

(Edit.) Miia Lammi

Industrial services in Ostrobothnia



INTERVIEW STUDY ON THE STATUS OF SERVICE BUSINESS AND
SERVICE DEVELOPMENT IN THE METAL AND PLASTIC INDUSTRY
IN OSTROBOTHNIA AREA IN FINLAND

M U O V A

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Leverage from
the EU
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The Digikasvu project maps the digital based servitization

According to the Digibarometri report (Digibarometer) (2015), Finland has strong expertise and favourable conditions for digitalization. However, digitalization is still rather poorly utilized in companies. Developing digital solutions requires a holistic approach covering the impact of business-related changes throughout the whole business ecosystem. On the other hand, Digitalisaatio suomalaisissa yrityksissä (The Digitalization in Finnish Enterprises) -report, emphasizes that changes caused by digitalization have impact not only within the company, but also in interaction with external stakeholders such as customers, subcontractors and principals. As the digitalisation strengthens the international competitiveness of companies, it also has a significant impact on increasing the exports of Finnish companies.

Finnish industrial companies have been looking for new business opportunities in services. Here, digital solutions can play a significant role. Industrial services have created new business models and service innovations. Typically, industrial companies have developed services as part of the product, thereby adding value to their customers. The servitization of industrial companies, meaning the transformation from a product-oriented business to a service-oriented business, requires fundamental changes in the way companies think, their roles in value chain and practices. Kohtamäki et al. (2013) state that only a significant investment in the service business will increase sales. Instead, a small investment can even have a negative impact on a company's business. Therefore, it is important to develop the digitalisation and servitization of industrial companies as a strategic process that creates value for both the company and its customers.

This report describes the current level of service business, development goals and future prospects for digital service provision for companies in the Ostrobothnia region in Finland. This report summarizes the results from the company interviews and creates an overview to companies needs for developing their skills and practices. The company interviews were part of the Digikasvu-project and they were carried out by Design Centre MUOVA (Vaasa university of applied sciences) and the School of Management and the School of Technology and Innovations (Production – Industrial management) at the University of Vaasa. The project started on May 1, 2017 and was running until December 31, 2017. The project was funded by the European Union ESF - European Social Fund, Ostrobothnia ELY Center, University of Vaasa, Vaasa University of applied sciences VAMK and VASEK.

31.1.2018 Vaasa

Miia Lammi | Design Centre MUOVA

The Ix3-project supports SMEs in developing data-based services

SMEs' interest in entering into service business has increased, because services are seen to create attractive business opportunities. Also, the importance of databased solutions has increased in global business. Digital services can provide companies new ways for increasing their presence in international markets. With digital services, SMEs can reach markets that are unreachable with traditional services. However, entering into service business requires significant changes both at the strategic and operational level of the company. Also, the development of smart solutions creates not only opportunities but also new requirements and challenges for companies.

This report was originally created at the Digikasvu project (funded by European Union social fund). The report was translated in English as part of the international collaboration in Ix3-project (funded by European Union social fund). This report describes the current level of service business, development goals and future prospects for digital service provision in SME companies in the Ostrobothnia region in Finland. This knowledge creates an important cornerstone for international collaboration.

Ix3-project aims to foster the capabilities of industrial micro, small and medium-sized companies in developing intelligent product-service systems for international markets. The project started in the beginning of 2020 and lasts until the end of June 2022. The project is carried out by Design Centre MUOVA (VAMK Ltd. University of Applied Sciences), Strategic Business Development research group, and the Digital Economy research platform from University of Vaasa. The project is funded by European Union ESF, VAMK Ltd. University of Applied Sciences and University of Vaasa.

25.06.2020, Vaasa

Sanna Peltonen | Design Centre MUOVA

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TUOMAS HUIKKOLA, MARKO KOHTAMÄKI

Servitization

The business in manufacturing companies is shifting towards the services, the Industrial Internet, and the Internet of Things. Economic, marketing, and strategic benefits are regarded as drivers for this change. In addition, many manufacturing companies are forced to develop services either by responding to customer needs or by responding to the current competitive situation.

Indeed, services have been seen as an attractive business opportunity for manufacturing companies. Profit margins on services are typically higher, and demand for services is often more even compared to products. However, according to international studies, only a few companies have been truly successful in their service business. Servitization of a manufacturing company requires significant involvement of competencies and processes.

Service transition is typically described as a continuum, which illustrates the relative importance and maturity of a service business in a company. At the one end of the continuum, there are purely product-driven companies, where services are seen as "add-ons" to the product. At the other end, there are pure service-driven companies, which see products as "add-ons" to services. In reality, placing companies to the continuum is difficult. Often, the degree of service transition has been measured, for example, by the relative share of services in total sales or the size of the service portfolio.

Business models in manufacturing companies

Manufacturing companies have applied a variety of business model configurations to meet the needs of diverse customer segments to create financial benefits. For example, the product business model is applicable to customers who have the willingness, capability, and ability to operate the specific device related business process. The product is at the heart of this business model, and services (such as after sales service and spare parts) are designed to support product sales. Customers' service needs are mainly related to technical support. This business model is the most traditional one in manufacturing companies. Responsibilities are easy to understand and the operating model is clear to everyone. Figure 1 outlines different business models for industrial companies.

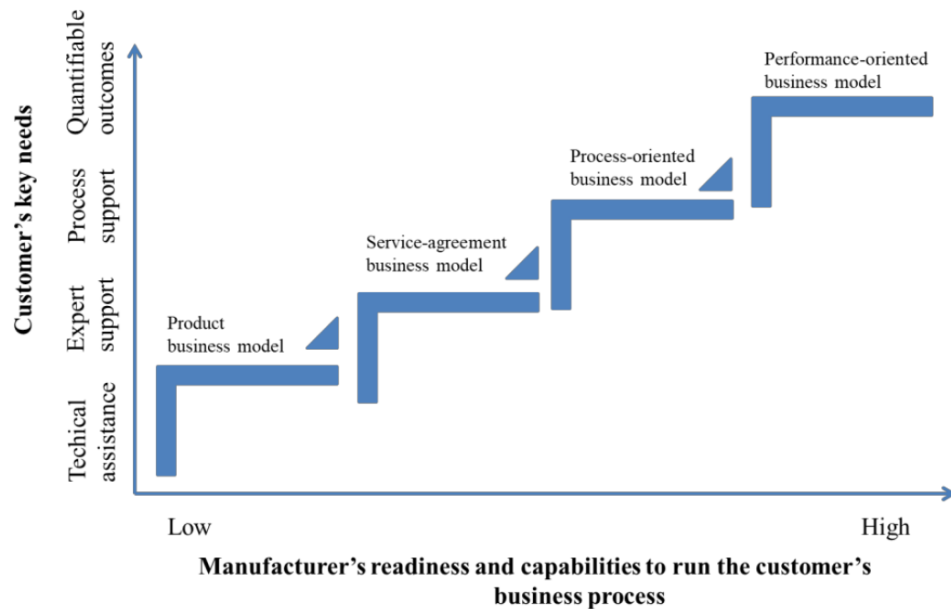


Figure 1. Business model types in manufacturing companies

Second model type is called service-agreement business model, where the manufacturing company strives to enter into service agreement to customer's machine. In this case, the risk of failure in machine operation is transferred to the manufacturer, at least to some extent. However, it is the customer's responsibility to operate the machine. Often service contracts are divided into basic contracts, advanced contracts and full-service contracts. The logic is that the broader the service contract, the higher the price and consequently the level of service it guarantees (e.g. response times can vary from weeks to minutes depending on the level of service).

In a process-oriented business model, the manufacturing company provides a variety of operational services so that the customer may no longer own or even operate the machine. The customer may outsource the operation or the use of the machine if they do not have the ability or willingness to operate the device themselves, their main area of expertise or strategic focus is elsewhere or they want to reallocate resources.

In a performance-oriented business model, the manufacturing company sells a measurable end result or outcome instead of product and add-on service. For example, the classic Rolls-Royce Power-by-the-Hour is an example of this business model. In a performance-driven business model, supplier and customer success become intertwined, requiring a strong win / win

attitude, interdependence and trust between the partners. Both companies should see the other as a partner rather than a customer or a supplier. In addition, the duration of contracts is typically long, ranging from five years to thirty years. This business model is still relatively rare in complex product-service systems.

International research in servitization has shown that there is no single precept for success in industrial services. Studies have also shown that the transition from products to services is not straightforward. There is considerable consensus among researchers that the successful transition from products to services is likely to be gradual rather than radical. For example, IBM's transition from a product company to a pure service company took decades and KONE Corporation has been maintaining elevators for nearly a hundred years.

Gradual transition is partly explained by the B2B customer base of technology-oriented companies. Companies are not adopting new technologies as fast as consumers. However, the technologies already common in B2C markets, such as new digital solutions eventually affect also the way companies in B2B markets operate and do business. Platform economy, the Internet of Things, artificial intelligence and augmented reality, for example, have already had a significant impact on the strategies, overall productivity and business models both in product and service companies. It is even estimated that in the future, many manufacturing companies will look more like software companies than traditional product factories. After all, digital solutions open up new business opportunities for industrial companies, especially in the services sector.

Digitalization

Digitalization is often understood as an introduction and the impact of information technology in the company's everyday functions and operations. At this level, digitalization is not a new phenomenon. Automatic data processing and information processing have been discussed for half a century. In contrast to the past discussion, the digitalization nowadays focuses more on the technology related structural and economic changes in a society. These changes can be revolutionary, such as the proliferation of various digital services managed by companies without other resources than information processing and customer management. Examples include Uber taxi operations, Airbnb apartment reservations, the Ebay marketplace or Alibaba as a sales channel for industrial products. Such platforms not only allow customers to compare different alternative effectively but also allow producers to access a large global market. On the one hand, large centralized solutions help smaller companies to get closer to potential customers, while on the other hand a direct customer access is only possible through a centralized portal.

Information technology is already widespread, affordable and common. Consumers have access to computers and smartphones - wireless Internet access covers basically the whole world. People are used to technology and have an adequate level of education. People have adopted new behavioural patterns when using consumer products. When using Spotify for example, we no longer own the music we listen. The ownership has turned into a membership or fixed-term access. In sports, the pedometer uploads data to the cloud and we monitor our progress online without thinking about the location of our data. Financial management and office software can be used as a cloud-based service as well.

Digitalization in manufacturing companies

Digital transformation is driven by the consumer markets and information technology companies. Many large manufacturing companies are already developing web-based services, services for smart and internet-connected products or automated production solutions. For many companies, the goal is to get closer to the customer in the value chain, to provide new electronic services, to move from physical products to digital solutions, or to improve operations through automation. Small and medium-sized companies follow the larger companies and aim to develop their own digital solutions. They share similar customer needs as well as the high expectations of the potential. However, SMEs often have very limited resources, which challenges practical

implementation. Indeed, one of the aims of this research was to build an understanding of how SMEs position themselves in the changing environment.

Large companies have more resources to conduct long-term technology mapping. However, global competition and digitalization have an effect on every single company, regardless of its size. Automation and robotics can be used as an example of challenges in manufacturing. The use of robotic and 3D printing are examples of new technologies in manufacturing. New types of robots, Collaborative robots - cobots, can work collaboratively with humans. Mobile robots and automated warehouse machines enable the flexibly movement of products.

New systems increase efficiency but they require investments not only in hardware but also in new kind of know-how. Customized products can be produced in a cost-effective way by using flexible manufacturing techniques. Automated machines provide information about raw materials, components and production. This information can be utilized in maintenance and service processes. All activities aim at increasing the efficiency in production and reduction of manpower. Although digitalization poses significant challenges for companies, it can be seen as a key driver in strengthening companies' competitiveness over low-cost countries.

Smart products and support services

Today, intelligence is a requirement in nearly all industrial products. Machines need to monitor their own condition and performance level. It is also common to expect an access to industrial internet. The use of machines is monitored throughout their life cycle. Customers want to monitor the machine status and usage history. Respectively, also manufacturers want to collect usage data and learn how their products are used.

The importance of information and services has increased and, in many cases, they are one central criterion in purchase decision. Products and services are closely interrelated. Service agreement may require that the monitoring of machine is allowed. Payments can be linked to device operation and maintenance level. Digital servitization may enable the transfer of focus from investments to utilization. Similarly, the focus may shift from investment costs to operating costs and total life cycle costs.

Making business out of smart products is a challenge that also large companies are still working on. In the absence of a recipe for success, research in the fields of servitization and digitalization will continue to grow. New applications are developed continuously. Also, the research deepens the understanding of the effects of the phenomenon. In this changing landscape, SMEs may have the advantage of adjusting their processes faster than large

companies, where operational changes take time and require reallocation of resources. Although digitalization is a technological term, the most important decisions in the company level are strategic and business-oriented. Digitalisation is a tool for structural change and it should be considered also in the SMEs.

Research process

The Digikasvu-project explored the current status of digital based servitization in manufacturing SMEs in the Ostrobothnia region. In the first phase of the project, interviews were carried out to identify the gaps in competences as well as the current status of service business and service development in SMEs.

Interviews focused on the following industry categories: TOL 22 Manufacture of rubber and plastic products, TOL 25 Manufacture of fabricated metal products, except machinery and equipment, TOL 26 Manufacture of computers and electronic and optical products, TOL 27 Manufacture of electrical equipment, TOL 28 Manufacture of other machinery and equipment TOL 29 Manufacture of motor vehicles, trailers and semi-trailers. Companies' contact information was extracted from the Orbis Business Database, and companies were contacted by email and/or phone in order to find out their willingness to participate in the interview and to arrange an interview.

The interviews were conducted jointly by the Design centre MUOVA (Vaasa university of applied sciences) and the School of Management and the School of Technology and Innovations at the University of Vaasa. The University of Vaasa focused on service business models and MUOVA on service development. For the interviews, a structured interview template was prepared to guide the discussion with the companies. The interview template was tested with one pilot company and based on the test results, some clarifications were made.

For this study, 31 company executives were personally interviewed. Interviews covered 3 micro, 12 small, 14 medium and 2 large companies. The interviews were conducted between October and December 2017. The duration of interviews was about an hour. The interviews were confidential and the individual responses cannot be identified from the report.

In this report, the results are grouped into themes and presented with graphs and tables that provide an overview of the current status and future goals of the companies in Ostrobothnia region. This report first describes the current status and future goals of the service business as well as the key development areas in companies. Next, this report describes different elements of service business, organized according the business model canvas tool. The last part describes the current status of service development in industrial companies. Finally, the report summarizes the results in a profile graph consisting of the most typical responses of the interviewed companies.

Current and target status of services in business

In the interview, companies evaluated the importance of products and services in their current business and the expected changes within the next five years. Based on the data, the importance of services seems to grow. Some of the companies even expected that services will form the core of their business in the near future.

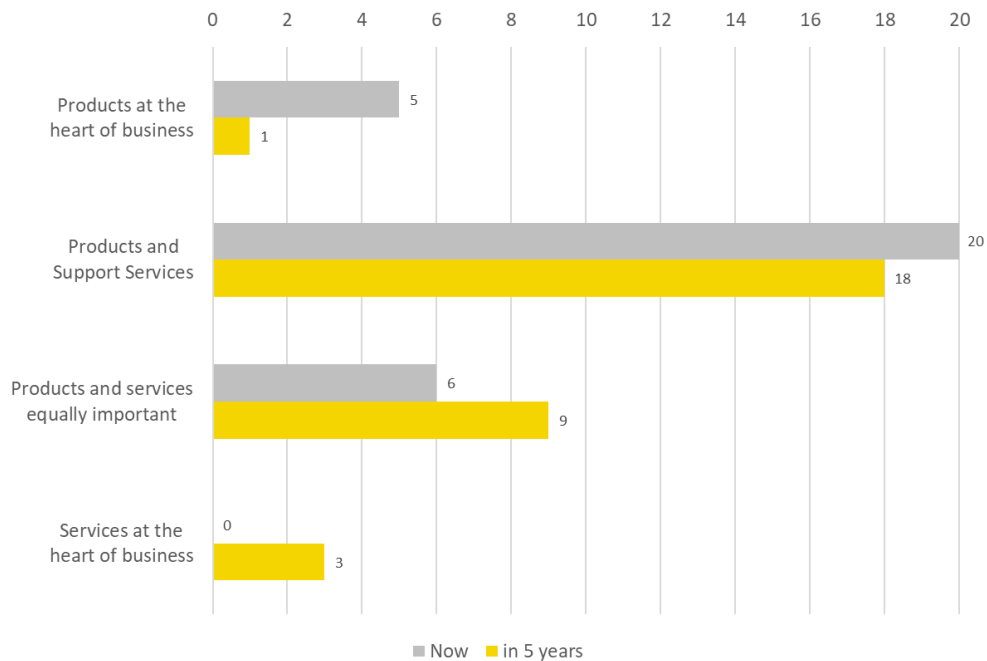


Figure 2. Current and target status of Product-Service business

Key development areas in service business

These interviews focused on identifying the key development areas related to servitization and digitalisation. Companies were asked to describe three main improvement areas over the next five years. Based on the results, development of service business, digitalization and information systems are the most significant development areas.

In the field of service business, companies identified the development of product support services, the general development of service business and the development of new services as key focus areas. Companies also named services as a mean to get closer to their customers. In the field of digitalization, companies identified digital documentation, IoT solutions and resource allocation as the main focus areas. In the field of information systems, companies focused mainly on the customer portal, ERP and system integration. (See table below)

Development of service business	Digitalization	Information systems
21	16	14
29 %	22 %	19 %
Development of Product Support Services (Consulting & Design, Testing, Logistics, Maintenance, Remote Access) (6)	Digital documentation (4)	Development of customer portal (4)
General development of service business (service elements, service models, invoicing) (4)	IoT/remote access (3)	ERP (4)
Service as part of customer's processes (participating in customer's product development, training, storage) (3)	Allocating resources to digitalization (3)	System integration (3)
Development of new services (eg welding, sales of materials) (3)	Development of data collection, analytics and visualization (2)	Recording product history (1)
Identification of new service ideas (1)	Platform development, e.g. online shop (2)	Software development (eg quotation software) (1)
Service commercialization (1)	Process development with digitalization (2)	Sales Configurator (1)
Development of Life cycle services (1)		
Automation and Maintenance Expertise (1)		

According to the interviewed companies, also management, production and product development as well as marketing were seen as development areas. In management, companies highlighted the development of business models and earnings logic as well as the change management. In production and product development, it was important for companies to focus on scaling of production, developing production control, internal processes and product development. Development areas in marketing are mainly found in understanding customer needs. (See table below)

Management	Production and product development	Marketing
7	7	5
10 %	10 %	7 %
Development of business models and earning logic (3)	Scaling and controlling of Production (2)	Marketing (2)
Change management (3)	Improving the efficiency of internal processes (2)	Increasing understanding about customer needs (2)
Budgeting (1)	Developing capabilities in product development and design (2)	Acquisition of new customers (1)
	Development of production techniques (1)	

A couple of companies also mentioned the importance of networking and legal issues over the next five years. (See table below)

Networking	Other
1	1
1 %	1 %
Networking with small actors (1)	Legal issues (1)

Tuomas Huikkola, Timo Tamski, Marko Kohtamäki, Karita Luokkanen-Rabetino

Business models in industrial companies in Ostrobothnia

In this research, we identified the current business models of small and medium-sized industrial companies in Ostrobothnia. Business models have been categorized and named based on the authors' own interpretations, previous categorizations in literature and practice. More detailed description of typical business models in manufacturing companies can be found in the article by Huikkola and Kohtamäki (2018). Previously, similar categorizations have been made by e.g. Kalliokoski et al. (2003), Turunen (2013) and Ulaga & Reinartz (2011). However, previous categorizations have typically focused on offerings and related value propositions rather than on comprehensive business models as such. This report presents the business model categorization with four types:

- Product Business Model (Level 1)
- Service Contract Model (Level 2)
- Process Oriented Business Model (Level 3)
- Performance-driven business model (level 4)

The model is an applied maturity model. In fact, a company can apply multiple business models simultaneously. When using business models at the Level 1 and Level 2, the customer owns the business process. At level 3 and level 4, the industrial company owns the customer's business process, either by operating the use of the machine or the entire business process on behalf of the customer. Often when moving from one level to another, the company must master the previous level in order to be successful at the next level.

The current business model in each company was explored through nine dimensions. The dimensions are based on Osterwalder & Pigneur's (2010) classification of the business model components: 1) revenue streams, 2) cost structure, 3) key partners, 4) key activities, 5) key resources, 6) value proposition, 7) channels, 8) customer relationships, and 9) customer segments. Each dimension is divided into four levels based on the company's service business maturity. Selecting the first arguments in the structured interview means that the business logic corresponds to the Product Business Model, the second argument corresponds to Service Contract Model, the third argument corresponds to Process Oriented Business Model, and the fourth argument to the Performance Oriented Business Model.

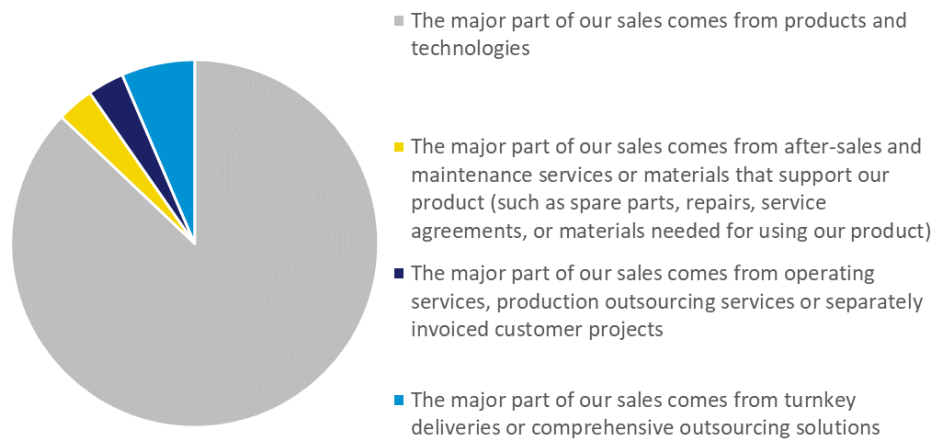
In other words, the attempt was to position interviewed companies and their current business model to the four-step model presented above in Figure 1. In order to determine the business model maturity at the component level, more detailed additional questions were used. The amount of these additional questions varied between two to six questions. Next, we describe the results of the company interviews.

Sources of turnover/sales

Sources of turnover/sales describes how turnover/sales is distributed across products, services, projects and solutions. In addition, this theme includes the impact of economic cycles on company sales, the current pricing model, and the invoicing strategy.

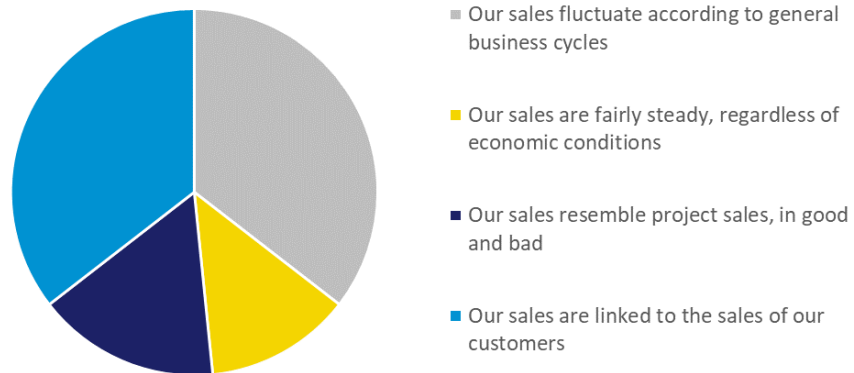
SOURCES OF SALES

▶ In most of the interviewed companies, the major part of the sales comes from products and technologies.



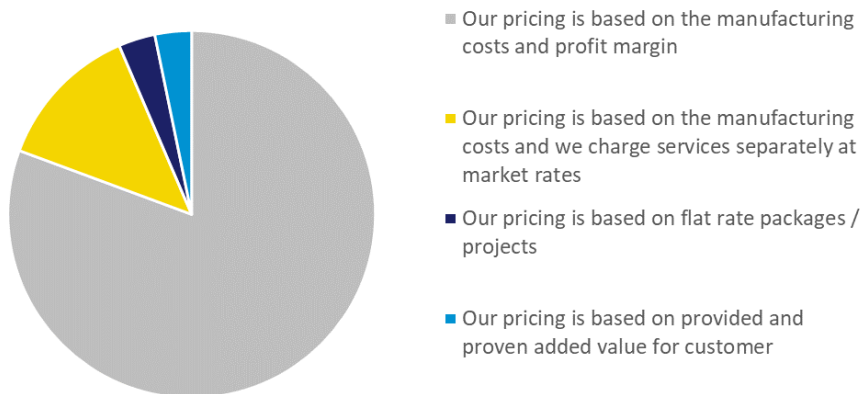
VOLATILITY OF SALES

▶ Most of the studied companies reported that their sales fluctuate according to general business cycles or that sales are linked to their customers' sales.



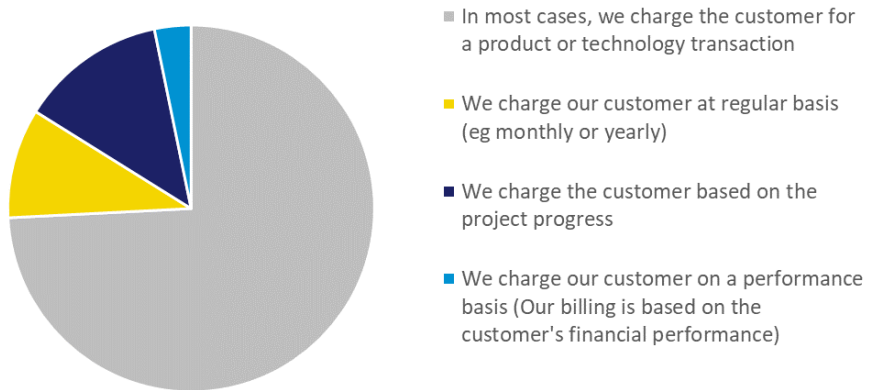
PRICING MODEL

▶ Production cost and margin is used as a pricing model in the majority of the interviewed companies.



INVOICING

▶ The interviewed companies invoiced their customers mainly on the basis of product and technology sales.

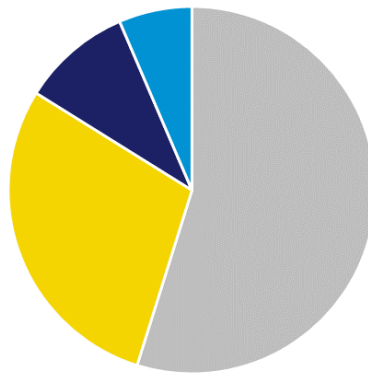


Cost structure

The cost structure covers the earnings logic, the major cost sources and cost categories, as well as the leverage effect of earnings.

EARNINGS LOGIC

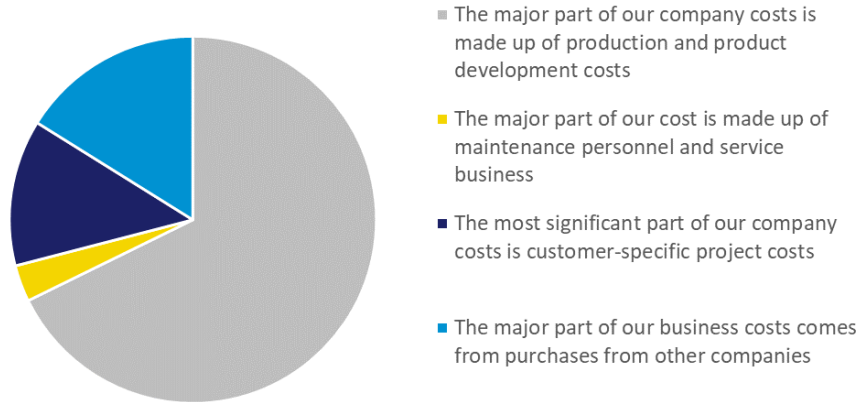
▶ It is typical that companies' earnings logic is based on relatively large deals but low margins. For some, the earnings logic is based on small trades but high margins.



- Our earnings logic is based on relatively large individual deals but relatively low margins
- Our earnings logic is based on relatively small individual deals but relatively high margins
- Our earnings logic is based on successful project deliveries or outsourcing agreements
- Our earnings logic is based on our customer's improved performance (customer's improved productivity / reduced costs)

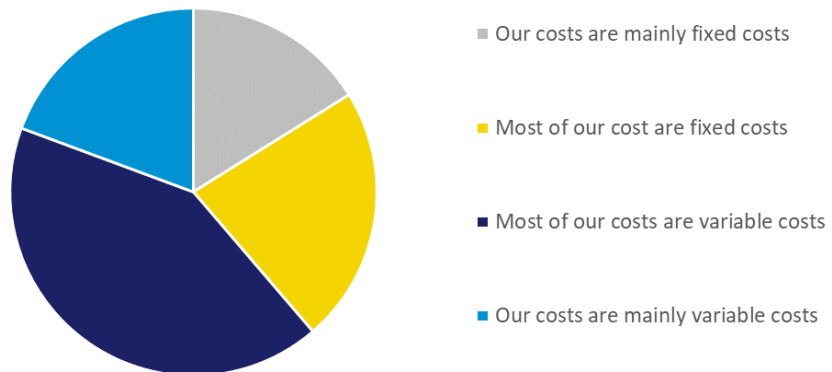
COST SOURCES

▶ In the interviewed companies, the major part of the costs came from production or product development.



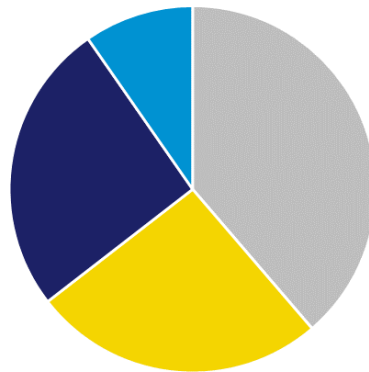
COST STRUCTURE

▶ Among the interviewed companies, the cost structure varied a lot. However, most of the costs are variable costs.



SOURCES OF BUSINESS SUCCESS

▶ Typically, most companies benefited from economies of scale. In other words, unit costs are clearly reduced as volume increases.



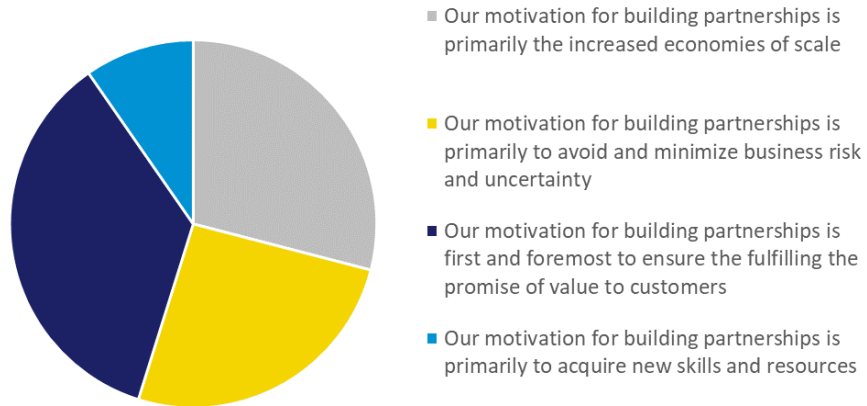
- Our business clearly benefits from economies of scale (unit costs are clearly reduced as sales / volume increase)
- Our business benefits somewhat from economies of scale, although costs increase in relation to sales volumes
- The success of our business depends on the success of our projects
- The success of our business depends on the success of our customer's business

The role of key partners

The key partners section describes the role of partners in the company, the motivation to form partnerships, and the type of key partnerships.

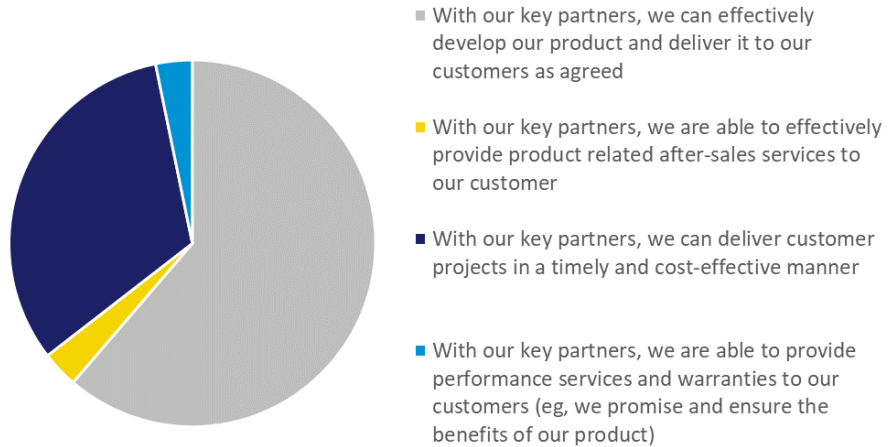
MOTIVATION FOR PARTNERSHIPS

▶ Typically, companies are motivated to build partnerships in order to deliver their value promise to the customers. In addition, economies of scale and risk minimization are also driving companies to partnerships.



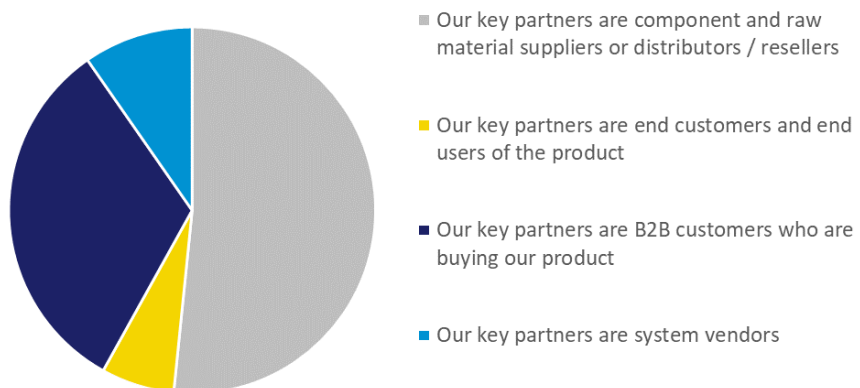
THE ROLE OF KEY PARTNERS

▶ For most companies, the role of key partners was to help the company to develop and deliver the product to the customer.



TYPE OF THE KEY PARTNERS

▶ The component and raw material suppliers and distributors / resellers were seen as a key partner in majority of the interviewed companies.

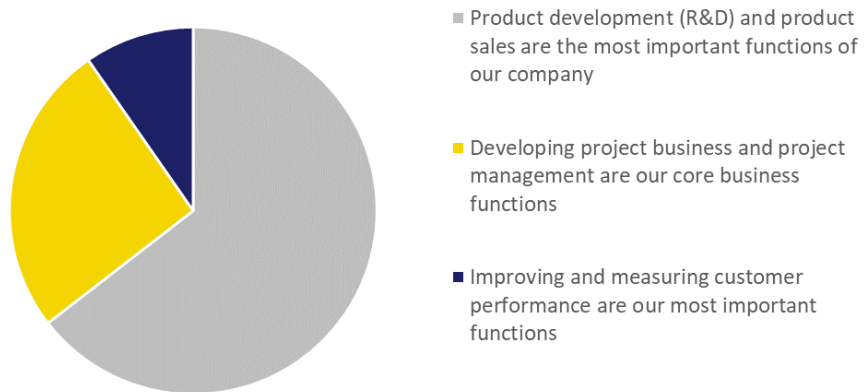


Activities

Activities refer to key functions of a company that help it to deliver its value proposition, reach its customer base and maintain its customer relationship. For example, for a product company, production, product development and innovation activities are the key activities.

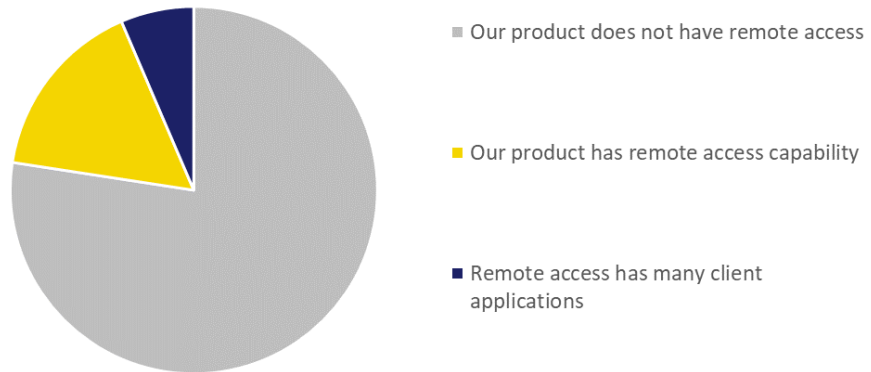
MAIN FUNCTIONS OF A COMPANY

► For the majority of the interviewed companies, product development and product sales were the most important functions. Also, some companies found that developing and managing the project business as their key activities.



REMOTE ACCESS

▶ Most respondents stated that their product is not remotely accessible. However, some companies had remote access in their product.



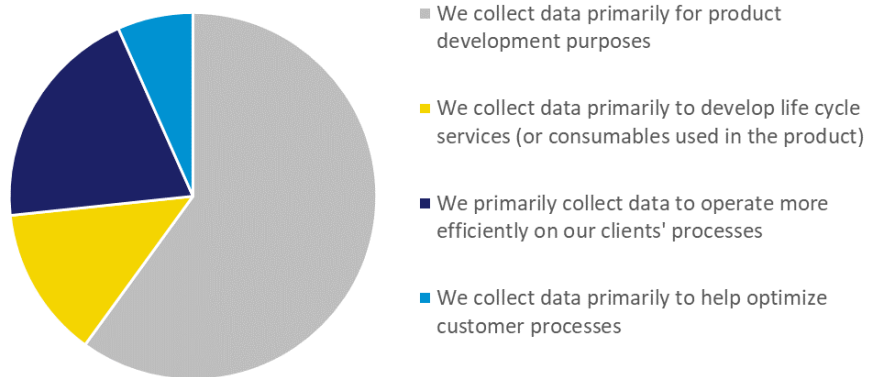
THE LEVEL OF INTELLIGENCE

▶ The vast majority of respondents reported that their products have only little or no intelligence.



DATA COLLECTION

▶ Most companies collected data primarily for their own product development. Some companies collected data also in order to operate their customers' processes more efficiently or to develop life cycle services.

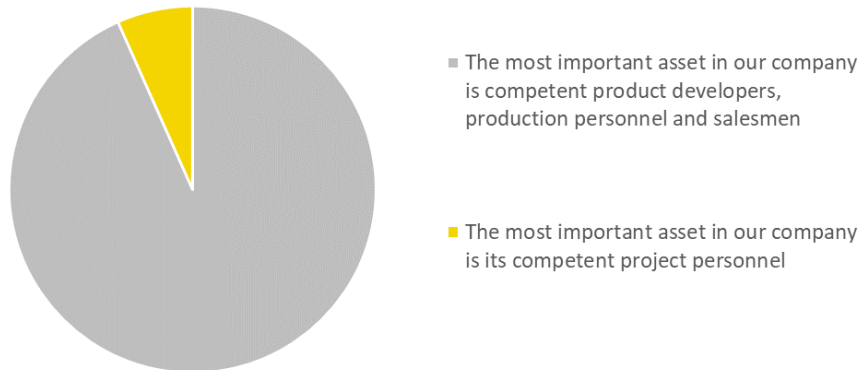


Resources

Resources represent the most important and valuable assets and competencies that a company owns and manages or wants to develop further.

THE MAIN ASSETS

▶ The major part of the interviewed companies found that their most important assets are competent product developers, production staff and product sales.



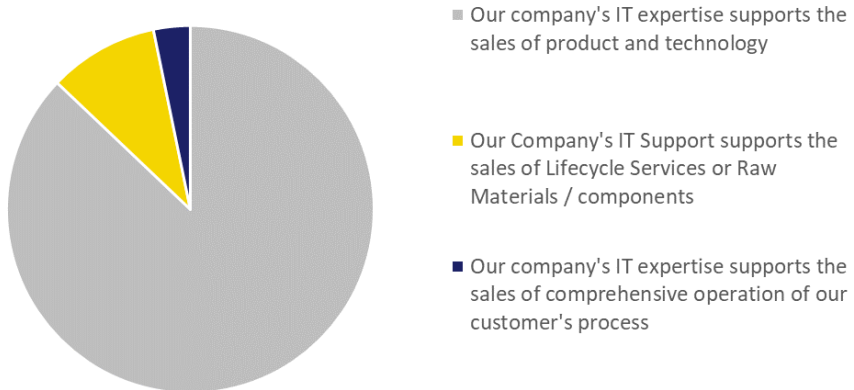
RESOURCE DEVELOPMENT

▶ Similarly, the vast majority of companies stated that they were developing resources for enabling them to develop new products and technologies.



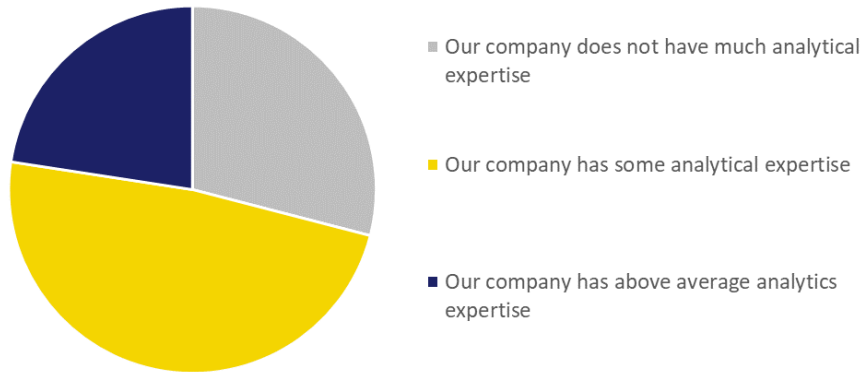
IT EXPERTISE

▶ When asked about IT expertise, most companies found that their IT expertise is particularly focused on supporting the sales of product and technology.



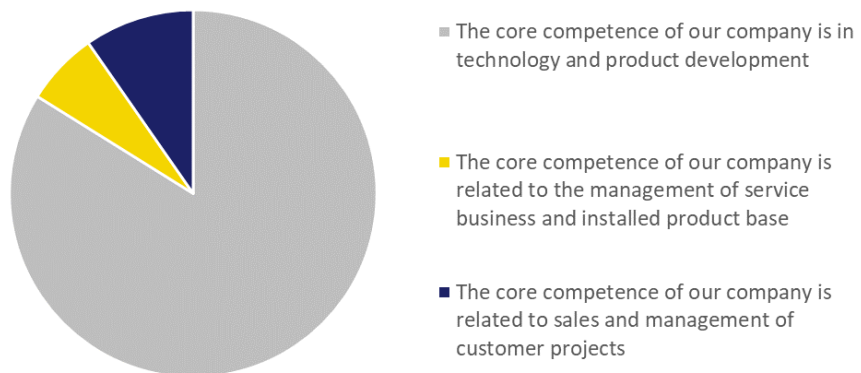
ANALYTICAL EXPERTISE

▶ A large majority of respondents thought they had some analytical skills. Some respondents said that they do not have or have only some analytical skills.



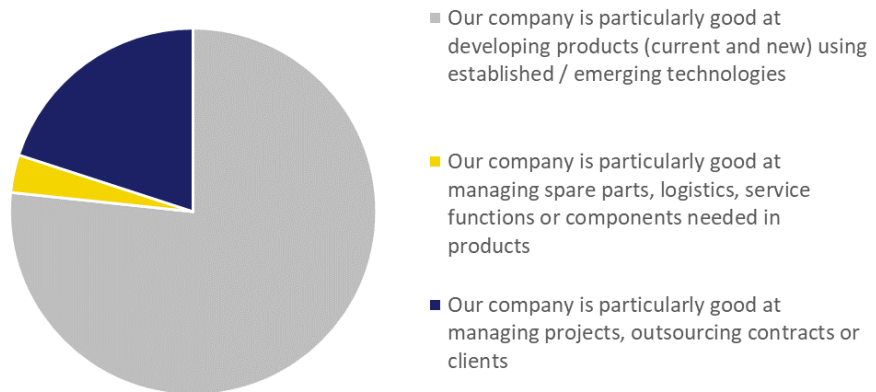
COMPETENCE AREAS

▶ Most areas of expertise in interviewed companies were related to technology and product development, rather than service business or customer project management.



COMPANY STRENGTHS

▶ Most respondents believe that their company is particularly good at developing products with well-established or emerging technologies. Some companies were particularly good at managing projects, outsourcing contracts or clients.

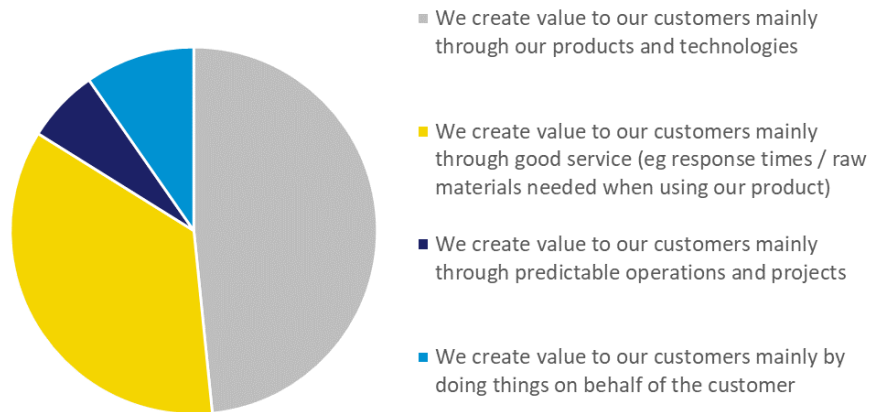


Value proposition

Value proposition is one of the most important part of a business model. It determines which customer problem the company solves with its products and services. Because the customer has multiple problems, the company also needs to decide which problems it will not solve.

VALUE CREATION

▶ A large proportion of respondents found that their company is creating value for customers mainly through products and technologies.



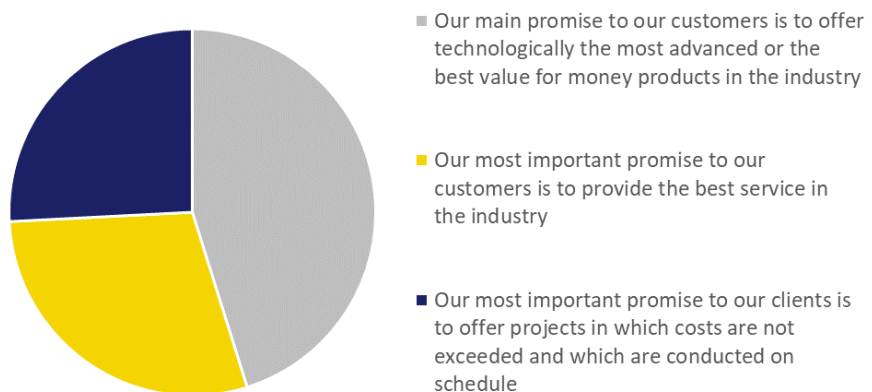
OFFERING

▶ Most interviewed companies offer products and product variants rather than product-related services, expert know-how, or project work for their clients.



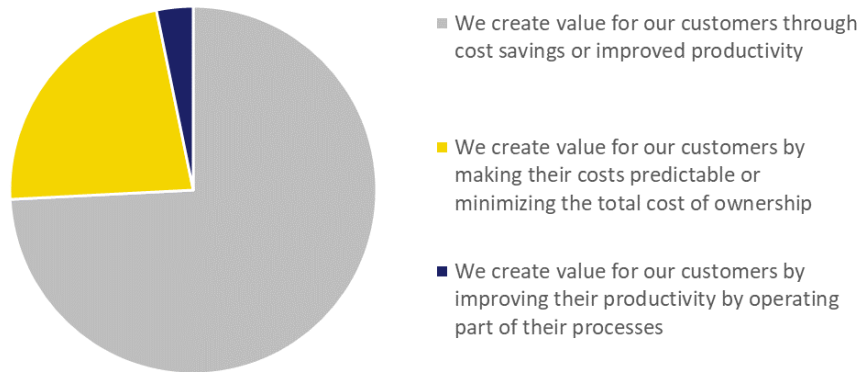
MAIN PROMISE TO CUSTOMER

▶ The most important product promise for most of the respondents was to offer the most technologically advanced or value-for-money products in the industry.



VALUE GENERATION

▶ The vast majority of respondents believe that their company generates value for customers primarily through cost savings or improved productivity.



RISKS

▶ Companies stated that their mainly reduce customer's risk by providing product related warranties. Some companies also share the risk with their customer.

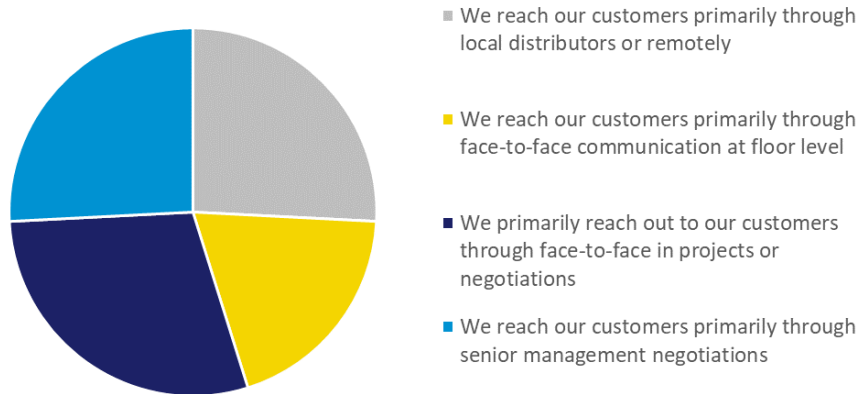


Channels

Channels include the company's communication and value creation. The selection of channels is influenced by factors such as the number of customers and their purchasing behaviour. In the era of platform economy, various "platforms" (such as alibaba.com or Online Stores) are channels for marketing as well as selling products. However, in specialty products, personal interaction is still a typical way for customer interaction.

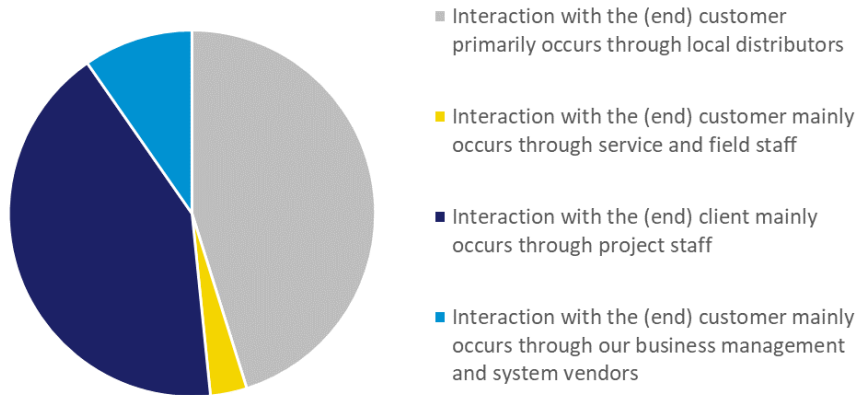
REACHING CUSTOMERS

▶ Interaction with the (end) customer is mainly handled either through local distributors or remotely or remotely or face to face in projects and negotiations.



INTERACTION

▶ Typically, the interaction with customers occurred face to face in projects or through local distributors.

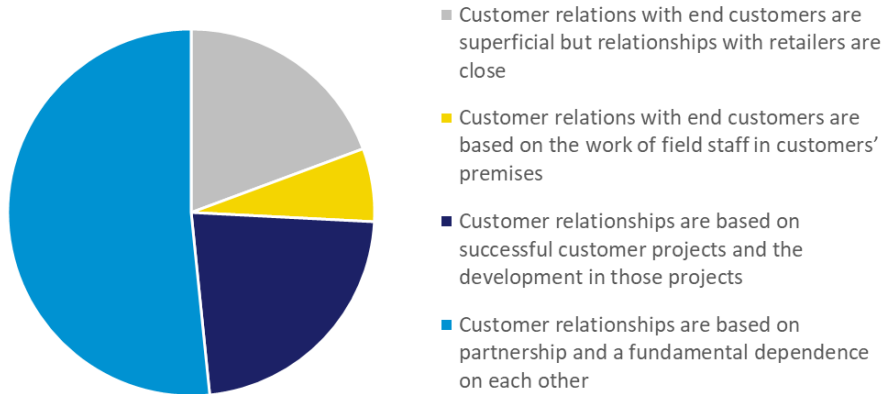


Customer relations

In this report, customer relations describe how a company reaches, acquires and retains its customers. The study aims to understand how close the company is to its end-customers and how do the company's most important customer relationships look like.

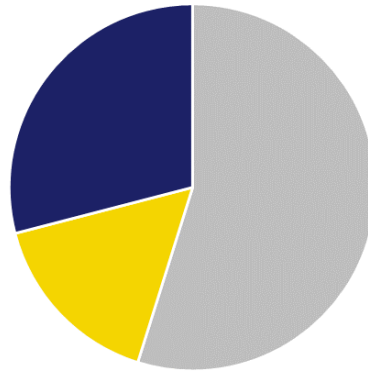
DEPTH OF CUSTOMER RELATION

▶ For most of the companies, customer relationships are based on partnership and mutual dependency.



CUSTOMERS' WILLINGNESS AND CAPABILITY TO MANAGE BUSINESS PROCESSES

▶ Typically, most customers are willing and able to manage the business process of using the product. However, there are also customers who are unwilling or unable to control the use of the product.



■ In our most important customer relationships, the customer wants and is able to manage the business process of using the product

■ In our most important customer relationships, the customer is able to manage the business process of using the product, but wants to share some responsibility with us

■ In our most important customer relationships, the customer does not want or is not able to manage some sub-process associated with using the product, but outsource it to our company

Customer segments

Customer segments can be defined e.g. based on their needs or various demographic factors, such as the country or the size of the customer company.

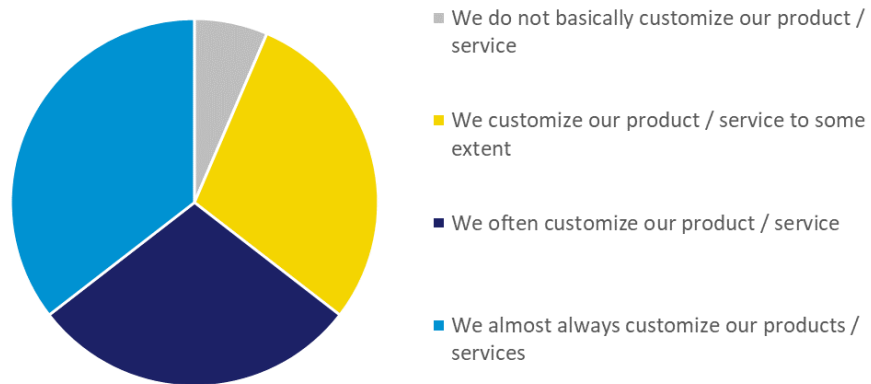
MAIN CUSTOMER GROUPS

▶ The most important customers for many interviewed companies are those who use the product, need production outsourcing and operation services or development projects.



THE LEVEL OF CUSTOMIZATION

▶ Typically, the company will customize its product or service.



Summary: Business models in SME companies in Ostrobothnia

This study shows that manufacturing SMEs in Ostrobothnia usually have product-oriented business model. Companies have some service business, especially the project business, but the earning logic is still largely based on selling products and technologies. Companies value the direct communication with their principals and the level of customization is very high. Direct and personal interaction with customer, trust and customization are seen as competitive edge in competition with low-cost countries. This approach provides the close relationship with the customer. However, same approach may lead to over reliance on a small number of customers.

This study revealed that companies have significant willingness and capability to develop. Working with demanding customers and gaining space in the market require manufacturing SMEs to adapt, innovate and follow trends. The interviewed companies have put some effort on developing service business, but are frustrated with service related business model, the earnings logic, and the challenges of developing the capabilities required in the service business.

Although service business is currently a topical issue, it should not be seen as an intrinsic value. In practice, only a few companies have been able to create truly successful service business. In a narrow product area, a company can do profitable and sustainable business through products and technologies. Intel, for example, is a good example of such a company. However,

services are considered to provide a better predictability for the manufacturing company and reduced risk of using the device for the customer.

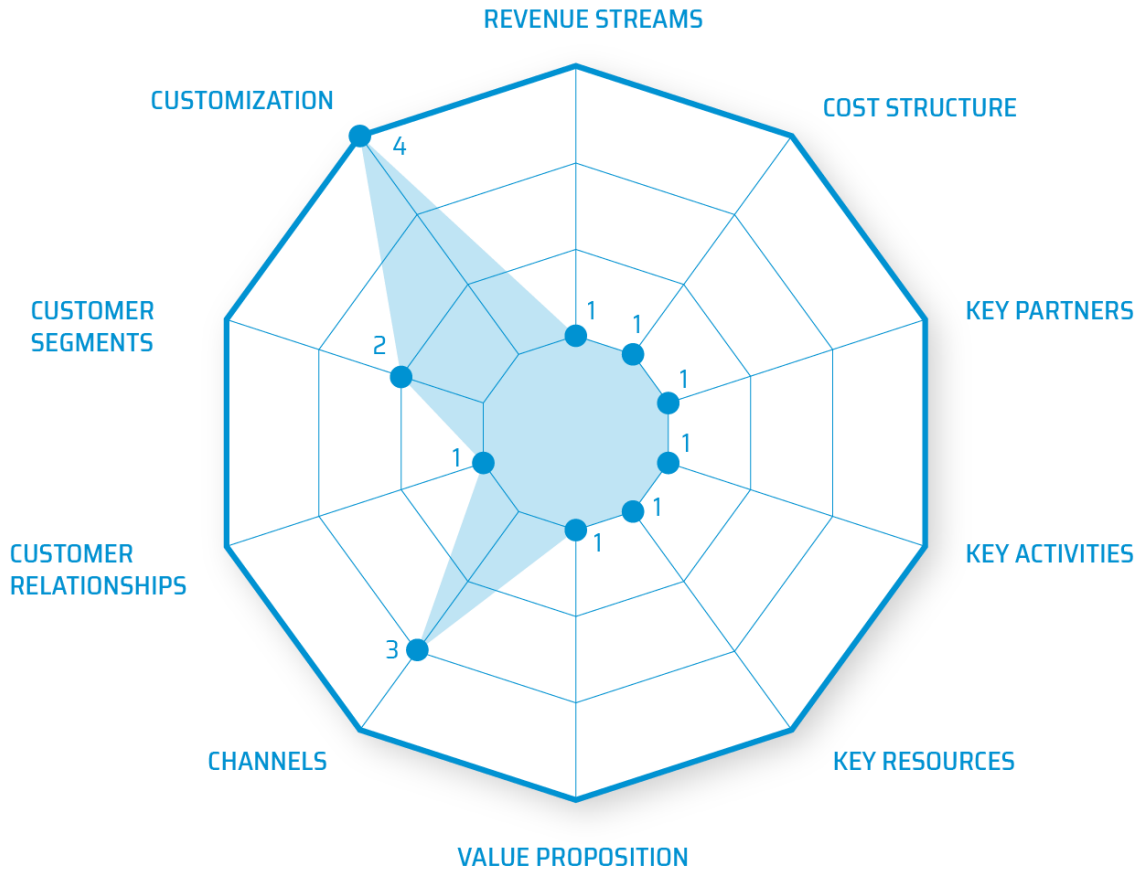


Figure. Profile of service business in Ostrobothnian companies

However, the service business logic is considerable different with the product business logic. Many product-oriented companies have applied the proven models in the product business also in the field of service business. However, previous research indicate that it would be worthwhile to develop service business as a separate entity, even in smaller companies, as this will reduce the dominance of the product business. In order to develop the service business, it is advisable to develop a business model separate from the product business, within which the service strategy will be implemented.

Service development in industrial companies in Ostrobothnia

The aim of this part of the research was to understand the current state of service development in small and medium-sized industrial manufacturing companies in Ostrobothnia. The current state of service development was investigated through four themes. The themes are based on previous research and current maturity models in service development. Interviews covered following themes:

- Strategic management of service development
- Formality of service development
- Knowledge management in service development; and
- Customer involvement in service development

Each theme is divided into dimensions (except the Knowledge Management). For example, companies' ability to engage their customers in service development includes two dimensions; the role of the customer in the service development and the way customer information is utilized in the service development. These dimensions are mainly based on Jin et al. (2014). However, some modifications were made to better match with activities of those companies who have only recently focused on service development.

Each dimension is divided into four maturity levels. Each level illustrates how the company manages that particular area of service development capability. Together these four levels form a continuum, where the first level is product-centric where is hardly any service development activity. At the fourth level, the company's strategy is service-oriented. Based on the interviews, companies are positioned at these four maturity levels that describe the importance of services for the business and how this is reflected in service development. These four service development levels are:

1. Company's strategy is to manufacture products. The company develops products and potential services are not considered from a development perspective. The product is occasionally supported, e.g. by providing spare parts or advice. The company does not see its services as an important part of their business.
2. Company's strategy is to manufacture products. However, the strategy identifies the services and sees them as a significant support for the products. Development efforts

focus on products, but services are also seen as potential development area. These support services will be developed when needed. Service development takes place in occasional projects.

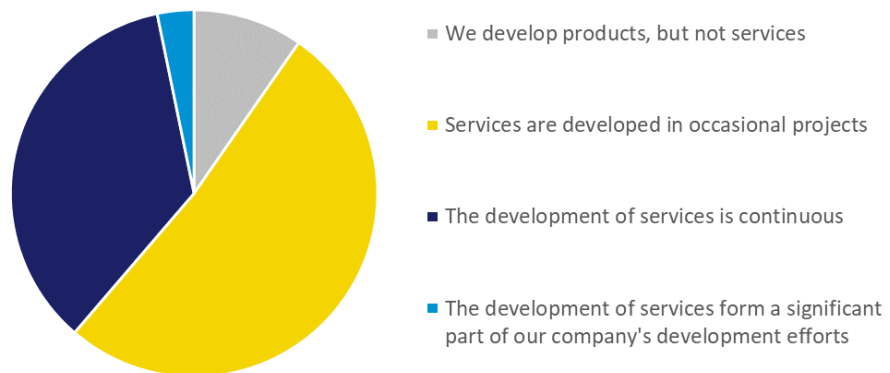
3. Services are seen as an important part of the business. The development of services is continuous activity in the company.
4. Company has adopted service-oriented strategy.

Strategic management of service development

Strategic management in service development refers to the ability of a company to determine a service development strategy in relation to the company strategy. Strategic management defines how a company set service development goals, identifies the target markets, and allocates resources for the development. (Jin et al. 2014) The strategic direction of service development was mapped with five questions related to the regularity of service development, overall goals of service development, motivation, resource allocation and the depth of service market knowledge.

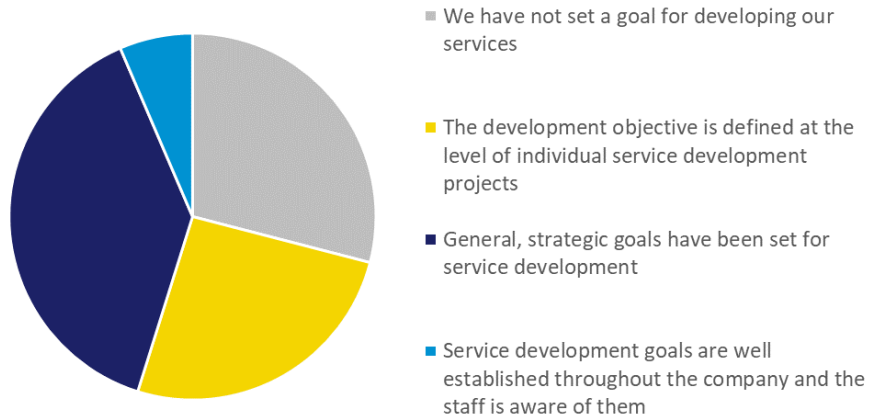
INTENSITY

▶ Most of the companies have developed services in occasional projects. However, for some, service development is continuous activity.



STRATEGIC GOALS

▶ Over one third of the companies had set general, strategic goals for service development.



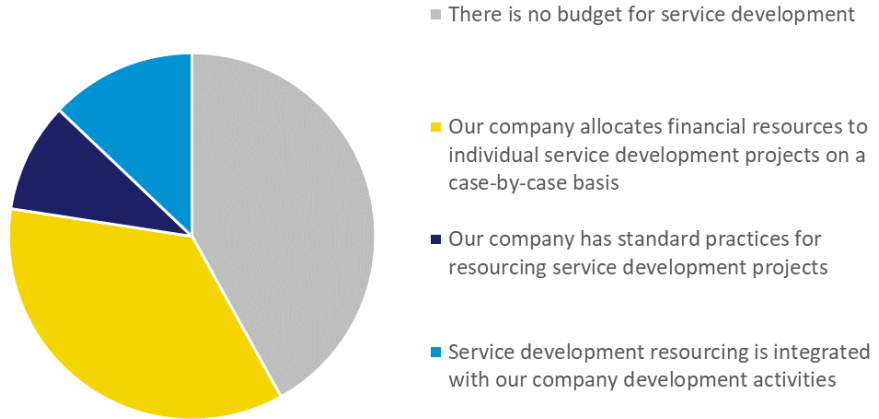
MOTIVATION FOR DEVELOPING SERVICES

▶ Almost half of the companies were motivated in service development by a desire to help their clients to succeed in their business.



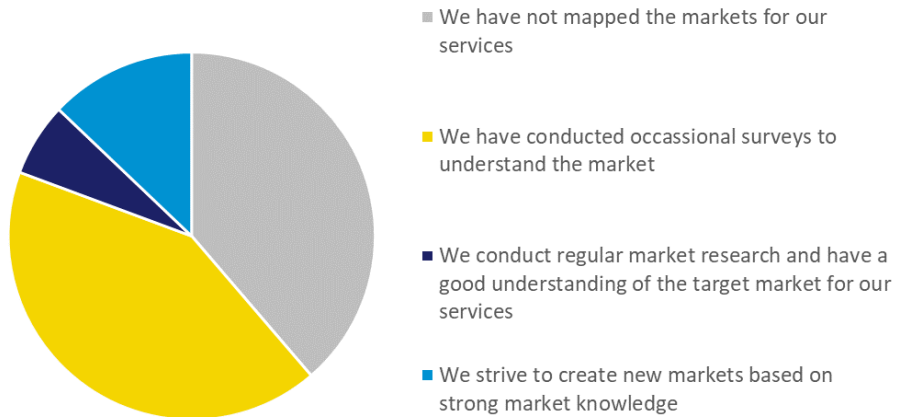
RESOURCE ALLOCATION

▶ Typically, companies do not have own budget for service development and financial resources are allocated to service development projects on a case-by-case basis.



SERVICE MARKETS

▶ Many companies have not systematically mapped the market for services or their market knowledge relies on random surveys.

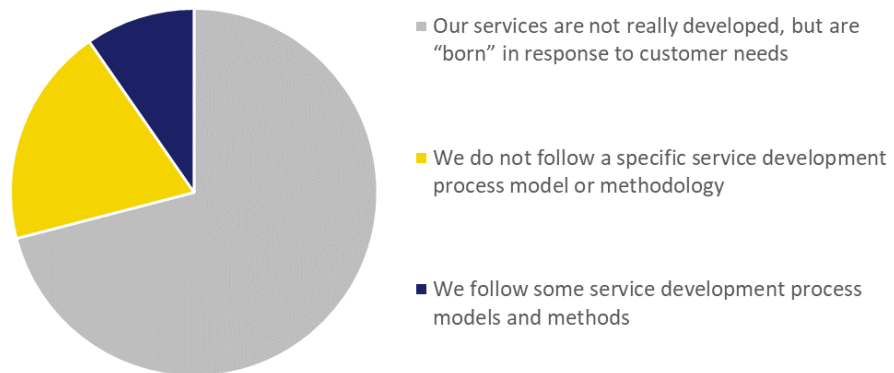


Formality of service development

Service development formality refers to the ability of a company to implement a defined, systematic and reproducible service development process. The formal process increases the predictability of service development and facilitates scheduling and budgeting. (Jin et al. 2014) The formality of the service development process was measured with the systematic nature of service development, the division of responsibilities and the use of service design.

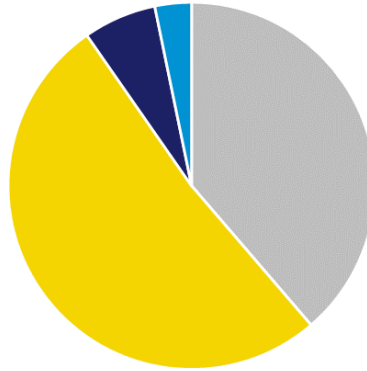
SYSTEMATIC NATURE OF SERVICE DEVELOPMENT

▶ In majority of companies, the service development was not systematic.



THE DIVISION OF RESPONSIBILITIES

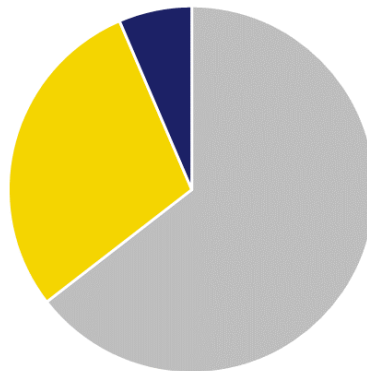
▶ Companies typically appoint a person in charge for each project.



- There are no service development people in our company
- When we decide to launch a service development project, we name the person responsible for the development
- A service development project is always assigned an official project team where the responsibilities of the individuals are defined
- The service development team is responsible for the continuous development of the services

SERVICE DESIGN

▶ The vast majority of companies have not used the service design when developing services.



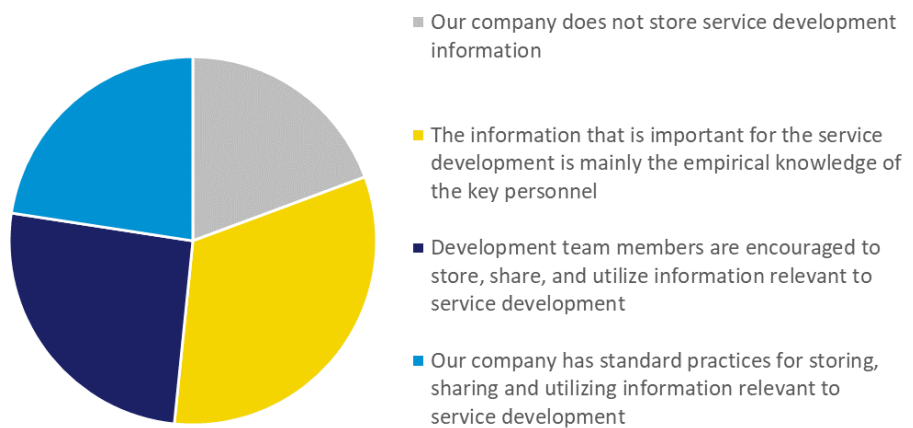
- We do not use design when developing services
- We have used design occasionally to make existing services more understandable and attractive
- In most service development projects, design is used for understanding customer needs and improving customer experience

Knowledge management in service development

Knowledge management in service development is about managing the skills and knowledge that are essential for service development. (Jin et al. 2014) In the interview, companies were asked to evaluate the storage, sharing and utilization of service development related information.

INFORMATION MANAGEMENT

▶ Service development is based mainly on empirical knowledge of the key personnel.

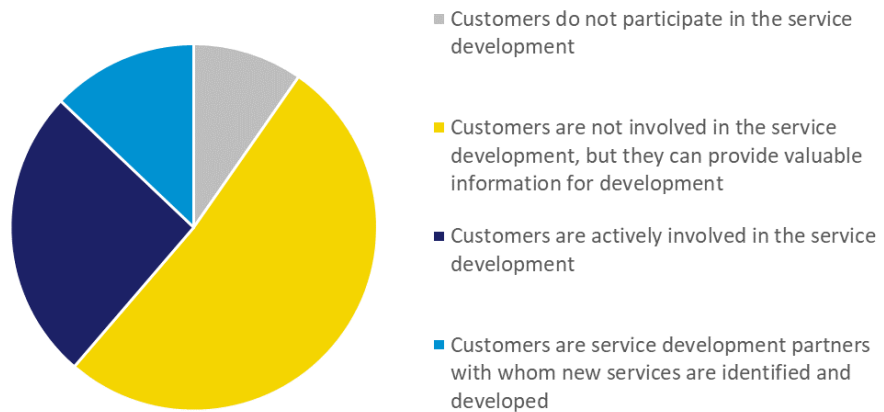


Customer involvement in service development process

Customer involvement in service development means the depth of interaction between the company and the customer during the service development process. (Jin et al 2014) The ability of the company to engage its customer in service development was investigated by two questions that mapped the role of the customer in the service development and the way customer information is utilized in service development process.

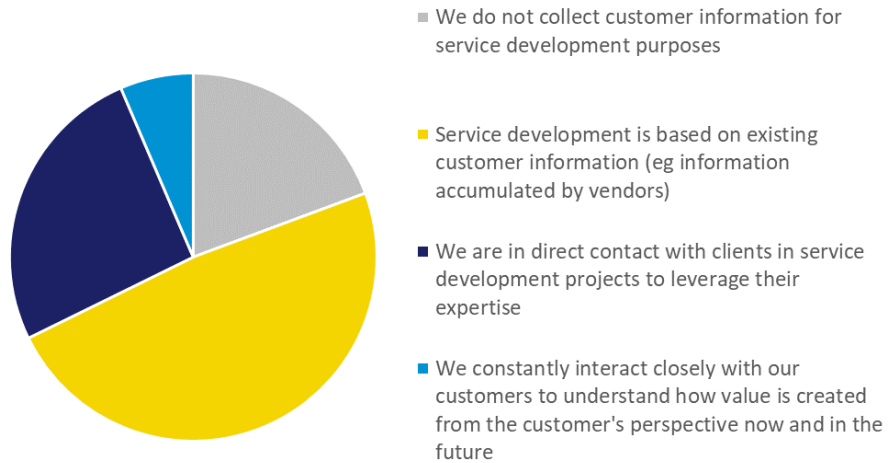
ROLE OF THE CUSTOMER IN SERVICE DEVELOPMENT PROCESS

▶ Half of the companies see customer as a valuable source of information.



UTILIZATION OF CUSTOMER INFORMATION IN SERVICE DEVELOPMENT

▶ Service development is based mainly on existing knowledge.

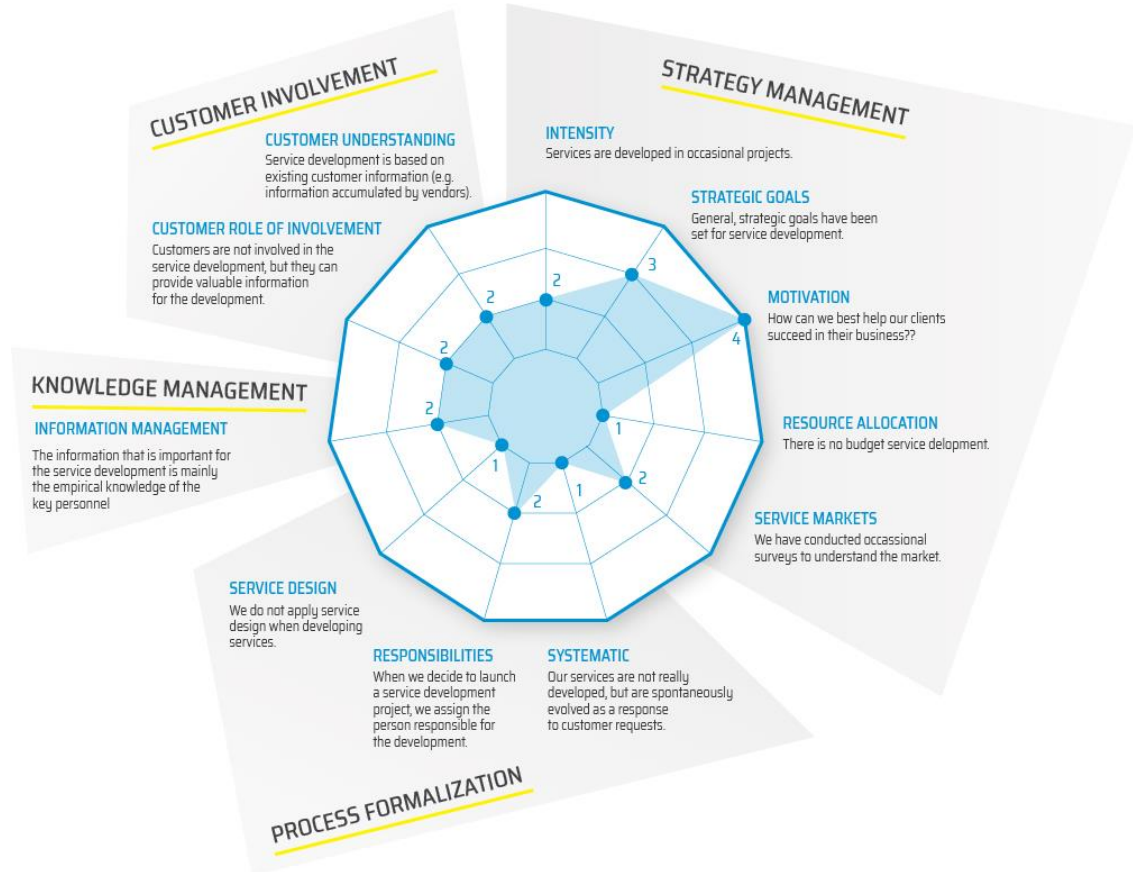


Summary: The current state of the service development in Ostrobotnia

The following figure summarizes the level of service development in Ostrobotnia as it appears in the interview data. The profile is created by using the most frequently selected statement in each question.

This research shows that companies' have favourable motivation and attitude for developing services. Up to half of the companies want to help their customers to succeed in their business. Some companies have also set goals for the service development. In these companies, the top management of the company have discussed on the importance of services. In some companies, service development has been identified even the most important strategic priority.

However, there is also need to improve service development practices. Service development do not typically have own budget. However, also in these companies a responsible person is assigned to the development project. Services are developed in occasional projects rather than being developed as part of the product development. Illustratively, most companies have not actually developed services, but services have just "born" as a response to customer needs.



According to the interviews, companies have mapped the service market with occasional surveys. Sales, after sales and customer projects are regarded as the key sources of market information. Customers are typically not involved in the service development process, but they are seen as an important source of information. In most cases, customer information is empirical and it is cumulated to key personnel. Usually, new customer information is not gathered for the service development purposes. Also, service design is still a relatively unknown approach in SMEs. The table below describes the most frequently selected statement as well as the proportion of this statement in all responses.

Description	The most typical choice	Share of all responses
Intensity: Services are developed in occasional projects	2	52 %
Strategic goals: General, strategic goals have been set for service development	3	39 %
Motivation: How can we best help our clients succeed in their business?	4	48 %
Resource allocation: There is no budget for service development	1	42 %
Service markets: We have conducted occasional surveys to understand the market	2	42 %
Systematic: Our services are not really developed, but are “born” as a response to customer needs	1	71 %
Responsibility: When we decide to launch a service development project, we name the person responsible for the development	2	52 %
Service design: We do not use design when developing services	1	65 %
Information management: The information that is important for the service development is mainly the empirical knowledge of the key personnel	2	32 %
Customer involvement: Customers are not involved in the service development, but they can provide valuable information for development	2	52 %
Customer understanding: Service development is based on existing customer information (eg information accumulated by vendors)	2	48 %

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