BUSINESS SWEDEN

POWERING UP WITH SERVICES

WHY MANUFACTURING IS PRIMED FOR A SERVICES BOOM

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CONTENT

Layout/Graphics
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FOREWORD

NEW WAVE OF SERVITISATION OF MANUFACTURING GETS UNDERWAY

The global technological shift is transforming society and business, not least the manufacturing industry. This new era encompasses digital driven platforms, logistics technologies and data-processing advances that continue to reduce cross-border transaction costs. The impact of next-generation enabling technologies – AI, robotics, connectivity and additive manufacturing – on global trade flows of goods and services will continue to fuel trade in value-added services in the manufacturing industry.

The new era also includes the introduction of new types of leasing, subscription, and other product-as-a-service business models by manufacturers. Product-as-a-service business models allow customers to purchase a desired result rather than the product that delivers that result. Companies that adopt enabling technologies together with innovative business models stand to make big gains. When value chains worldwide are restructured, it may even become a necessity. Swedish manufacturers offerings within as-a-service include for example Volvo's *Care Track*, which includes complete telematic monitoring of construction equipment machines for optimal maintenance, productivity and profitability, and Sandvik's performance agreements guaranteeing uptime and an increase in process efficiency, equipment reliability and availability.

Some of the key benefits of servitisation for manufacturers include; longer customer lifecycle and revenue periods, deeper and more long-term relationships with customers, a way to differentiate and a means to enable investments. As a result, we see a new early wave of servitisation of manufacturing operations with more and more companies testing and implementing as-a-service concepts.

However, moving from selling a product to selling it as-a-service requires several changes to the company's business model. While digitalisation enables this transformation, as well as the potential to make profits from it, substantial efforts and resources are required. Business Sweden has has carried out interviews with Swedish manufacturing firms that have adopted or tried some type of as-a-service business model, to get a deeper understanding of their challenges.

We have identified some key success factors when moving from a product to a service-based offering in the manufacturing industry, with focus on important steps when introducing and scaling up the as-a-service business model globally.

The world is changing and companies with it – those who keep up have significant opportunities to capture additional revenues from services, especially digital ones. While digital technologies have been around for half a century, it is only now that they have become the core of almost every industry. The upswing for services in manufacturing will most likely continue for some time, but companies will also need to sell products. Although servitisation may not be for everyone it should be considered, at least, in order to defend and grow market positions.

LENA SELLGREN
Chief Economist
Business Sweden

THE RISING ROLE OF SERVICES IN MANUFACTURING

SERVICES – A CORNERSTONE OF THE MANUFACTURING INDUSTRY

Services have historically been viewed as a separate domain of the economy, along with other major sectors such as agriculture and manufacturing. However, the lines between these areas have become increasingly blurred over the past few decades. Services now play a fundamental role in the business strategy of the manufacturing industry, as manufacturing companies increasingly are buying, producing and selling services. The traditional dividing line between sectors has thereby lost its validity.

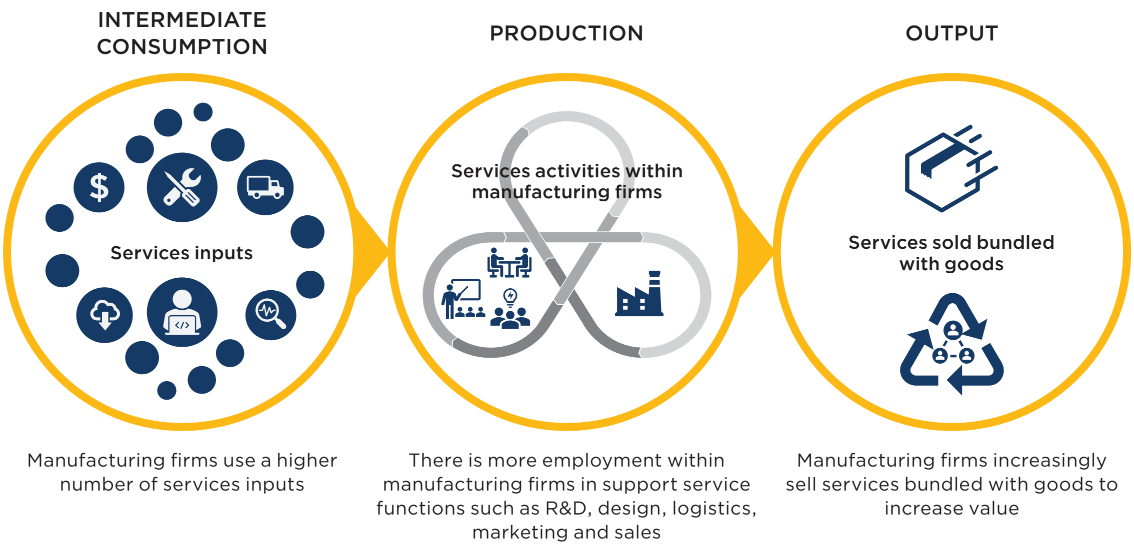
Data from Sweden shows, for example, that services currently make up 50 per cent of employment in the manufacturing industry, having grown from a share of 39 per cent in 2008[1]. Likewise, the share of revenue from services in industry is increasing fast and accounted for just over 24 per cent in 2014, surging from 11 per cent in 1993[2].

A GROWING AND UNDERVALUED ROLE IN GLOBAL VALUE CHAINS

Trade in services has grown significantly over the past decade, and currently makes up around a third of Swedish exports. However, as services make up an increasingly larger share of other sectors, such as manufacturing operations, trade statistics obscure the real impact of services on trade.

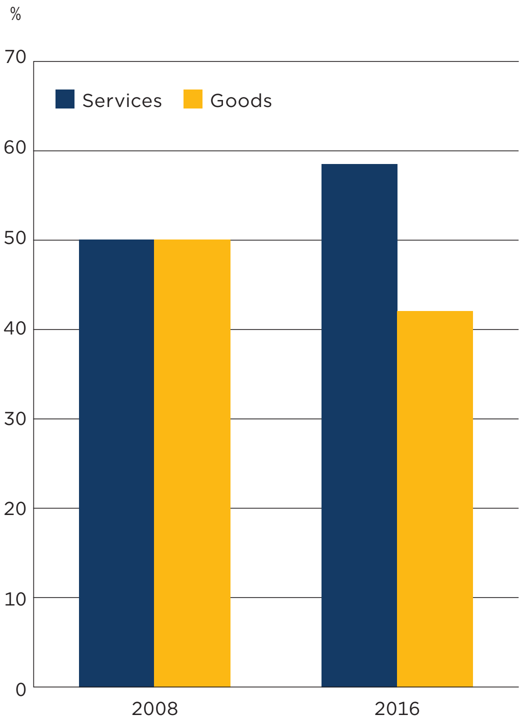
The Association of Swedish Engineering Industries estimates that the services content of Swedish manufacturing industry's exports rose from 50 per

SHARE OF SERVICES AND GOODS CONTENT OF SWEDEN'S MANUFACTURING INDUSTRY EXPORTS



Source: Adapted from Haven & Van Der Marel (2018) Servicification of Manufacturing and Boosting Productivity through Services Sector Reform in Turkey, World Bank Group Policy Research Working Paper 8643.

SHARE OF SERVICES AND GOODS CONTENT OF SWEDEN'S MANUFACTURING EXPORTS



Source: Teknikföretagen (2019) Sveriges exportsektor växer

cent in 2008 to 58 per cent in 2016. The remaining part, 42 per cent, consists of pure goods exports. The importance of services in manufacturing exports has increased partly as an input into goods exports and, to a smaller degree, from the exports of services to end customers.

Finally, the intangible assets that Swedish manufacturing companies send to their affiliates around the world – including software, branding, operational processes, and other intellectual property developed at headquarters – represent tremendous value, but these transactions are often unpriced and unnoticed and untracked by statistics agencies. Additionally, trade statistics do not track cross-border flows of free digital services, including email, real-time mapping, video conferencing, and social media. These services create value for users, even without a monetary price. The consultancy firm McKinsey estimates that these channels globally produce up to $8.3 trillion in value annually.[3] Seen in this light, services represent a larger share of global trade than goods today and will continue to grow in importance.

MOVING TOWARDS AS-A-SERVICE CONCEPTS

The impact of next-generation enabling technologies *(AI, robotics, Internet-of-Things, connectivity and additive manufacturing)* will continue to fuel trade in services and drive the manufacturing industry's transformation.

The global technological shift includes the automation of production, the collection and analysis of large amounts of data, and the inclusion of artificial intelligence as an integral part of business processes. It also encompasses the digital driven platforms, logistics technologies, and data processing advances that continue to reduce cross-border transaction costs.

Finally, the technological shift includes the introduction of new types of leasing, subscription, and other *as-a-service* business models by manufacturers. There are several types of as-a-service business model available to manufacturing firms, differing by the degree of risk and service level offered by the provider. The difference between these types of as-a-service offerings is described in the grey box on the next page.

This trend of servitisation coupled with adaption of enabling technologies could provide significant economic benefits to countries. In a recent analysis, Business Sweden (2018)[4] estimates that Swedish GDP growth could potentially increase from a current average rate of 2 per cent per year, to 6 per cent per year by 2030, in the most radical scenario for servitisation. In this scenario, service exports increase by 11 per cent per year, from the current average growth of 6 per cent per year.

These gains to GDP are driven by individual companies adopting new technologies and new innovative business models. As value chains across the world are restructured, joining the transition also becomes a necessity, as companies' risk being stuck with old, obsolete business models and technologies unless they keep up. Many companies recognise this but struggle to understand how to implement it in their own business development.

HOW CAN SWEDISH MANUFACTURERS CAPTURE VALUE FROM AS-A-SERVICE BUSINESS MODELS ON INTERNATIONAL MARKETS?

This analysis sets out to describe how manufacturing companies can benefit from as-a-service business models, i.e. selling products as services to end customers. It also provides a view of the potential pitfalls and risks associated with moving from a product focus to a partial or full-service offering, especially when implementing or scaling up service-based business models globally.

For this report, we have carried out interviews with Swedish manufacturing firms that have adopted or tried some type of as-a-service business model. The survey respondents' portfolios include, for example, batteries as-a-service, vehicles as-a-service, instruments and clinics as-a-service, and muscle relaxation as-a-service. They range from very small companies with 4-10 employees, to large multinational corporations. The extent to which these firms offer their products as-a-service also varies: some have adapted a rental model, some have moved towards usage or performance-oriented contracts.

Importantly, the adoption or development towards as-a-service business models is new for most of the respondents. We have tried to outline some of the take-aways from their journeys up until now, but additional research, as well as experimentation by companies, is still needed to answer all relevant questions.

AS-A-SERVICE CONCEPTS IN MANUFACTURING

Sales of products as-a-service mean that companies sell the use of a product, or even the results of using that product, instead of the product itself. Sales of products as-a-service often mean that companies add services around a product and sell an integrated solution, which includes services that ensure functionality, updates and other features.

Servitisation of manufacturing companies can be expressed on a scale where companies offer products at one end, and services at the other end. The extent of risk taken, and service level offered by the provider, differ along this scale. Three main business models can be outlined:

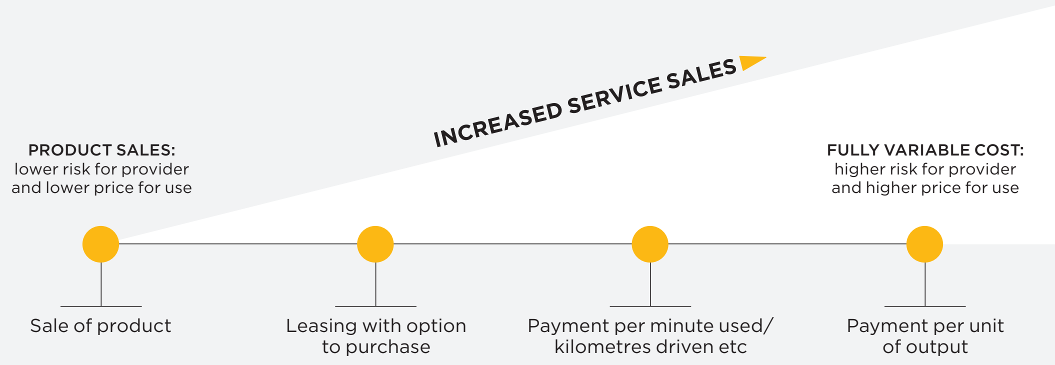
- Product-oriented business models
- Usage-oriented business models
- Performance-oriented business models

A product-oriented business model may include service sales but focuses on the sale of a product. Any services sold with the product aims to increase the value and improve the usability of the products, e.g. training in how to use the product, phone support and product demonstrations.

A usage-oriented business model means selling the use of or access to a product instead of the product itself. This can involve subscriptions, pay-per-use contracts or other rental models. This concept often contains more complex, high-value-added services aimed at improving the product, for example through R&D.

Performance-oriented business models for manufacturing companies involve the sale of results or capacity rather than a physical product. This model tends to be highly service-based and requires the provider to assume a higher level of risk and responsibility, for which customers pay a premium price.

A company may offer one or more of these models to their customers. Customers can, for example, buy a product and supplement with services if needed (product-oriented). Customers can also lease a product during a specific contract period, with the option to buy the product at the end of the period (usage-oriented). Customers can buy access to the product, for example, per month or per minute (usage-oriented). Finally, the customer can buy access to the output of the product (performance-oriented). In the last two examples, the producer takes the risk of the product not working properly. The higher level of service means that the producer can charge a higher price for these offerings.



NEW ERA UNFOLDS:

FROM PRODUCTS TO SERVICES

NEW EARLY WAVE OF AS-A-SERVICE IN MANUFACTURING

As-a-service business models have been tried and tested in manufacturing for a long time. An early and famous example is the Rolls Royce's "Power by the Hour" programme, in which airlines pay for an engine's hours of operation rather than buying the engine; maintenance and other services are provided by Rolls Royce as needed to ensure the specified hours of availability. Additionally, many business models can be perceived to be as-a-service, though they usually go by a different name. For example, cars have been offered as-a-service (i.e. taxi) for as long as they have existed.

However, the use of as-a-service concepts in manufacturing have not always been successful. On the contrary: a 2004 survey among Swedish manufacturing firms found that only 21 per cent of companies achieved financial success with an industrial as-a-service strategy. Most survey respondents abandoned their strategy after a few years.[5]

We now see a new, early wave of servitisation of manufacturing as more and more companies are testing and implementing as-a-service concepts. An important explanation for this is the *digital transformation* of the manufacturing sector. As the CEO of GE, Jeff Immelt, was quoted saying: "if you went to bed last night as an industrial company, you're going to wake up today as a software and analytics company."[7] This conclusion is echoed in the Swedish government's strategy for industrial renewal – Smart Industry – which demonstrates a firm commitment to support the industrial sector's transition to services-oriented production and business.

The digital transformation of manufacturing makes servitisation both increasingly *possible* and *increasingly profitable*.

Increasingly possible: The ability to use sensors on e.g. machinery and vehicles enables a new way of measuring usage, which can be further used to set the right price for an as-a-service concept. New digital platforms also enable companies to manage the global supply networks required to deliver complicated, integrated services, as well as scaling these offerings.

"There are significant new opportunities to be proactive in service sales today, due to the way digitalisation enables us to measure things."
CEO of medical technology company

Increasingly profitable: Digital platforms and sensors coupled with monitoring systems, analytics tools and technologies such as artificial intelligence, allow the manufacturing industry to offer services with increasingly high value. ABB and Scania are typical examples of companies that have equipped their machines with sensors to transmit data on how their products are being used – data that can be used for insight-driven preventive maintenance, fleet management and self-diagnostics. Another example is 'digital twinning', which has potentially enormous implications for the high-tech sector. Connectivity via sensors enables companies to identify the essential parts of a product, digitally recreate an exact image, and display it in real-time. 'Evergreen' products that can be continuously updated once they have been launched enable high-tech companies to keep refining and updating their products with new features online. Combining these types of services with products creates an offering far more valuable to customers, which can make selling services increasingly lucrative.

"Our digital services can for example include helping a customer analyse data from connected machines, rather than just selling the data."
VP of mining and infrastructure equipment producer

Digitalisation thus drives the new wave of servitisation in manufacturing, but the business reasons for transitioning to an as-a-service model are the same as when Rolls Royce's Power by the Hour programme was launched in the 1960s. Specifically, there are four key benefits that make servitisation relevant for manufacturing companies.

1 LONGER REVENUE PERIOD AND PRODUCT LIFE-CYCLE

Selling a product as-a-service, while more complicated than selling a product, creates greater potential for profits. As the service level in many cases is higher than the service accompanying a product sale, companies can charge a higher price which can lead to better margins. This can also bolster long-term commitments from customers and facilitate a steadier flow of revenue.

An as-a-service concept also enables providers to sell access to or rent products several times. Providers can, for example, refurbish and update machines and rent them to other customers over and over, or eventually sell it for purposes with lower performance requirements. Finally, when the product reaches its end of life, the company can recycle it and use the recycled material for new products. This ensures resource efficiency and stops the product from ending up on the second-hand market where it risks competing with the firm's new products. This 'circular' way of thinking may also increase the life-span of products, as the potential to use or sell a product several times increases incentives to create long-lasting products.

We take great care of the batteries we rent out when they reach their end-of-life. We take them back to recover the material, and can in some cases use the batteries for other purposes that have lower performance requirements.

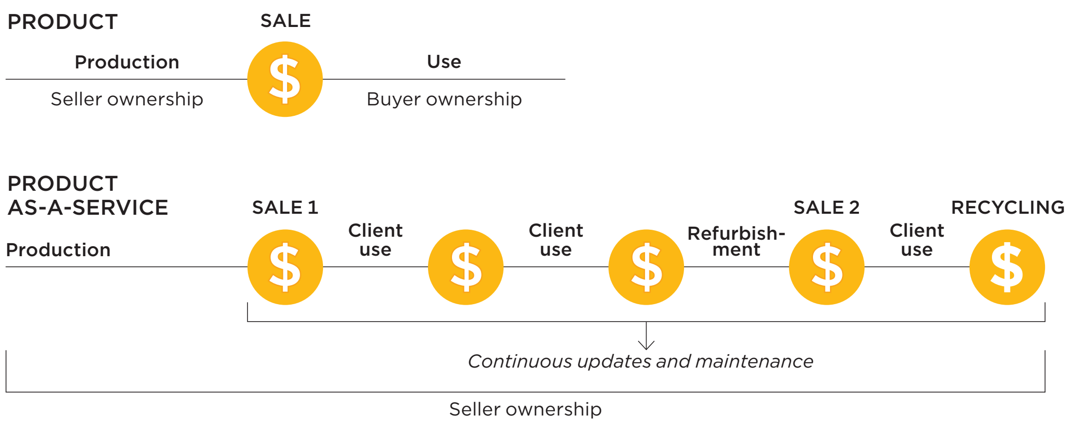
VP of mining and infrastructure equipment producer

2 DEEPER AND MORE LONG-TERM RELATIONSHIP WITH CUSTOMERS

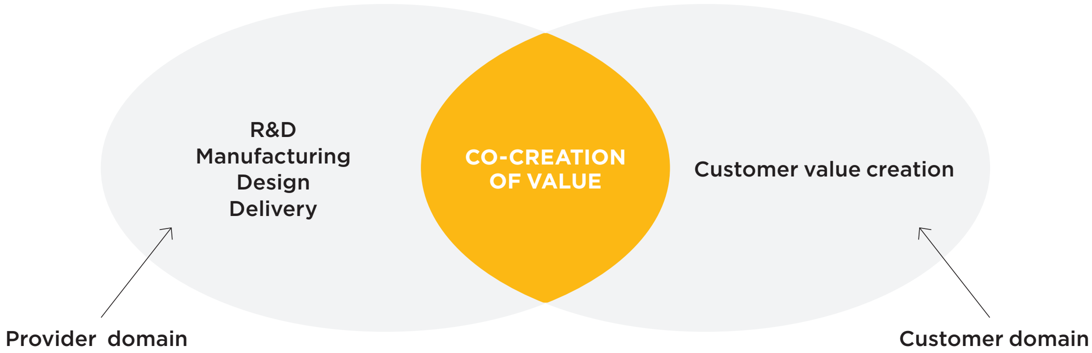
Servitisation brings customers and providers closer together. Provision of services required flexibility on the part of the provider, and continuous updates and improvements to support customers based on their unique conditions. This requires a high level of insight into the customer's needs and often access to customers' premises, machines or other infrastructure. Active participation from both the provider and the customer is required for this process to be successful. This increased interaction paves the way for customisation and personalisation, as well as greater flexibility for both customers and providers. The process can be described as one of co-creation of value, in where the provider and customer (as well as partners such as suppliers, dealers and distributors) work together to create value. Digitalisation further strengthens the ability for partners to co-create through platforms.

The increased interaction between provider and customer can create deeper and more long-term customer relationships. In some cases, an as-a-service offering means that manufacturers have direct contact with end customers instead of intermediary partners, which can also strengthen relationships.

PRODUCTS VS SERVICES:
A comparison of the sales process and product life cycle



CO-CREATION IS KEY TO SERVITISATION



Source: Adapted from Linköpings Universitet – Industriella tjänster och tjänstestrategier, lecture notes, 20 September 2017.

3 A WAY TO DIFFERENTIATE

When companies face fierce competition, they may use servitisation to differentiate their offerings. Given that much technology over time is driven towards componentisation, i.e. standardisation of supplies such as components, servitisation increases the ability of providers to distinguish themselves. When competitors can offer advanced technologies and quality at significantly lower prices, differentiating with superior lifecycle value may be a powerful strategy. Again, digitalisation further enhances this possibility by making it possible to add high-value digital services and analysis to the portfolio.

4 ENABLING INVESTMENTS

With an as-a-service model, customers can pay a variable cost instead of an inventory cost, which enables them to make large scale investments they may not otherwise afford or want to pay for. This set-up can also be a flexible and predictable way of payment for customers, where they pay a fixed cost per use, or per unit produced, instead of recouping the total cost of a large investment on a potentially uncertain amount of production.

You pay for what you use each month, which is very flexible for our customers.
VP of industrial tools and equipment company

Moving toward services can be a way to enable investment in times of economic downturn. When capital is scarce and companies may be reluctant to make investments, an as-a-service business model can ensure sales continuity. Of course, this involves a larger risk for the provider, which must be reflected in the pricing model.

EXAMPLE OF ENABLING INVESTMENTS

Epiroc has been developing a flexible payment service for the use of batteries *(battery-as-a-service)*. As the mining industry switches to electric powered machines, firms need to change old fuel sources to batteries charged with electricity. However, an electric powered machine has a high price tag. Customers are sometimes reluctant or unable to finance such an investment up-front. With Epiroc's as-a-service solutions, clients can make the necessary investment while keeping the cost down initially and converting an otherwise fixed cost into an operating cost.

SUCCESS FACTORS WHEN MAKING THE SHIFT

Moving from product-focused sales to as-a-service requires several changes to a company's business model. While digitalisation facilitates the transformation and unlocks the potential to make new profits, considerable efforts and resources are required.

We have identified six key success factors when moving from a product to a service-based business model in manufacturing. These are particularly relevant when introducing and scaling up an as-a-service approach globally.

1. Find a viable pricing model
2. Identify committed customers
3. Secure the right competences
4. Establish local presence
5. Build and manage your network
6. Target the right market

1 FIND A VIABLE PRICING MODEL

The way companies set prices and charge for their services will determine if they make money from as-a-service concepts or not. Understanding how to set the price should be one of the highest priorities and may require extensive research.

The price of the service must firstly reflect the generated value. Digitalisation adds value to services, and as value creation shifts from the product to the service. This must be reflected in the price.

"Agreeing with the customer on what value is created by our solutions is the difficult part. For each individual solution, there is a dialogue about what we should measure and what we should get paid for."
CEO of medical technology company

The price must secondly reflect the higher risk for the service provider associated with guaranteeing performance. One such risk is of course that the product breaks or shuts down and that the provider must fix it, potentially on short notice. Another risk is that the provided product is not used by the customer, in which case a pay-per-use set-up can be costly for the provider. There is also a risk that the customer goes out of business during the contract period, which further drives up risk to providers. These risks should be factored into pricing calculations or managed in some other manner.

In response to theese challenges, companies need to develop new routines and customer agreements to calculate appropriate prices that balance risks and revenue-generation potential. This can include taking inspiration from pure service industries such as IT, telecom, banking and insurance. Bearing in mind that selling products on a use-basis involves the risk of products not being used, contracts should include incentives for customers to use the product, e.g. by offering both fixed and flexible payment part of a contract. For example, customers may pay a fixed fee for access to the product, and a flexible fee based on how much they use it. If the flexible fee is set to decline with increasing usage of the product, this incentivises usage.

"Our pricing models differ but generally consist of a fixed and a flexible part. For example, clients may pay a basic fee and for usage that exceeds a certain level."
VP of industrial tools and equipment company

Changing the pricing structure can be difficult, especially when it is at odds with customer expectations. Customers in manufacturing sometimes expect certain services to be provided free or at minimum cost, which can be problematic for commercialising services.

2 IDENTIFY COMMITTED CUSTOMERS

Selling as-a-service requires trust from both parties: from the buyer in that the provider will ensure performance, and from the provider in that the buyer will treat their products in a fair way. It is therefore easier to set or scale up an as-a-service offer with customers that have confidence in providers and trust their ability to deliver. An as-a-service set-up may require some experimenting during a trial period with adjustments to both service features and pricing. Customers may need education and training to understand the benefits of an as-a-service offer.

"We test this with some of our customers - not all. There must be trust in both directions."
CEO of medical technology company

3 SECURE THE RIGHT COMPETENCES

Service-based sales with long-term customer relationships are different from product sales with a short sales processes followed by after sales. As-a-service offerings tend, for example, to be more complex than traditional product offerings, and sales staff need to convey the value and convince customers of the benefits of paying a premium for service. Acquiring new sales skills or developing existing ones is therefore one of the more important steps for companies looking to develop or scale up their as-a-service portfolio.

"Sales competence is a scarcer resource for us than for example engineering skills. Our sales force must truly understand the customer's reality and how to support their business to be able to sell as-a-service. It requires more from them."
CEO of medical technology company

Analytics is also an important competence needed for selling as-a-service. Service providers must understand their customers' reality and match their offering with customer's needs and requirements. What and who do they depend on? What does their production look like? What will their demand look like in the future?

Switching to a service-based business model may require additional technical skills, perhaps even a larger IT team, as digital services are expanded. New product and operations platforms may be needed to support the new as-a-service supply chain, with connected tools and processes. Nonetheless, the companies interviewed in our survey, indicate that the need for additional technical skills is not as pressing as the need for increased sales competence in order to scale up or implement as-a-service offerings.

The increased use of service-based contracts will likely require more advanced legal competences, in order to set up long-term agreements and solve legal issues.

Finally, management needs to be dedicated and alert to the changes needed. Going from product to service-based sales may for example affect performance metrics, when value increasingly comes from services and intangibles rather than from product sales. Resources also need to be allocated to activities that harness this value. This may mean a shift from what the company historically has allocated resources for, such as developing and owning hard assets, toward assets such as platforms and networks that foster interactions and co-creation with customers and suppliers.

4 ESTABLISH LOCAL PRESENCE

A challenge for companies looking to move into an as-a-service business model may be a lack of qualified service delivery partners in local markets. According to the interviewed firms, distributors frequently lack the resources and skill sets needed to successfully market and deliver as-a-service offerings.

"We offer products in many countries and have the ambition to sell services globally, but we are constantly challenged because we do not have competent dealers or service partners to support service sales globally."
From Parida et al 2014, Mastering the Transition to Product–Service Provision – Insights into Business Models, Learning Activities, and Capabilities

To mitigate this challenge, there are different strategies companies can take. One is to set-up a local presence in countries with attractive customer segments. Offering integrated product-services often means interacting with customers and resolving technical or engineering problems on-site which may require a local presence. As service-based business requires greater trust, using distributors is often a risk. By setting up a local organisation companies can maintain control and safeguard a higher level of service which may have to be delivered quickly and customised.

Another way to tackle the lack of local resources and skills is to attract and retain the best distributors, based on the distributors' perceived ability to offer as-a-service concepts. New routines can be introduced to upskill and build the service delivery competence of the local sales representatives.

5 BUILD AND MANAGE YOUR NETWORK

Once a trusted network has been established, firms need to carefully manage relationships with existing partners and potential new ones. Silo-ed organisations will fare worse than those who can harness cooperation across their ecosystems. As stated by the purchasing manager of Volvo Cars: "As much as 70 percent of the value in a Volvo car is added by the company's suppliers. That is why choosing the right partners and preparing for the future together is so important".7 Partnerships can also mitigate the need for keeping competencies in-house.

6 TARGET THE RIGHT MARKET

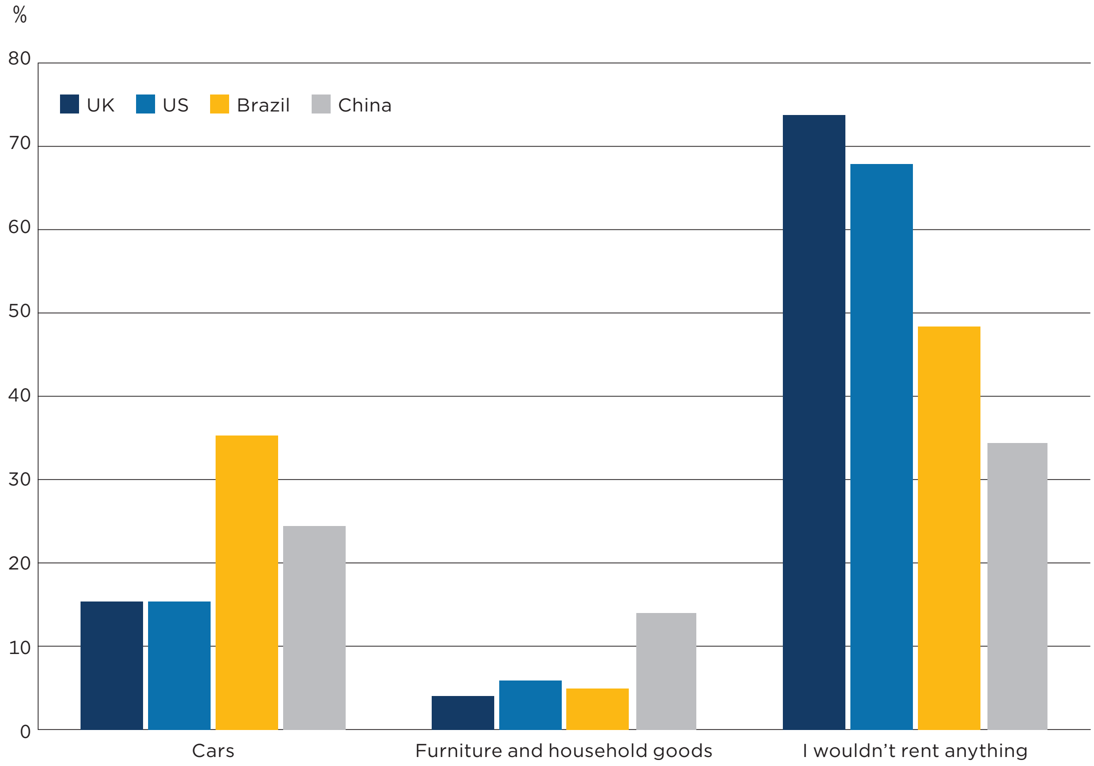
Customers in some markets may be more receptive to as-a-service business models than others. According to some of the interviewed firms, the US and Europe are the most mature markets for as-a-service sales, as the pay-as-you-go mindset is well-established. The high level of digitalisation in these regions is also a contributing factor.

"90 per cent of our vehicles in Europe are connected – clients here see a value in connected services."
Digital specialist at transport company

Additionally, there are cultural differences to consider, including the local perception of ownership. These questions may play into the decision of customers to use as-service concepts in different countries.

An example from Asia was given by one of the interviewed firms. The respondent explained that, as ownership has a high social value in Asia, owning products is seen as a status symbol. This was hindering their a-a-service sales in the region.

SHARE OF CONSUMERS WHO SAID THEY WOULD RENT CERTAIN ITEMS INSTEAD OF BUYING THEM



This, of course, is not true for all customers in the respective regions. Additionally, the situation is rapidly changing in some regions. In China, for example, *consumers* are well ahead in terms of accepting service-oriented models, as shown in the figure below. This could quickly affect business-to-business as well. The respondent giving the Asian example also explained that their largest potential for expansion is in Asia, and that they are confident that their as-a-service offering will grow in the region.

In-depth analysis of potential customer's willingness to opt for as-a-service solutions is needed before considering entering new markets or scaling up on existing ones.

SERVITISATION MAY NOT BE FOR EVERYONE

Altogether, the transition to service-oriented business models, as opposed to product-oriented ones, is not without challenges. Guaranteeing a function or result involves greater risk than selling a product, but also allows for greater chances of profits.

The transition to as-a-service is also expensive. From the outset, companies must be realistic about the scale of investment that will be required. There are a lot of costs involved in setting up a servitised organisation, especially on a global scale, which can make it prohibitively cumbersome for small companies. In-depth analysis of customer needs, pricing strategies and market targeting requires resources. Training of personnel, especially the sales force, may require considerable effort.

Finally, firms need to consider the impact of keeping products in their ownership for a longer period. As cash flows change when a product stays in the ownership of the provider for a longer period, its need for capital increases and so does its financing needs. Access to financing usually differs considerably from market to market. The higher liquidity requirements on the firm can also affect it market value. When going from a product to a service-oriented business model, companies need to address these issues and others.

For some guidance, consider these questions before ramping up your servitised offering globally:

– Have you set a pricing model for a servitised business model that works for your segment(s)?

– Are you aware of which segments and/or customers to target with your servitisation offering?

– Do you have the right capabilities to develop, launch and scale up your servitisation model?

– Are the local infrastructure, resources and partnerships in place to enable you to deliver your servitisation model?

– Do you have the right sales channel setup to be able to scale your target markets?

– Are you looking to scale to existing markets and customers or reach new markets and customers?

AS-A-SERVICE WILL GROW, BUT COMPANIES STILL NEED TO SELL PRODUCTS

Firms with capital and quality products can create a competitive advantage by selling services instead of products. However, they will likely maintain both business models: selling products the traditional way as well as products as-a-service.

A study from 2014 found that industrial firms tend to evolve their servitisation strategies gradually, beginning by offering basic services and then moving toward increasingly advanced and high-value-adding services as they gain experience and capabilities.[8] The authors also conclude that companies tend to layer on new, complementary services rather than abandoning standalone product offerings as they move up the scale of service-oriented business models.

Perhaps the most important take-away is this: companies do not have to, and seldom do, adopt a 'big bang' approach to their as-a-service implementation. They can run two-speed operations, with a separate as-a-service business unit alongside their traditional business model. The latter can be scaled down through a phased approach to minimise the risk of enterprise-wide disruption.

The world is changing and companies with it – those who keep up have significant opportunities to capture additional revenues from services, especially digital ones. While digital technologies have been around for half a century, it is only now that they have become the core of almost every industry. As stated by Erik Brynjolfsson, director of MIT Center for Digital Business:

"The technologies are here and we're only beginning to glimmer and understand what the implications are or how we organize work, how we organize markets and the new kinds of inventions that entrepreneurs have for business models."[9]

NOTES

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