please specify what

---

Testing failure and damage tolerance, please specify what

---

Computer aided design(CAD) and numerical simulation, please specify what

---

Other, what

\_\_\_\_\_

9. Please rate on a scale of 1 to 5 the importance of the following factors when considering an analyses service provider?

	1	= 2 = Slightly	3	= 4 = Very	5 =
	Unimportant	important	Important	important	Critical
price *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
time for execution of service *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
quality *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
location *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
trust *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ease of access to the service *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
other, _____ what	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

10. Which of the following would be the most unwanted factor when cooperating with analyses service providers? ( choose the most unwanted)

- bureaucracy
- communication problems
- going over the planned budget
- slow progress of the analysis service
- unclear results
- irresponsible service

other, what

\_\_\_\_\_

**11.** If you have experience of laboratories for material research, would you please rate your overall satisfaction from the projects, on a scale of 1 to 5, 0 for no experience?

- 1 = Poor
- 2 = Fair
- 3 = Good
- 4 = Very Good
- 5 = Excellent
- 0=No Experience

**12.** Please describe with your own words in one sentence what would your ideal analyses service be to best suit your company's needs?

**13.** Do you use one or more than one regular analysis service provider/s?

- I don't use the same service provider regularly
- I use only one analysis service provider regularly
- I use two analysis service providers regularly
- I use three or more analysis service providers regularly

other, what

\_\_\_\_\_

**14.** How many times have you used your most regular analysis service provider?

- one time
- 2-3 times
- 4-7 times
- 8-10 times
- more than 10 times
- no frequent analyses provider

**15.** Would you prefer working with your current frequent analysis service provider/s or would you look for other possibilities in the future?

- use current provider/s
- consider new partner/s
- definitely look for new partner/s
- I always consider the available possibilities for a partner/s
- the project's content leads to the partner's choice
- other, what  
 \_\_\_\_\_

**16.** Do you have experience with the following research organizations? Please, mark the one/s you have had experience with?

- Private service provider
- University analyses laboratories
- Own analysis facilities
- other, what  
 \_\_\_\_\_

**17.** What would be your choice for material analyses in the future?

- to outsource the research to another company
- to use an university analyses laboratories
- to focus in developing own laboratory services
- other, what  
 \_\_\_\_\_

**18.** Which of the following channels have you or your company used to find or purchase a service from a research lab?

- the Internet
  - specialized magazines and journals
  - conferences, fairs, specialized events
  - word of mouth recommendations
  - direct mails or phone calls
  - newsletters
  - social media
  - other, what
  -
- 

19. On a scale of 1 to 5, please rate the possibility to use in the future the following information channels for gathering information and/or purchasing analysis services?

	1=Definitely not	2=Probably not	3=Maybe	4=Probably	5=Definitely
the Internet *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
specialized magazines and journals *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
conferences, fairs, specialized events *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
word of mouth recommendations *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
direct mails or phone calls *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
newsletters *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
social media *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
other, _____ what _____	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



## APPENDIX 2

### COVER LETTER TO SURVEY IN FINNISH

Subject: Kysely yritysten mahdollisista tuotekehitystarpeista, OAMK Oulu

Tervetuloa osallistumaan kyselyymme.

Opiskelijamme Ivaylo Tomov kansainvälisestä koulutusohjelmastamme tekee tradenomin opinnäytetyötä laboratorioden palvelujen tarpeesta EU-rahoitteisen projektin toimeksiannosta. Työn nimi on "Identifying needs for material analysis services by SMEs dealing with tangible products in Northern Bothnia region". Projektin tarkoituksena on kehittää asiakkaiden tarpeista lähtevää palvelua, jossa yliopistoille hankittuja materiaalien kuvantamis- ja analysointilaitteita voitaisiin tehokkaammin käyttää alueen yritysten mahdollisiin tuotekehitystarpeisiin.

Toivon, että teillä olisi hetki aikaa vastata kyselyyn, tai välittää tämä viesti henkilölle tai yhteistyökumppaneillenne, joille asia voisi olla ajankohtainen. Vastaaminen kestää noin 5-10 minuuttia. Vastaukset ovat ehdottoman luottamuksellisia eikä yksittäistä vastaajaa voida tunnistaa.

Kaikkien vastanneiden kesken arvotaan 150 € arvoinen lahjakortti IKEAan ([http://www.ikea.com/ms/fi\\_FI/customer\\_service/ikea\\_services/palvelut\\_lahjakortti.html](http://www.ikea.com/ms/fi_FI/customer_service/ikea_services/palvelut_lahjakortti.html)). Voittajalle ilmoitamme henkilökohtaisesti.

Tässä linkki kyselyyn:

[#codelink]

Kiitoksia jo etukäteen yhteistyöstä. Vastaattehan 28.2.2014 mennessä, jolloin osallistutte lahjakortin arvontaan!

Ystävällisin terveisin

Yliopettaja, markkinointi

Oulun ammattikorkeakoulu, Liiketalouden yksikkö Teuvo Pakkalan katu 19

90130 Oulu

FINLAND

[www.oamk.fi](http://www.oamk.fi)

## APPENDIX 3

### Cover letter to survey in Swedish

Subject: Välkommen att delta i vår enkät om behovet av materiell analys

Välkommen att delta i vår enkät om behovet av materiell analys.

Vår studerande Ivaylo Tomov från vårt utbildningsprogram i internationell företagsekonomi bereder sin avhandling (Identifying needs for material analysis services by SMEs dealing with tangible products in Northern Bothnia region): han undersöker behovet av service i tekniska forskningslaboratorium i samband med en EU-finansierad projekt.

Projektens syfte är att utveckla en servicekoncept som utgår från kundernas behov: hur kan man utnyttja analyseringsredskap mer effektivt i produktutvecklingen i regionens företag?

Jag hoppas att ni har en stund (ca. 5-10 minuter) att delta i vår undersökning eller vidarebefordra den till era kontakter som kan vara intresserade av högteknologiska service.

Undersökningen är konfidentiell och enskilda svarare kan inte urskiljas.

Vi lottar ut ett presentkort på 150 € hos IKEA mellan alla deltagarna.

([http://www.ikea.com/ms/fo\\_FI/customer\\_service/ikea\\_services/palvelut\\_lahjakortti.html](http://www.ikea.com/ms/fo_FI/customer_service/ikea_services/palvelut_lahjakortti.html)).

Vinnaren meddelas personligen.

Länken till enkäten, se nedan:

[#codelink]

Vi tackar för samarbetet och ber er vänligen att svara på enkäten före den 17.3.2014.

Då deltar ni också i utlottningen av presentkortet.

Med vänlig hälsning

Överlärare i marknadsföring

Yrkeshögskolan i Uleåborg, Enheten för företagsekonomi,

Teuvo Pakkalan katu 19

90130 Uleåborg

FINLAND

[www.oamk.fi](http://www.oamk.fi)

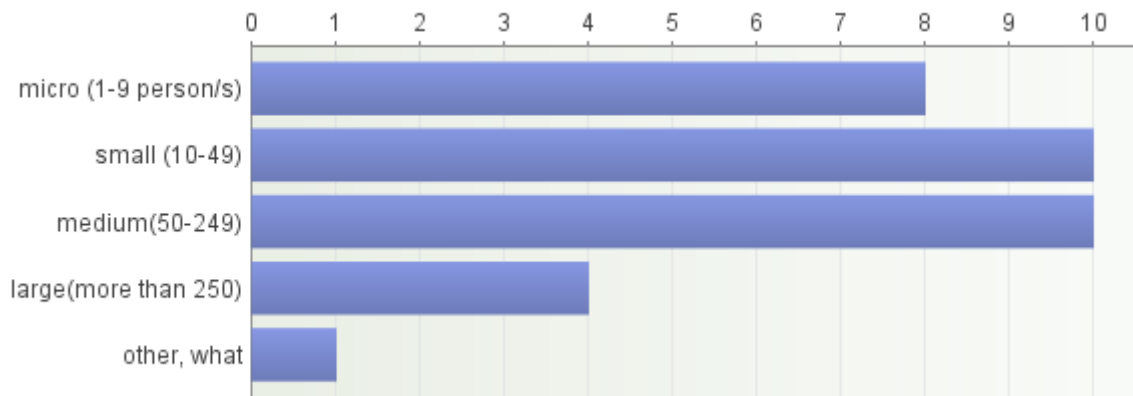
## APPENDIX 4

### Original survey results

#### Identifying needs for material analysis services by SMEs dealing with tangible products in Northern Bothnia region Copy

##### 1. What is your company's size? (current personnel)

Number of respondents: 33

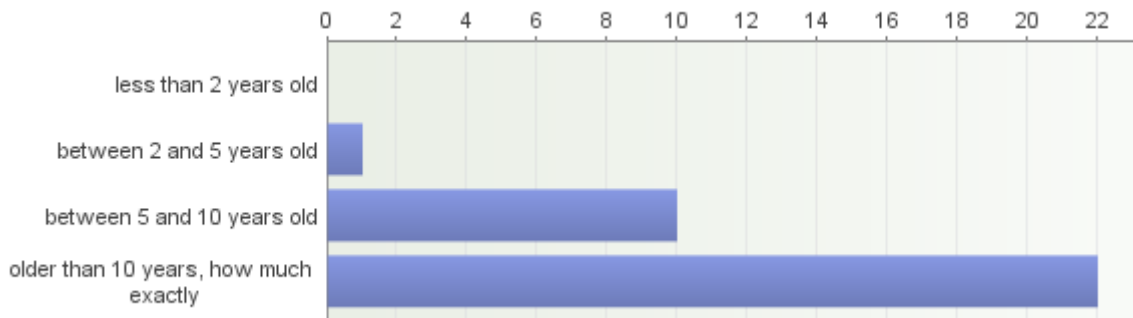


##### Open text answers: other, what

- 2000

##### 2. How old is your company?

Number of respondents: 33

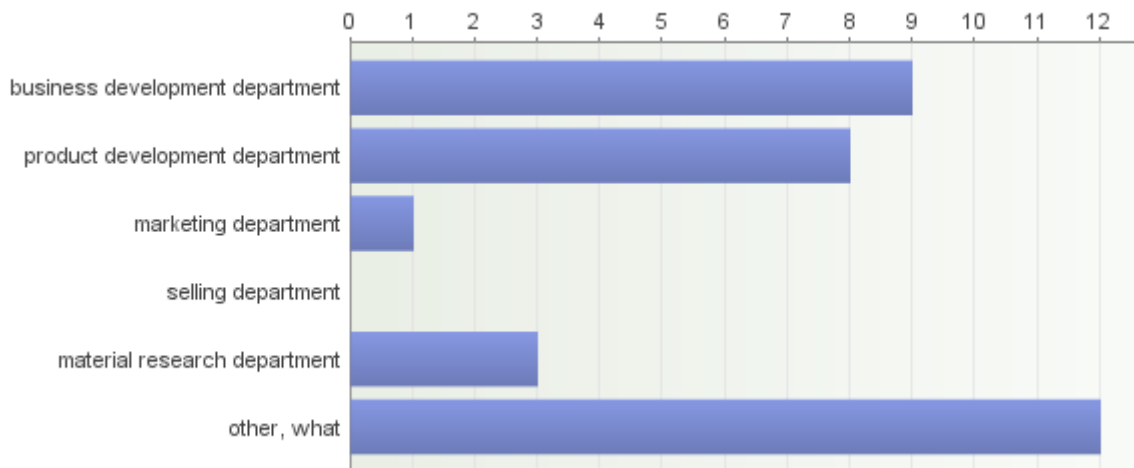


**Open text answers: older than 10 years, how much exactly**

- 13
- 25
- 20
- 75 v
- 11
- 40
- 67
- 45
- 25
- 42
- 21
- 50
- 25
- 13
- 50
- 16
- Depends - roots in the 70:s
- 28
- 37
- 50
- 30
- 35

**3. Is your work position in the company in one of the following departments:**

Number of respondents: 33



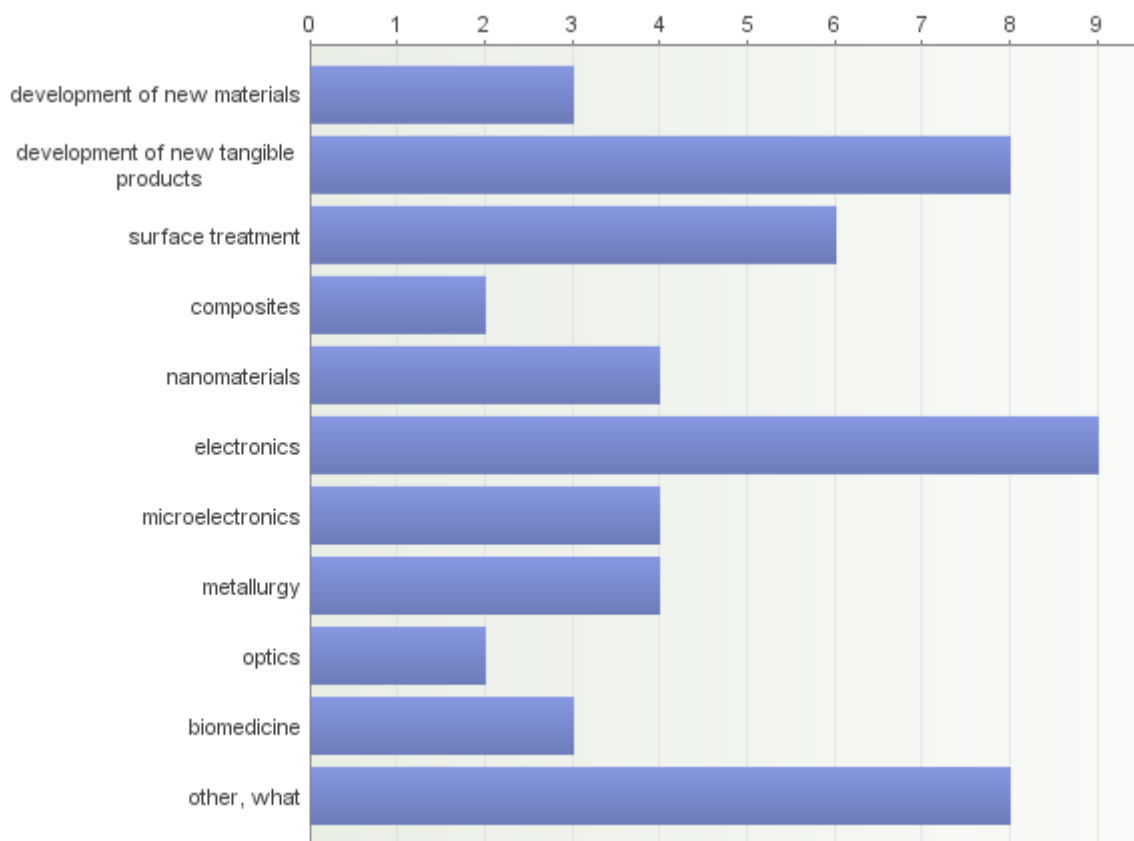
**Open text answers: other, what**

- Business unit
- Finance and HR
- Process development
- CEO in medical business
- CEO
- CEO
- Research and project management
- Production, R&D and regulatory affairs

- Managing Director
- CEO - head of all departments
- management
- CEO

4. Does your company operate in an industry branch that includes development of new materials in product design? Please choose the option/s which best describes the area of your current operations

Number of respondents: 31

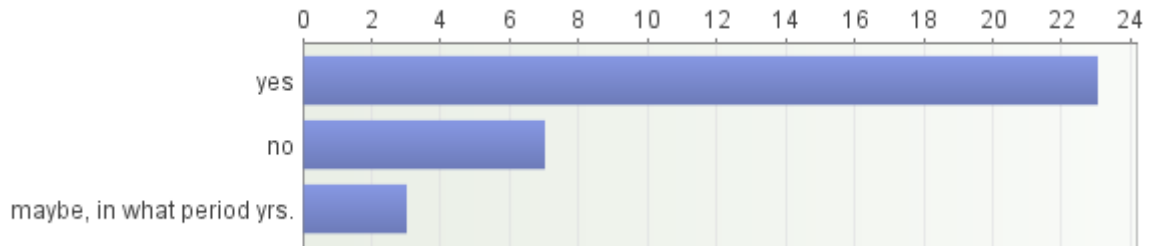


**Open text answers: other, what**

- CMO Pharmaceuticals
- elintarvike teollisuus
- not new products
- None
- Natural Stone
- process development, energy, environment
- reliability testing
- advanced forming of metallic materials

5. Have you ever used or do you think you will be using material analyses in your product development?

Number of respondents: 33



**Open text answers: maybe, in what period yrs.**

- 3
- 1
- 2

6. Approximately how many times have you ordered/purchased material analyses with your current company?

Number of respondents: 30

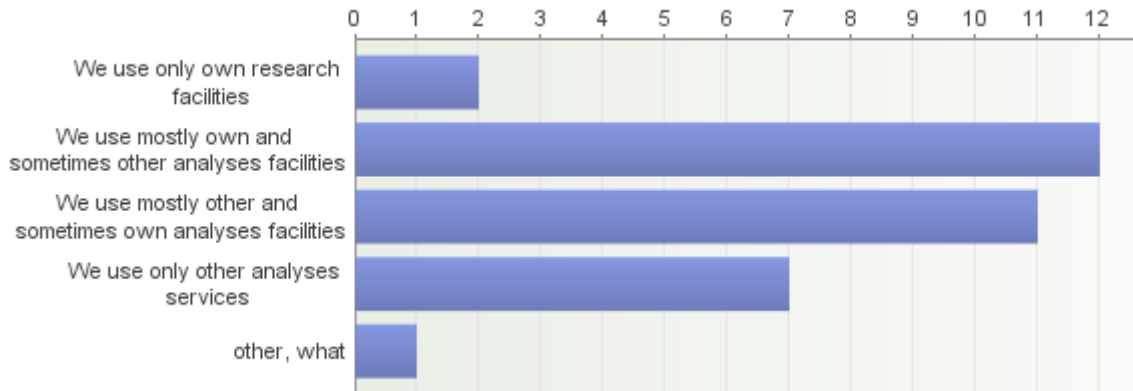
- In our case material analyses means e.g. analysis of heavy metals, elemental analysis. We order that kind of service regularly.
- once in a quarter
- 
- yli sata kertaa / vuosi
- 40
- A few times per year
- some 1-3 times per year
- Never
- 100
- 5
- 0
- 3000
- 10-20
- 10
- For every production batch and for every R&D project, 5-6 times / year. We have no testing equipment or lab of our own, all testing is outsourced.
- >50/year
- My associates does it every week
- less than five.
- None
- 10
- 20
- 0
- 10
- Na
- Less than 10
- 0
- 20 times



- over 100 times
- 5
- 100-200

7. Do you mostly use own research facilities or you choose the services of other organization?

Number of respondents: 33

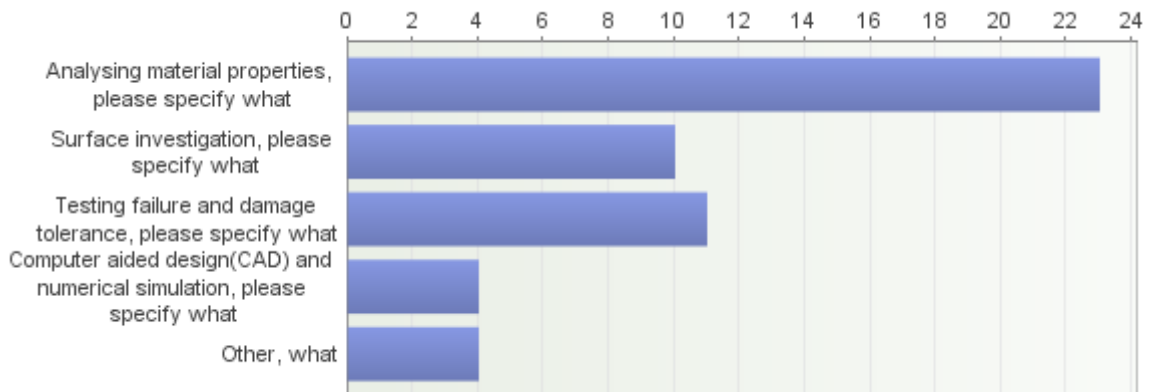


**Open text answers: other, what**

- LKAB and SSAB lab sometimes Luleå University

8. Which of the following describes best your material research needs?

Number of respondents: 32



**Open text answers: Analysing material properties, please specify what**

- UV, temperature
- elintarvike analyysejä
- solder pastes, different glues

- Characteristics of fine powders, sludges, dusts
- depends on need
- material analyses, hardness, chemical structure
- strength, temperature impact
- Chemical, mechanical, physical properties
- Chemical composition
- Residual monomer content, residual production impurities in final product, microbiological properties of products (bioburden content)
- Chemical, thermochemical, thermo-mechanical
- microstructure, reactivity, viscosity, thermomechanic properties
- Chemical analysis of rock and soil
- mechanical properties, metallurgy, forming properties
- Usability care application
- Heat transfer
- Confirming material properties and compositions are per specified.
- strength, ductility, hardness
- soil, concrete, air. Material from: asbest, PAH, THC, VOC, PCB etc.
- GC/MS/MS, LC/MS/MS, NMR, X-ray

**Open text answers: Surface investigation, please specify what**

- salt water, fog, acid, fungus
- contamination analysis
- Surface analysis of implant surfaces, Auger Electron Spectrometry (AES) and Sec. Ion Mass Sp (SIMS)
- slags, pores, defects
- XRD, hardness, tension, etc., corrosion
- Polymer surfaces
- surfaces impact in our process
- Surface coating properties, materials used and coating thicknesses
- SEM, Auger, Optical

**Open text answers: Testing failure and damage tolerance, please specify what**

- 
- Analyzing reliability testing fail units
- Industrial machine failures, fractures, fatigue, corrosion, ...
- Mechanical properties of new developments, tensile strength of semi-finished products
- coupon testing, structural testing, damage mechanics, fractography
- drop and thermal shock impacts, corrosion response
- Durability
- fatigue, impact toughness

**Open text answers: Computer aided design(CAD) and numerical simulation, please specify what**

- mechanical concepting
- Scrubbers
- FEM analyses on high plastic deformation

**Open text answers: Other, what**

- safety studies, heavy metals, elemental analysis, TG.
- None
- EMC
- microscopy, elemental analysis, residual stresses

9. Please rate on a scale of 1 to 5 the importance of the following factors when considering an analyses service provider?

Number of respondents: 33

	1 = Unimpo rtant	2 = Slightly importa nt	3 = Importa nt	4 = Very importa nt	5 = Critical	Total	Average
price	1	1	16	13	2	33	3.42
time for execution of service	0	5	6	16	6	33	3.7
quality	0	0	2	16	15	33	4.39
location	5	10	10	7	1	33	2.67
trust	0	0	2	19	12	33	4.3
ease of access to the service	1	3	4	19	6	33	3.79
other, what	1	0	0	1	1	3	3.33
Total	8	19	40	91	43	201	3.66

**Open text answers: 1 = Unimportant**

- nn

**Open text answers: 4 = Very important**

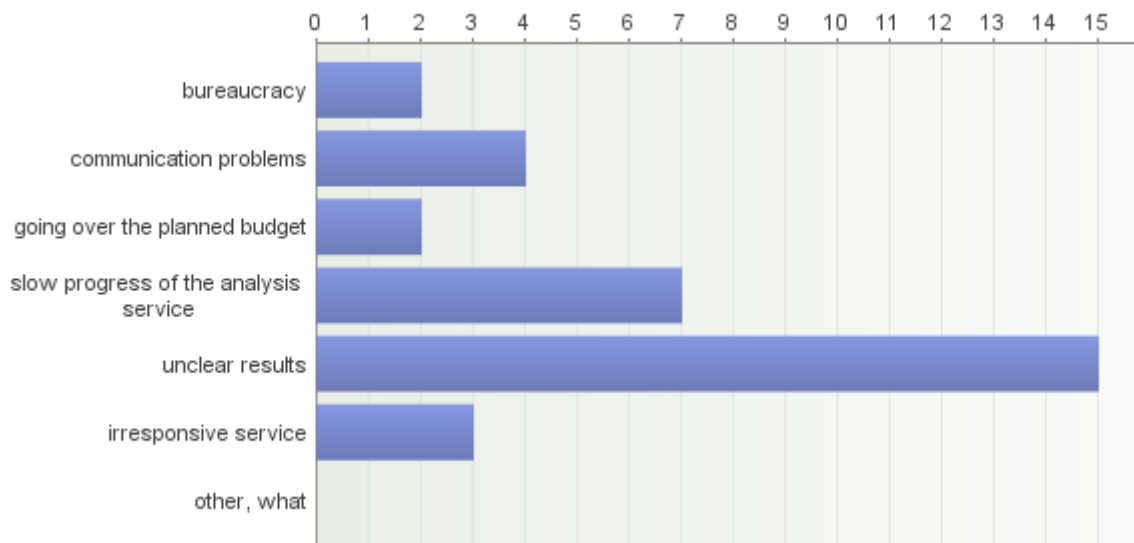
- quality system

**Open text answers: 5 = Critical**

- Expertise

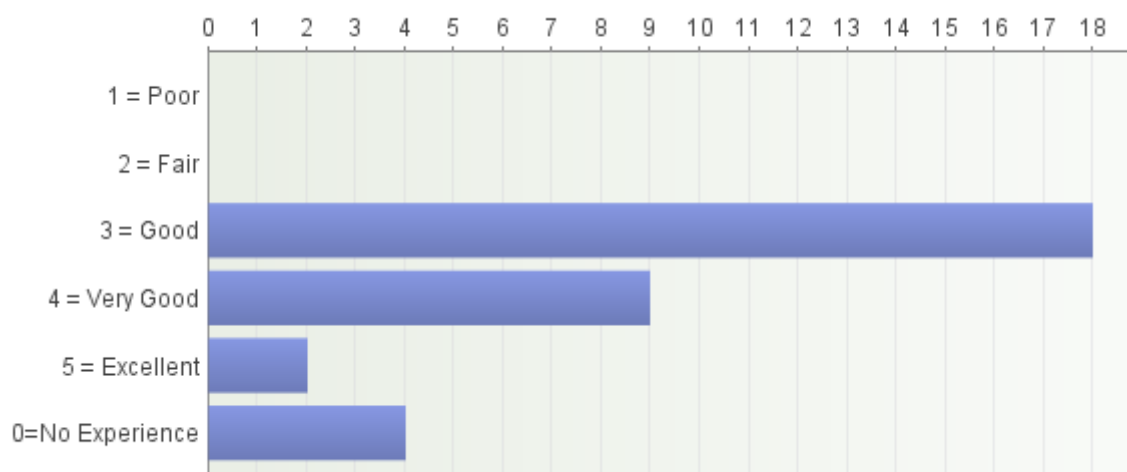
10. Which of the following would be the most unwanted factor when cooperating with analyses service providers? ( choose the most unwanted)

Number of respondents: 33



11. If you have experience of laboratories for material research, would you please rate your overall satisfaction from the projects, on a scale of 1 to 5, 0 for no experience?

Number of respondents: 33



12. Please describe with your own words in one sentence what would your ideal analyses service be to best suit your company's needs?

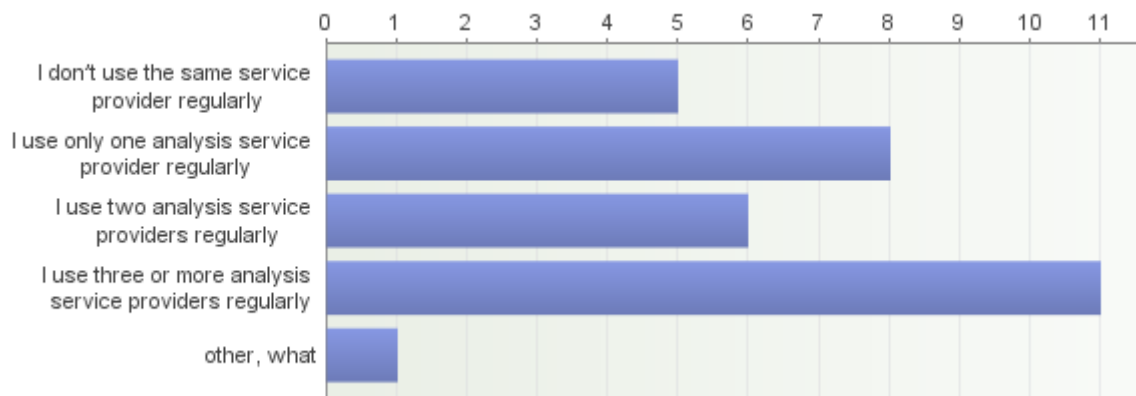
Number of respondents: 20

- Timely delivery, comprehensive quality system, experienced personnel.
- Saisi samasta paikasta erilaisia analyysijä elintarvikkeisiin.
- Fast, reliable, easy access, cheap, close to our R&D site
- Versatile competence on different methods and network to find out best service somewhere else, if not available for my own.
- dunno
- We are an analytical services company ourselves but use others when we do not have the resources inhouse. Speed and quality are critical
- Fast, easy communication, professional work and reliable results
- Our ideal partner has experience of medical devices and owns the sufficient accreditation per ISO 17025 or comparable standards for laboratory services.
- reliable, fast, co-operative
- One-stop-shop. Provide everything with help of partners
- Good reliability
- No opinion
- University acting as a analysis supplier to a private test laboratory
- Active co-operation = possibility to work together for better understanding
- An answer within one working week in running Projects. If other more R&D related 1 month

- Varies
- Fast, high expertise provider with excellent customer service.
- Not from your new material R&D things... we need old materials condition etc analyses.. customers want these analysis fast.
- all inclusive
- experienced and skilled personal

### 13. Do you use one or more than one regular analysis service provider/s?

Number of respondents: 31

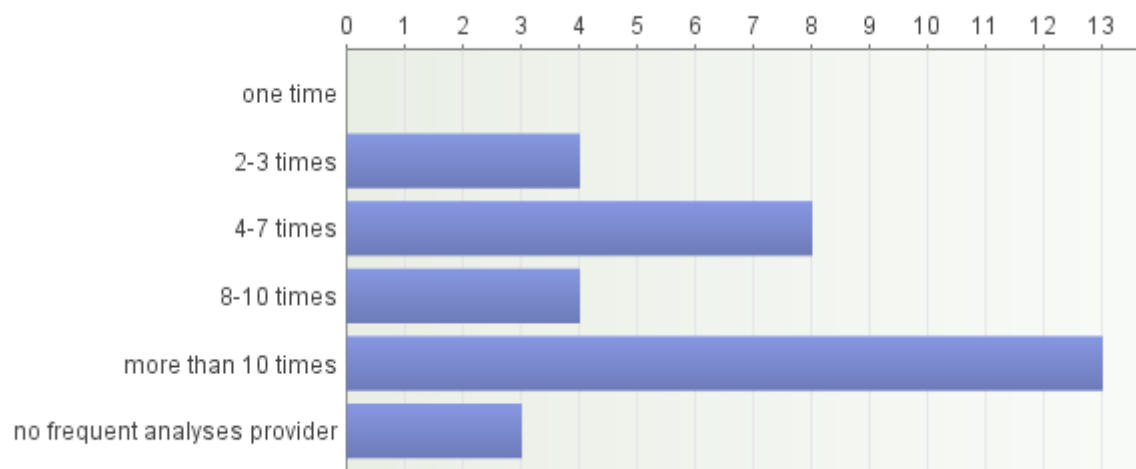


#### Open text answers: other, what

- dunno

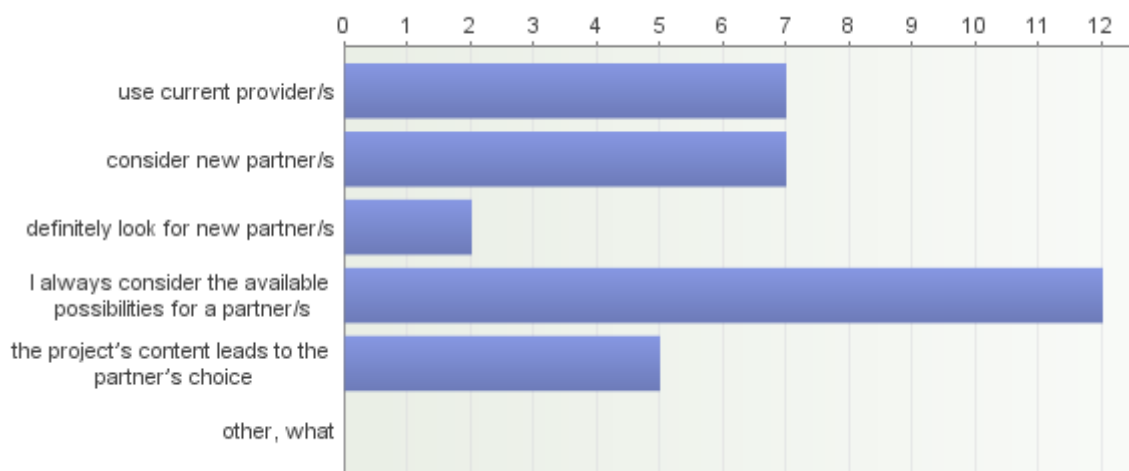
### 14. How many times have you used your most regular analysis service provider?

Number of respondents: 32



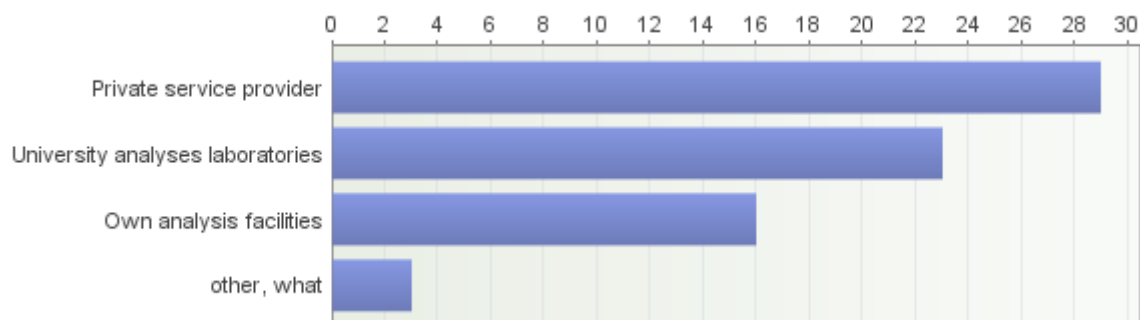
15. Would you prefer working with your current frequent analysis service provider/s or would you look for other possibilities in the future?

Number of respondents: 33



16. Do you have experience with the following research organizations? Please, mark the one/s you have had experience with?

Number of respondents: 31

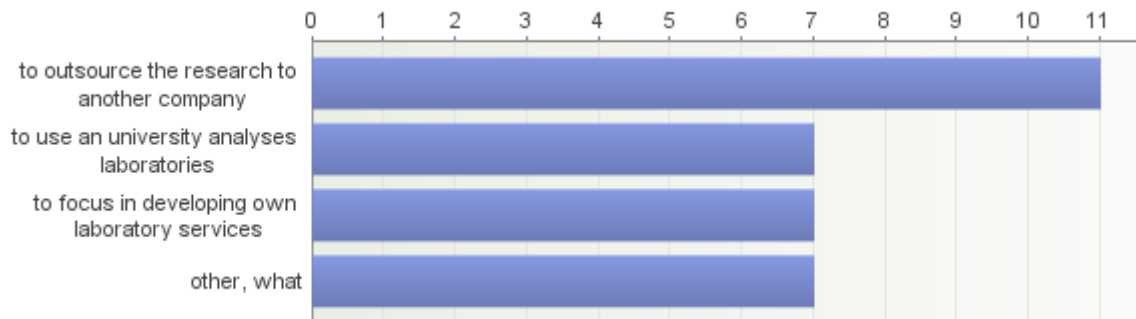


**Open text answers: other, what**

- kaupungin laboratorio
- Institutes,
- VTT, TTL

### 17. What would be your choice for material analyses in the future?

Number of respondents: 32

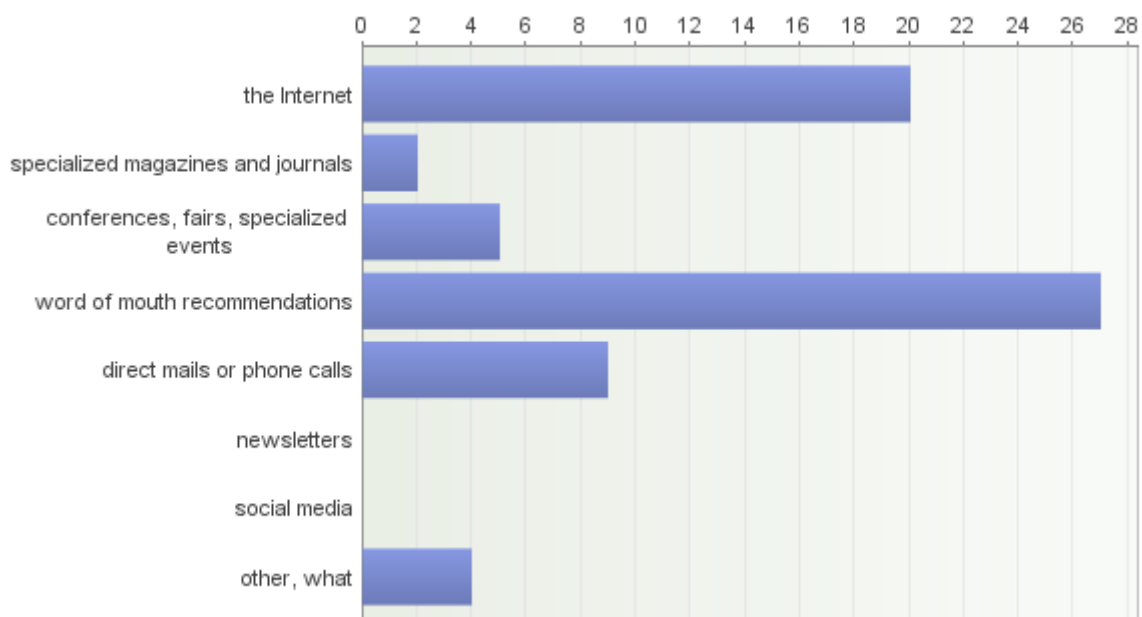


#### Open text answers: other, what

- nykyiset
- suitable set of providers
- develop own facilities when it's important for other own operations, otherwise outsource
- based on need
- Outsource analysis to another company - we are not going to outsource research function.
- any service provider can be considered which meets the requirements
- all above, need lot of different specialites

### 18. Which of the following channels have you or your company used to find or purchase a service from a research lab?

Number of respondents: 33



**Open text answers: other, what**

- -
- inherited, cumulative knowledge of capabilities
- local contacts
- Partners i R&D-projects (EU and national)

19. On a scale of 1 to 5, please rate the possibility to use in the future the following information channels for gathering information and/or purchasing analysis services?

Number of respondents: 33

	1=Definitely not	2=Probably not	3=Maybe	4=Probably	5=Definitely	Total	Average
the Internet	0	3	7	9	14	33	4.03
specialized magazines and journals	2	11	10	8	2	33	2.91
conferences, fairs, specialized events	0	6	13	12	2	33	3.3
word of mouth recommendations	0	0	5	14	14	33	4.27
direct mails or phone calls	1	7	13	5	7	33	3.3
newsletters	4	8	19	1	1	33	2.61
social media	8	9	15	1	0	33	2.27
other, what	2	0	0	1	0	3	2
Total	17	44	82	51	40	234	3.09



**Open text answers: 1=Definitely not**

- nn
- no provider

**Open text answers: 4=Probably**

- Vary