Servitization of business updated: Now, new, next

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Abstract

Coined in 1988, "servitization" has become the go-to concept for enhancing corporate competitiveness through value-added services. Over the years, the notion of value-added services to create a competitive edge, enhanced customer relationships, and market power has changed, facilitated by ever advancing technology. The authors look at this progression, spanning from the 1970s to the 2020s and into the future, with examples in both a B2B and B2C context. This is intended to assist both academics and practitioners in positioning themselves and taking steps to advance their research, thinking, and strategies.

1. Introduction

1.1. 1970's into early 1980's: when (only) the core counted

"Servitization of business," coined in 1988, was published in EMJ and is one of the 20 most cited papers in the journal in the last 40 years. The object was to demonstrate the increasing importance of value-added services as opposed to just "core" products (e.g., solar panels) or "core" services (e.g., home loans) in generating market competitiveness (Vandermerwe & Rada, 1988). Up until then, competitive thinking was that to be ahead meant to keep improving the "core" business. Customer relationships were mostly transactional (about the sale itself), with the "core" products or services improved by adding new features, or using price as a competitive weapon by industrializing processes.

But with globalization, fixation on the "core" became all too easy to copy, and for many brands this led to reduced market power and shrinking margins, often in a downward spiral.

Thought leaders and practitioners began to realize that the only way forward, if they were really to get and stay ahead, was to create more value for customers. And this could only happen through new and ever-increasing value-added services, a concept that became known as servitization (Vandermerwe, 1993a).

In the original paper, the authors put forward a servitization value-adding bundle. This consisted of the "core" business, services, knowledge and know-how (built from data), and support and self-service. We maintain that this bundle has remained and will remain valid in putting enterprises and brands out front, but ever advancing digitization has enabled new ways of doing things for and with customers, unimaginable in previous eras (Gebauer, Paiola, Saccani, & Rapaccini, 2021).

The elements have evolved in the following ways:

- *Core products and services* have become less important than the technology that makes them intelligent, or connects them to other products, to deliver more advanced services than single products or brands can.
- *Services* can be constantly and instantly improved and updated, thanks to ever advancing forms of artificial intelligence (AI), which makes learning infinite and ongoing.
- *Knowledge* and *know-how* from data about customers, now accessible and manageable in ever-larger quantities, are paramount in allowing enterprises to deliver relevant value for individuals, rather than segments.
- *Support* has become more prevalent in driving real-time value, throughout customers' experiences, with a large component increasingly digital and delivered in collaboration with customers and the crowd.

2. The servitization eras

In this paper we trace the progression of servitization from the 1970s (in which it barely existed) into the 1980s, when it gained momentum, over the decades and through to the present, projecting as well into the future. In Table 1 we divide servitization into the different eras, with the chart showing the shifting emphasis, the changed relationships between brands and customers, how this created new ways to sustainably compete, and the evolving technology that drove and continues to drive and facilitate it.

We also provide some cases of both business-to-consumer (B2C) and business-to-business (B2B) servitization, highlighting major themes and best (and next) practices of each era.

2.1. Early 1980s into early 1990s: it was value-added services that mattered

2.1.1. Services "after the sale is over" took off

We start in the 1980s, when the emphasis in servitization was ostensibly more support post-sale. Obvious to many was that the "sell–sell" mentality had to shift to offering customers more services once the sale had taken place. The most well-known example of this was Lexus, the Japanese car brand, the first in its industry to emphasize a post-sale servitization offering. Working with distribution partners to collect data about customers and their cars, it delivered an after-purchase service that created *the* most satisfied customers in the entire car industry at that time. Services included regular and proactive servicing of cars, new service centers offering substitute cars (which meant customers got to try new models), home pickups, dropoffs, and fancy customer lounges.

In the B2B automotive space, Volvo Trucks was at the forefront of post-sale services. It distinguished itself by putting engineers into its support service team, demonstrating that this extended customer relationships, and also started getting customers involved in the innovation process.

Table 1. Chart tracking servitization eras.

Timeline[a]	1970s+	1980s-1990's		Mid 1990s	2000s	2010s	2020s →
Servitization emphasis	Core – servitization not emphasized	Value-added services (VAS)		Customer experience (CX)/outcomes in new "market Spaces"			"Anything-as-a- service"
Competitive edge	Core business, either product or service	Post-sale	Solutions	Customer experience	Digital CX – integrated with ecosystem (including customers)	Mobile CX – data/access from anyone anywhere in real time	"Everything -as-a- service"
Customer relationship	Transactional	Relational		Connected, interactive, and personalized			Embedded
Facilitating technology		Computers	Computing	System integration & networking	Internet, Web browsers, platforms, E-commerce, and APIs	Apps, AI/machine learning, merging on- and offline, blockchains, etc.	Cloud
Case examples B2C		Lexus	SAS, Apple	Baxter	Amazon, Google, Farfetch, Philips, PayPal, Ticketmaster, booking.com	Uber, MAAS, Google Maps, NatWest, Discovery Insure, Nike, LEGO, Amazon Go/ Fresh, Coursera, Fitbit, Open AI	Bosch-Siemens, Zoom, Volvo, Spotify, Sky, GoCar
Cases examples B2B		Volvo Trucks	SKF, Canon	IBM, Volvo, SWIFT	Amazon Web Services (AWS), Salesforce, FlexClub	John Deere, SKF, IBM Food Trust, Portbase, Unilever, Ikea, Swisscom, Philips Healthcare' BBVA, Spotify	Ancanto, John Deere, Trane Technologies, DHL, Solaris, NatWest, Shopify, Swiss Techniplas Prime

[a]While we believe that there were distinct eras globally and we have tried to keep the chronological categories separate, readers will find that they may to some extent overlap.

To offer customers post-sale services, cultures had to shift, moving sales into a more consultative and relational role—the birth of account management. So involved did Lexus sales people become with customers that when they observed a customer out and about with a car defect (e.g., a broken light) they would stop them, offer them their own car, get it fixed, and return it to the owner free of charge. This servitization of their business post-sale that Lexus maintained led to increased customer loyalty and growing profits.

2.1.2. Services drove "solutions"

During this time, servitization began to be seen as more strategic and a way to change mindsets, with customers central to the business, rather than just the stuff that was made and sold. This morphed into "solutions," largely because computers had become mainstream and solving customer problems (whether complex or otherwise) had become a dominant and necessary part of the relationship.

More value-added services that delivered solutions, history would show, brought happier customers, staying for longer periods, and spending more, with less expense for the brand on customer replacement. Jan Carlzon, head of Scandinavian Airline System (SAS), typified this era with his upside-down pyramid philosophy, paving the way for the business world to understand that putting customers first required having a suite of innovative services and a relational approach. To differentiate the brand, SAS offered a variety of services to enhance traveling, which Carlson called "moments of truth" (Carlzon, 1987), such as picking up the customer from home, adding new lounge facilities, transfers directly from the lounge to the plane, passenger-pleasing services on board, rigorous attention to punctuality, transfer to hotels with built in personalized welcoming, and help desks (Vandermerwe, 1993b; 1993c).

For some B2B brands, it was obvious by now that enterprises that servitized to provide solutions got ahead. SKF, the Swedish bearings manufacturer, knew that making better and better bearings would not give them more marketing power in an increasingly price-competitive marketplace. Problems had nothing to do with the quality of its bearings. Customers had been buying, installing, and lubricating bearings badly, thereby reducing their lifespan, which was causing factory downtime, costing them dearly. This pushed SKF's top management into servitization, offering "solutions" rather than just bearings, including better buying, installation, and lubrication services (Vandermerwe 1990a, 1990b, 1990c). This changed the brand's pricing from charging just for the bearing to value-based pricing—sharing what could be saved through the brand's new solution proposition.

More services to provide solutions also meant that customers could do more things for themselves, that is, self-serve better. So at this time Canon, the Japanese printing company, pioneered the replaceable cartridge, which included drum, charger, toner, and cleaner, enabling unskilled people, typically the end users, to replace spare parts and do simple repairs themselves, providing quick and less costly printing.

Computing allowed the orchestration and coordination these new services offered. There was, however, a constraint. It was incredibly hard to integrate systems, and therefore enterprises like SAS and SKF had to provide value-added services themselves, in isolation. Which is what happened to Apple, which offered its "plug and play" version of servitization—

services such as operating systems, hardware, software, support, and so on—all of which worked beautifully together to produce a solution, but did not really work with anything or anyone else!

2.2. Come the mid-1990s: services mean outcomes and customer experiences in new market spaces

2.2.1. Services shifted value from "solutions" (problem-solving) to outcomes (results)

The big reveal by the mid 1990's was that the "core" product (or "core" service) was *only* a means to an end. And customers did not just have problems to solve—they wanted a more ambitious proposition that brought a real tangible result, or *outcome*. For market leaders, this meant not just gaining more market share of the "core" business (actually just share of product category, e.g., solar panels or home loans), but through value-added service, gaining share in a wider market space: the new outcome-based strategic territory (Vandermerwe, 1990d).

The health industry began to move from illness to lifetime wellness, using predictive and preventive service tools. Data-driven, using behavioral science, Discovery, a South African group (now in 45 countries, having impacted 41.3 million lives globally), servitized the health insurance model, for instance, with innovative services to help make people healthier in the *vitality management* market space. For SKF, the switch was to move from the "core" business of bearings to its chosen market space, namely, trouble-*free operations*.

To add more value-added services to get an outcome not only was strategically savvy because it differentiated brands, but also became the basis for new servitization-based missions, values, and skills that would propel corporations through the 1990s and make them market leaders. It meant getting and keeping more customers for longer periods, higher shares of existing customers' wallets, and potential new revenues. It also resulted in greater data sharing for mutual gain and shared value.

Companies had to expand into value-added services to produce an outcome in their chosen market space or they would lose out to others who did, and in the process marginalize customer relationships and the potential for new revenue.

One of the great illustrations of this demise came from IBM which ended in huge losses hitherto unseen. It failed to move from its "core" business (mainframes and computers) to value-added services, such as consulting or software, to deliver customer outcomes. As they argued for sticking to the "core" rather than servitization, others, such as Anderson Consulting (now Accenture), Deloitte, and Microsoft, entered their strategic territory and did what they failed to do, grab new service opportunities.

Forced to change, IBM did eventually become a servitization leader in the *cognitive computing* market space, which was and still is intended to assist financial and medical decision-making, with the actual making and selling of the computer hardly featured in its value proposition.

2.2.2. Services delivered outcomes throughout the customer experience

What soon became clear was that customers' outcomes happened over time rather than in isolated transactions that happened only at a moment in time. Executives who saw this began to create strategies fueled by servitization that produced a *customer experience* rather than just a series of transactions. (Vandermerwe, 1993d).

Baxter (UK) was a case in point. In the late 1990s, instead of just making and moving renal bags (the product) for patients, management took the unusual step of defining its market space as *renal wellness.* It sought through servitization to become indispensable to customers at each stage of their experience, in extending their lives from a couple of years to 30+ years, the outcome. The challenge was what value-added services to provide in order to both give and get this lifetime customer value (Vandermerwe & Taishoff, 1997).

The servitization bundle it created consisted of all the value-added services a customer needed to obtain a better and longer life. This experience began with pre-treatment, when decisions had to be made about what to do. From its research Baxter knew that customers lived longer (and cost less to government, hospitals, and health insurance), if the disease was caught later rather than earlier. So pre-treatment, it provided mobile units and self-diagnostic kits to get early diagnosis, early referrals, and working with doctors and hospitals, better treatments. Option, and plans for the individual (instead of an average patient). During treatment the object was to keep the patient alive at a high quality of life, including providing machine installation in homes, patient training on how to use domestic renal machines to get the best results, family consultation, machine programming to monitor progress, connection and communication with doctors remotely, 24/7 emergency services, blood monitoring, bag disposal, and the delivery of complementary drugs and special services when patients were away from home. Post-treatment included Baxter's servitization move to late-stage treatment at home, which was previously offered by the competitor only in hospitals, culminating in Baxter's R&D work to accelerate the development of renal organ transplant.

2.2.3. Elevated services were built by networked partners

Thanks to the beginning of networked technology, data could now be collected easily to build a knowledge base across enterprise brands and countries and best practice disseminated with more precision, faster, and at scale. This helped enterprises such as Baxter not only to build best practice know-how centers to get ahead, but also to stay ahead. And to expand what it knew from its experience in the United Kingdom, where it started, into Europe and then the United States.

Servitization could be done together with networked partners, because systems could be integrated. So increasing amounts of value-added services that could be offered to customers resulting in an even longer and stronger experience for them and a competitive edge for providers. B2B Volvo Trucks discovered that the average utilization of trucks in Europe was only 50%. They set about developing an integrated system with partners to provide reduced fleet cost per mile (outcome) rather than just supply a good vehicle. Wireless and mobile communication, connected with IT systems, made fleet monitoring throughout the customer experience possible (e.g., route planning, breakdown prevention and support, reports on gasoline prices while driving, preventative maintenance, and speedy assistance with breakdowns).

The object, then, was to use the technology to produce an outcome with others in the network across products, silos, and enterprises. However, the system was still closed, emanating from one player or source. SWIFT, in its servitization breakthrough, created such a system, interoperability of payments, which for the first time worked across countries and banks worldwide, offering one seamless payment experience globally.

2.3. The 2000s arrive: with Internet, e-commerce, and platform takeup … and the "digital customer"

2.3.1. Services drove e-commerce

The world changed in 1996 when Amazon sold a book on the Internet (Vandermerwe & Taishoff, 1998). First, thanks to big data, self-service via the Internet now began to dominate the servitization bundle. Second, customers could interact with brands in real time. No longer did they have to go to the store or branch—it came to them. And third, people began to be treated as individuals by brands, because with data, their preference profiles could be matched to those of like-minded customers, to help them make informed choices.

By the 2000s, enabled by the Internet, web browsers, e-mail, and chats, brands and customers could connect and interact with each other digitally, using a universal set of standards and protocols, which drove uptake. This one global infrastructure propelled an ever-growing e-commerce wave, fueled by servitization. Value-added services, support, and self-serve enabled individuals to choose, buy, and pay for goods and services, get them delivered, and return them via the net. And increasing numbers of brands sold their goods and services digitally (one customer, one brand), a formula Amazon kept perfecting.

2.3.2. Services delivered anything from anywhere with platforms

But even more sophisticated, and becoming mainstream in this servitization revolution, were platforms. This was different (one customer, *many* brands). At a global scale. With platform technologies, brands matched the demand of an individual or market of one to supply the best product or service out of *many* potential brands, specifically for *that* customer.

Anything that was anywhere could be found and compared by customers digitally and delivered to them in record time. Even in high-end fashion, buying this way became increasingly accepted as the self-service norm. With enough data provided, customers could make expensive choices about clothing that could be obtained anywhere in the world at any time, from virtual customers facing marketplaces, and returned just as easily. In the upper market echelon, Farfetch, which started in 2007, was one such example, and by 2022 it had over 3 million customers in 190 countries with high-end items from more than 50 countries, delivered to customers' doors in record time.

Platform technologies, together with Application Programming Interfaces (APIs), changed servitization in several ways:

2.3.2.1. Services became layered

Services could be built on top of other services and data easily shared and aggregated between systems. But what was now different was that instead of the integrated system being built by one player (think SWIFT), APIs allowed systems to integrate across players, all of whom could plug into a bigger system, rather than be trapped in one brand's silo.

This meant that customers could get a broader experience that came from several players in one ecosystem. Google Maps wasn't really a success until a third party showed how it could be used to locate real estate or a desired destination on a map. Amazon understood this and formed Amazon Web Services (AWS) to help other parties build websites as good as their own and so increase the amount and assortment of goods customers could seek online.

Thanks to this API layering, entrepreneurs and developers now could enter into ecosystems and build their own service innovations, to fill gaps in the servitization bundle. A great example is FlexClub, a then South African startup (now also in Mexico), which was conceived because 70% of all Uber drivers could not get loans from banks to buy cars. Through crowdfunding, people could invest in one or more Uber cars, managed and serviced by the brand. There was no easy, safe, universally trusted way to pay online until PayPal found and filled the gap, providing a payment service that increased simplicity and security for customers buying online, enhancing and integrating the customer's digital experience.

As the Internet, platforms, and APIs dominated the servitization of enterprises in B2C, the same was happening in B2B. Different systems that previously could not talk to each other now could. Information from different sources inside and outside an enterprise could be packaged and delivered to the customer in a much more integrated fashion. Some understood and acted upon this, mostly newcomers; others did not and remained siloed.

2.3.2.2. Services connected products interbrand

With APIs, servitization also meant connecting products and services interbrand. Customers now could have seamless experiences across brands, rather than separate experiences with each brand. For instance, Philips Hue, a smart light system, could connect to Google's home security system or a home cinema to adjust lights if and when needed according to a customer's own preferences and settings. In financial services, open banking, API enabled, meant that customers could collect and view all their financial products interbrand (independently of provider) on one single interface.

2.3.2.3. Services made B2B customers competitive

With APIs, B2B enterprises could compete better by offering digital services to customers to make *them* more competitive. Salesforce was a good example of the use of APIs at scale to servitize its offerings. Its enterprise customers could get interconnected services (which now generate more than 50% of its revenue), linking data previously not combinable, so *they* can become more competitive (Iyer & Subramaniam, 2015). For example, if a bank's customer started an application for a loan and then stopped, Salesforce could connect to the bank's system, register that a customer had left the process, and remind the person to go back, prompting the next step and the most suitable channel. When the customer finished the application, the bank could link its system to Salesforce so that it could add that customer to an audience type, which would inform the bank how that person was likely to react to what media or message.

2.3.2.4. Services grew ecosystems

The bigger the ecosystems grew, the stronger servitization (i.e., more value through services) became, and the more ecosystems grew, especially when the technology and APIs were finally able to link all these providers. Now ecosystems could now form and perform as one system. Players eitherwere brought in at scale as partners (loosely, formally, or as an acquisition) or could get in as entrepreneurs and developers did, who spotted an opportunity to offer more value through services.

As we saw from Amazon, the more players it added, the more value it added and the more enticing and powerful it became. However, there was a lesson to be learnt. When Amazon used others, say couriers, to deliver books, it retained the customer connection and interaction for itself. When there was a problem—for example, goods didn't arrive—the customer contacted Amazon (not the courier) and it was Amazon that rectified the issue.

An integrated customer experience via ecosystems, delivering a servitized set of value adds, became the order of the day. Ticketmaster, for instance, offered insurance services in case customers got ill and could not go to a concert. And displacing traditional travel companies were brands such as booking.com

in the Netherlands, who kept adding players to servitize more and more, as in allowing customers to buy an airline ticket, book a hotel, do car rental bookings, buy travel insurance—and even order child care—on a single website (not a big deal now, but then it was).

2.4. With 2010 Come the big game changers: smart mobile devices, apps, and the “anywhere customer”

The next major shift was that servitization was about enabling customers to access services through mobile devices, thereby connecting and engaging with brands from wherever they were, in real time.

A summary of the major changes is as follows:

2.4.1. Services were accessed increasingly through apps

Perhaps most significant to the servitization movement was that value-added services were increasingly accessed via mobiles, in people's pockets! By the end of 2019 there were more than 8 million apps globally, with over 200 billion downloads (TechCrunch, 2020). The mobile, or the smartphone, became the interface and connection point between the customer (B2C and B2B) and the brand. With an app, consumers could chat to their bank managers, buy and sell new and second-hand goods, hail a cab, get a mobile ticket for traveling or a concert, gamble, watch news, monitor a manufacturing process, trade stocks, share and consume content, and so on. Without an app (that was being used) or a mobile presence, brands risked becoming forgotten.

With access available from anyone anywhere, customers were not just able to get new value-added services; many reported that what they got was actually better. For example, banking apps generally have much higher net promoter scores (NPS) than their branch networks (Bain, 2018). mHealth, which took off during this time, and continues to grow, worked with synchronously interactive information and communication technology such as videoconferencing or chats via mobile phone. With a combination of virtual services and support from local health workers, global experts and pharmacies, and remote self-serve, more patients were getting better results quicker, across the globe, and there were reduced errors, numbers of referrals, repeat visits, overmedication, and therefore costs (by 70% in some areas) (European Commission, 2019).

2.4.2. Services became real time

As a result of servitization largely going mobile, completely new competitive areas opened up, enabling brands to compete better by getting to customers instantly, in real time. Uber and Google Maps epitomized this. Google Maps changed the way customers accessed and used cities. No longer did they have to battle with paper maps or drive around aimlessly until they found their way; they could use the app to make decisions about where to stop and what to do, based on reviews and recommendations wherever they were, instantly. With one click, an Uber customer practically anywhere in the world could get or share a ride.

Discovery Insure (part of the South African Discovery group) got beyond selling car insurance and into the *great safe driving* market space. If there was a sudden change in weather conditions that would impact a driver, requiring an adjustment in speed or style, it could immediately relay this feedback to avoid an accident. Because it tracked user cars in real time, if a driver was in trouble and needed help or was in an accident, the brand got to them instantly.

2.4.3. Services merged on and off line

Online and offline services began to merge during this time. The store was still *a* channel but not *the* channel. It became more of an extension of the customer's experience. Servitization meant building a bundle that accepted that many customers were searching on the Internet before they bought, to learn from information and reviews. They compared products and brands online, checked specifications, decided on options, visited the store, branch, or showroom, made a choice, paid either on or off line, then collected or had goods delivered on- or offline, and finally did their own reviews in a cycle of reintegrative foot and finger steps.

NatWest moved to video banking instead of just face-to-face meetings in branches, offering customers chats, advice, and support 24/7. Nike offered customers the opportunity to train virtually with other customers and allowed customers to choose goods online and put them into a locker in its nearby physical store to try on later. Lego moved from paper-based instructions to online help for children in order to facilitate their virtual constructions and add variations that no hard packaging could do.

On the Amazon front, the future was now about bricks and clicks, launching checkout-less grocery stores (Amazon Go in the United States and Amazon Fresh in the United Kingdom). Once customers got onto the store, services were all digitized via its app. Customers did not have to take out a wallet, only tap their phones once, to get in at the entrance, and after that the technology tracked anything taken off the shelf, which was automatically receipted and paid for, with an option to get those items delivered at the customers' homes in the future.

2.4.4. Services delivered virtually offered cross-brand choice

Consumers now had more choice through servitization and were no longer locked into silos or single brands. Coursera was founded in 2012, with the vision of providing access to life-transforming learning experiences to consumers around the world. Today, a massive global online learning platform brand, it can connect to anyone, anywhere, and provide services to enable customers to access online courses from different universities around the world, which can be stitched together to form a portfolio of learning to suit individuals, depending on their professional roles and the jobs they are engaged with. This, alongside micro-learning certifications from various sources, suddenly meant that services could bring consumers from anywhere any skills they wanted to acquire, rather than their having to do an entire course or degree from one place.

Skills could be learnt from a variety of sources, such as YouTube or TikTok, with a mobile device, in the learner's own time, or even in real time as and when a job needed to be done, in micro bites.

2.4.5. Crowd-based services accelerated

With more people connected remotely via mobile devices, it became increasingly easy to match people who wanted something with people who had something to offer.

Thus, the crowd began to be used by brands to access freelancers (people with spare time) to act as providers of value-adding services.

This model of digitally managing a vast and fast crowd-based field force, using mobile technology and apps, gained traction quickly. It increased speed, decreased cost, opened up a wider geography and a bigger ecosystem pool for the brand, increased capacity with better service turnaround times, and improved productivity and competitive prowess.

First in was food and packaging delivery, where nonprofessional locals were increasingly being used as couriers in fulfilment. But others soon followed. Ikea, which had excelled by pulling customers into stores, now used 3D and digital technology to enable them to make decisions about home decoration from anywhere and buy online. This meant that the brand had to buy TaskRabbit in 2017, a freelance digital platform thath matched people at home who could deliver and assemble things with people who would have gone into an Ikea store to do all these tasks themselves, but now were buying online and needed delivery and assembly support services.

Servitization enabled the crowd to be used for simple as well as complex tasks, such as in industry for installation and repair of products or equipment. Swisscom, one of Switzerland's largest mobile service operators, used a crowdservice ecosystem to build a real time on-demand field force in maintenance and repair, with stellar results. The brand was able to get rid of the fixed costs of a maintenance department, which it could pass on to its five million strong B2C and B2B customer base, who then got services quicker—50% of the time responses an hour—resulting in customer churn being dramatically reduced, and customer satisfaction up, all within months of launch.

2.4.6. Services got smarter through artificial intelligence

Through AI and machine learning, intelligence could be obtained from the crowd, building more and more knowledge to enable brands to offer services never before possible. Discovery Insure used machine learning combined with its telematics to offer value-added services that got people to change behavior and drive better, incentivizing and rewarding them when they achieved their goals. It built this servitized intellectual property in South Africa and then took it to the world.

Philips Healthcare provided scalable precision medicine that used data and machine learning to build global servitization intelligence, which it then delivered locally to suit unique individual experiences for the chronic and acute diseases in each country.

With AI, servitization made services more predictive and preventive. SKF used big data and algorithms, learning from millions of bearing experiences to offer services that knew what conditions caused damage in sectors such as wind turbines and the railways, industries where its product was instrumental in machines functioning. Through collective updated intelligence, which continuously came from the system, SKF anticipated potential problems, forestalled them, and extended the life of bearings by having change-outs only when required, which was often after the average interval, saving customers large amounts of maintenance costs.

Enabled by AI, servitization became ever more accurate than any human could accomplish. Spotify, which learned how to predict what a person might like with astonishing accuracy, for instance, relied on feedback from that person and like-minded people—that is, intelligence obtained from the behavior of the crowd.

With artificial intelligence there is no end to what services can do. Take for an example Microsoft's Open AI ChatGPT, which has gone from searching and finding information to generating content in real time, based on an individual customer's request.

2.4.7. Services genuinely personalized

Because mobiles are tied to individuals, brands could collect data and become even more connected to customers and so offer really personalized services.

Accuracy started to include being able to adjust recommendations according to customers' moods and the occasion, which BBVA, a Spanish bank that handled millions of callers remotely a day, for instance, did. It constantly learnt how to detect sentiments and reactions and so changed the responses of its bots to suit markets of one. Spotify's algorithm learned how to change its music recommendations, depending on at customer's mood and the time of day or occasion.

MAAS, the Finnish “mobility as a service” brand, which surfaced in Finland in 2015, now in several countries (including public transport leaders Japan and Singapore), is a role model for personalized servitization, based on constant learning. It delivered the first single digital interface, multimodal service, integrating private and public transport into one seamless travel experience. It learned on a daily basis exactly what each person's agenda was daily and what options there were for them to get to their destinations, depending on the various models of transport available when needed and personal preference. Discover Insure can gear its services to individuals, warning them, for instance if their cars are stolen due to a different driving style, or whether they can anticipate a pothole or tire pressure problem on their particular routes to or from home.

On the B2B front, the self-driving John Deere tractor could plow fields, plant crops, and avoid obstacles, depending on what was happening at that moment in time on that piece of land. With cameras, sensors, satellite imagery, and AI applied from big data, services were personalized for each farm, for each condition, for each square meter of each farm. The farmer did not have to be there to do the work. All the services were delivered by technology and accessed via a smartphone and an app. And the result was better crop productivity (outcome), less effort, lower cost, and less environmental damage.

2.4.8. As services learned, brands became undisputed leaders

Learning never ceases as long as there are interaction and data capture. And data capture should never cease if it is used to give customers value.

Amazon's virtual assistant Alexa is said to have acquired more than ten thousand skills, such as home automation, shopping for food and fashion, bookings, and things to do in the home, by capturing data at every interaction with customers. And the more time it spent with customers, the more it learned, the smarter it became, and the better it got at knowing each customer better than anyone else, setting its services and its brand ahead.

Increasingly accessed through mobile devices, brands could also deliver these AI based value-added services anywhere. Alexa's presence moved from homes to cars, ensuring increased interactivity, scale, and competitiveness. Fitbit used mobile devices to collect data on each individual in real time, wherever they were. It tracked each person's steps, what exercise they did, heart rates, sleep patterns, and weight so it could communicate, immediately progress in real time, and identify the changes that were needed. With every interaction, new learning took place, and with each unit of ongoing learning, services could be updated, setting up barriers to entry, making the brand an undisputed expert.

2.4.9. Technology-driven services changed the economics

The more the servitization compendium was technology-based, the more cost-effective it was to expand value-added services into other markets or segments. In the case of Fitbit, its expansion into health services for companies, making employees more energetic and productive, was a no-brainer. And in the Discovery Insure case, getting rental vehicle drivers to improve driving and reduce damage and accidents, which is what they did with Avis in the Netherlands and elsewhere, was a natural extension of its servitization model.

Not only that, but expansion into other countries could be done speedily, as happened with Discovery Insure when it went into France, the United Kingdom, and then Saudi Arabia, which took four months and would have been even quicker if there had not been language issues.

Other changes to the economics include the following:

- Investments in the technology to deliver AI-based value-added services became an asset to be leveraged over time, to scale more customers and get more share of wallet per customer, *not* an expense that had to be amortized quickly.
- Once the investment was covered, scaling could be done at high speed and low cost, *not* requiring new setup costs, and the marginal cost of this scaling, that is, the next service, the next customer, the next country, was low and kept getting lower.
- Because data and learning (both of which lead to knowledge and know-how), the major ingredients in value-added services, were infinite, *not* finite, knowledge and know-how grew as they were used rather than being depleted, and therefore it cost less to get the value that pushed brands ahead.
- The more brands used data to produce value through service for customers, the more, *not* less, customers were willing to share data, which led to even lower production and delivery costs.
- With technology and social media, customers, *not* just paid media, became part of the servitization "scalesforce" (Vandermerwe & Erixon, 2021, pp. 282–288), providing content, advocacy, and promotion, further pulling costs down.

2.4.10. Blockchain services offered transparency and traceability

Blockchain technology emerged during this era, which enabled the increasing numbers of customers who wanted information on the origin of what they were buying to get it. Servitization was extended to offer transparency, authentication, and traceability services.

In food, for example, customers wanted to know not just the nutritional value of food, but also how animals were treated, how plants were grown, where the food was produced, by whom, and with what ingredients and storage practices. This took servitization to yet another level, where new data and knowledge stretched throughout the value chain, known, verified, and communicated to retailers and consumers.

Research revealed that this trend in food was global, and, in many cases, customers were prepared to pay more for this service, for instance, for Norwegian fish (IBM, 2020). IBM Food Trust, which was a forerunner in this practice, with its various suppliers, retailers, and logistic providers, used data-based services to generate new insights such as roadblocks, fraud, or contamination, to ensure timely recall, safety, and the elimination of pollution and waste.

Value-added services in logistics have increasingly been centered around this notion of transparency. The Dutch logistics company Portbase was powered by trusted blockchain technology to take data on total product visibility from origin to destination, not only to companies, but also to port authorities.

Through blockchain, as a way to compete better, servitization has also been extended to provide environmental data to B2C and B2B customers, to try to rectify damage to the planet and communities. For instance, mobile geospatial analytics, collecting geolocational data to monitor the growing and processing of palm oil (a product used in everything from chocolate to shampoo), whose high demand is said to have led to the destruction of forests and wildlife across thousands of supply chains spanning millions of hectares, consisting of farms, refineries, and processing plants in South Asia, was used by Unilever to track and ensure correct practice.

2.5. And 2020+ brings the cloud: "anything-as-a-service"

2.5.1. Everything is the service and the service is everything

Thanks to everything being in the cloud, customers can now get exactly what they want, without having to own content or infrastructure. It can be combined, shared, and delivered when, where, and how it's needed.

The cloud holds a vast reservoir of aggregated bits that can be configured into outcomes, accessed by or for customers. Consequently, customers can stream (get only what they want), instead of having to buy, say, rides, movies, books, or music, anytime they want it, not only if and when it's in stock, available on a shelf, on or off line. This has led to a generation of consumers, both B2C and B2B, switching from buying stuff to paying only for what it does for them.

This "anything as a service" wave is gathering momentum and promises to skyrocket, winning customers in accelerating numbers, at speed, globally. It's a lightning move away from times in which customers bought, paid for, and took care of goods themselves, until the next time.

The new servitization model literally means that everything *is* the service and the service *is* everything!

However, "anything as a service" is successful only when each element of the servitization bundle:

- is personalized for individuals, not segments (because the brand knows more about the unit or person than anyone else);
- only consists of what is necessary to produce the result, eliminating waste (the provider has no incentive to supply what is not needed, and buyers only get what they want or need (think of buying a whole CDs versus streaming only the songs you want to listen to);
- is integrated, not negotiated transactionally in bits (or sold from silos);
- is constantly refreshed, not a one-off transaction (the sale is never over);

- is based on a subscription pricing model (pay per use, pay per period, pay as you go or grow, for and when outcomes are received).

A gardening magazine paid for by subscription monthly is not anything-as-a-service. The customer has to buy it, look for what's relevant, discard what is not, and replace it. If all the bits of information the customer wants, obtained from *different* media, on those aspects of gardening that *individual* customers need were provided (stored no doubt in the cloud) when and how they need it (probably digitally and mobile), with content constantly updated to be timely and relevant to them, it then would fit the anything-as-a-service category.

The service bundle, configured to get a result for an individual, becomes the value proposition—not either the products or services sold separately. The bundle is inseparable and often invisible to customers, who only want, buy, and pay for an outcome—the gardening content they need in real time—*not* the inputs—all the magazines—that make it possible.

The shift away from ownership on the part of consumers, whether it's a solar panel or magazine (product) or a bank home loan (service), means more convenience, and often savings for them in time, money, and hassle. For brands it means ensured forecast streams of income and an opportunity to embed themselves in the lives of their customers, thus blocking others out.

Any goods remain on the balance sheet of the supplier, who is responsible for making products and services work. Goods are replaced by them (e.g., bearings) and updated (e.g., solar panels) in a timely way and services are continuously updated (e.g., ongoing, new, relevant gardening content), or replenished in a timely way (e.g., more funds in the home loan to decorate the home), in a proactive, seamless fashion.

Here are some of the major anything-as-a-service themes:

2.5.2. Anything-as-a-service means the supplier owns the infrastructure, hardware, and software

The supplier now owns and manages the infrastructure, hardware, and software. The Bosch-Siemens Hausgeräte (BSH) in the Netherlands, for example, does not sell its goods any more. Customers get and use its household products for a period of time. When the item needs to be replaced or upgraded, Bosch-Siemens supplies a new one. If the machine is still useable, the company maintains it in order to keep it running well as long as possible. The consumer is free of all the hassles associated with having to choose the correct item, make it work, keep it working, pay for everything (even though they may not use everything), and keep replacing.

Rather than selling a product at an often-deteriorating margin, the supplier is now selling the whole servitization bundle, retaining and constantly refreshing any “core” products or services, which are built to survive many reincarnations.

Since the supplier owns any assets, there is no incentive to build in obsolescence that would force the consumer to replace items after some years, as was the practice in previous eras, so materials used are higher-quality, durable, and eco-friendly, meaning that they last longer and can be repurposed or reused. Manufacturers are incentivized to make things that last longer and are easy and not costly to fix, rather than the reverse, if they want to compete.

2.5.3. Anything-as-a-service allows newcomers in

In IT, this servitization move has been dramatic. Instead of B2B enterprises investing in and building their own servers, systems, broadband (capacity), and IT infrastructure support, which takes money, time, people, and space and becomes obsolete, and much of which they do not really use, IaaS (infrastructure-as-a-service) delivers it all in one servitization package. Customers set up an IT infrastructure in hours if not minutes, and scale up capacity for storage, computing processing, and bandwidth when and as they need to. Leading the way is AWS, enabling access to massive computing power to anyone and everyone, changing the balance of power, and giving startups a kickstart, because they can now become operational quickly without the capital previously required. And in SaaS (software-as-a-service), B2B customers large and small can build, run, and manage applications via the web, without the complexity of having their own operating systems, storage, or infrastructure, making software cheaper and more efficient.

Shopify has embedded its position with customers as the one-stop shop of choice for small and medium-sized retailers. Its cloud technology provides a complete retail system (retail-as-a-service), with templates for storefronts, content, mobile-friendly built-in commerce features, and customizations, so that different brands can tailor their customer experience to suit their own positioning. Shopify holds the upfront investments and scales and shares benefits with smaller and single-product vendors, who would otherwise be unable to afford the previously high legacy entry costs.

2.5.4. Anything-as-a-service saves time, money, and energy

Time, money, and energy are saved by customers through anything-as-a-service servitization and are now a competitive weapon for brands.

For example, Trane Technologies in climate control technology, in 28 countries and growing fast, has found that the total cost of ownership of high-value assets is often more than when an asset is part of an anything-as-a-service proposition. Commercial customers who buy an asset have to depreciate it and incur maintenance and other costs such as upgrades, with all the associated expenses and hassles, including training staff to use it. They may also have to wait longer for repairs or upgrades to take place. Rather than spending the upfront capital on climate control equipment, industrial and commercial consumers—including those in health care, data centers, industrial, hospitality, and commercial buildings, schools, hotels, and factories—prefer the alternative anything-as-a-service model. They are then free to use the saved funds to compete better.

2.5.5. Anything-as-a-service changes the pricing model

This servitization move means a new pricing model, and takes subscription to a different level, because customers are paying for use or outcome, instead of a lump sum for the product, service, or value-added services. Bosch Siemens households pay for washing cycles. In B2B the same trend is taking off. John Deere now offers subscription plans to farmers for its autonomous agricultural system, which increases crop productivity.

In software it has become the preferred choice for 84% of the software sold today (Forbes, 2018). Now enterprises, old and newcomers, have access to cloud-based software on a monthly subscription basis and can use a single repository for content in the cloud, where they can access it from anywhere, manage it, categorize it, make it available to others, search for it, or do whatever they wish with it.

With more than 50% of logistics providers using cloud-based services today, they can manage multiple transportation networks, including truck, rail, ocean, and air freight, and inbound and outbound logistics from factories to warehouses, retailers to end users, for one monthly fee (Vandermerwe & Erixon, 2021). A modern company does not have to do its own logistics with all the CapEx associated with it. Logistics can be outsourced for a monthly fee. With customers connected to its cloud, DHL can take the orders, do the billing, deliver, and provide track-and-trace services, fast track customs, and so on, all from one platform. Customers pay only for getting the goods from a to b instead of having to invest in a fixed-capacity IT infrastructure or warehouses. Again, this makes it easy for startups or small businesses to compete. Singapore's Anchanto offers pay-per-use logistics models, specifically to help small and medium-sized enterprises compete with giants such as Amazon.

Banking does not have to be done by banks. But the infrastructure to build a bank would be too formidable for most enterprises. Banking as a service now allows brands with customers to offer them banking services without having to make that investment. Banks and their B2B customers become embedded, mutually dependent, and value-sharing, because both grow as a consequence. The banking customers can now offer more services to their customers and subscribe and pay only for what they use, depending on the number of customers they acquire. Banks gain because this increases their scale and reach.

Banking-as-a-service is an exploding trend. The variety of banking service brands such as Solaris in Germany and NatWest in the United Kingdom offer their B2B customers are constantly expanding and include banking licences, taking care of regulatory obligations, risk management, and all the technology needed to offer digital banking, card management, identity verification, consumer and SME lending, account aggregation, and account settlements. This could not happen if not for the cloud, because some pieces of data and capabilities are held by bank B2B customers, such as a customer's purchase behavior, and some by the banking-as-a-service provider, such as credit models. All of this, held in the cloud, can be combined in one safe environment and converted into value-added services.

2.5.6. Anything-as-a-service displaces products

Servitization now means moving customers from products to new subscription services, around which whole new industries have emerged. From music to movies, TV series, games, books, and magazines—all the stuff that customers used to own and store at home—entertainment is now being accessed from anywhere. Anything-as-a-service enterprises are shifting mindsets about ownership universally: from building a library of books, records, or

CDs, or listening to music from a radio, buying or renting videos, or going to a movie house, to streaming on the phone, tablet or laptop.

This new servitization of music is captivating people all over the world. No more paying for whole CDs containing only a few tunes you like, or for that matter having to download what you like onto a piece of hardware to store it. With a click on Spotify, the world's largest music-streaming service by number of subscribers, customers can choose specific pieces of music. And customers (70% of those with the Internet listen to music) love it, because they have access to the bits they want when they want them.

And no more looking for conference venues, with endless briefings, bookings, trips, costs for things not wanted, negotiations for and disappointments with things needed and not supplied. Zoom smartly connects people one to one and to teams in a virtual shared space, on demand, for conferences and meetings. Its servitization model took it from being an upstart to an indispensable collaborative communication tool. Customers do not have to buy Zoom software; instead, they pay for access to an ongoing service. The new ways of meeting and greeting through subscription, we think, are the new next. They cost less, take less effort, and can be infinitely productive. To what extent will this service replace physical conference centers? Only time will tell.

2.5.7. Anything-as-a-service means access, not ownership

Moving from buying to renting is a movement that is likely to accelerate, and if done correctly, will embed the relationship between customers and brands.

In 2021, research confirmed that younger people (60% between 18 and 35) want usership rather than ownership of cars (CF News, 2021). With subscription cars, all the costs needed to run a vehicle are typically in one monthly payment, and unlike other models of ownership, users simply hand the car back when they cancel their subscription.

In 2020, Volvo launched a direct-to-consumer subscription model. For a monthly fee, Volvo gives access to any of its cars with services and maintenance, roadside assistance, and data services. Irish GoCar introduced a pay-as-you-go model that allows customers to book and use a car or van after a one-off joining fee, and get charged according to kilometers driven. Instead of owning the car the customers own the trip (use) and have no up-front or recurring investments to lay out.

It used to be that consumers had to buy a television and then sign up with different content providers. Now Sky in the United Kingdom has launched Sky Glass, which provides access to high-end television, Internet connection, and Sky and Netflix content in one subscription and is talking about continually adding more of these services to its bundle. This is home-entertainment-as-a-service, and it includes the hardware, software, Internet access, and cloud storage needed for the customer to get entertained without having to own or buy any of the bits.

2.5.8. Anything-as-a-service means zero stock manufacturing

Manufacturers always owned and did everything and held stock. Now there's a new way to beat the big players, with manufacturing-as-a-service. Swiss Techniplas Prime has an e-manufacturing cloud platform with dozens of manufacturing partners and can offer services to customers from pre-production prototypes or tools to the entire fully functioning object. From a car developer customer, it can upload designs and give a price quotation in minutes, followed by the total production and delivery of the cars to the end user's doorstep.

This kind of operation is a microcosm of the zero-stock economy to come, where the entire process can be servitized so that B2B customers do not have to have huge inventory budgets, and consumers get what they want on demand.

3. Last words

The object of this paper is to show that services were and remain the key to competitive advantage for enterprises. This does not mean only using services to do better, what has always been done, but rather stretching imaginations and cultures to use services to create new ways of doing things, which give brands the kind of competitive edge that keeps them winning and retaining customers.

We believe the future is about anything-as-a-service, where the servitization bundle, integrated to produce ongoing outcomes, *is* the value proposition. The elements of the bundle will remain the same, but they will be as invisible to customers as the inside of a washing machine. Customers will not have to buy bits from silos (or even different brands); they will get what they really want—the outcome. Brands will have to use the technology not just to deliver services, but to grow their ecosystems so that they can keep amplifying offerings, in order to produce these outcomes in their chosen market spaces or strategic territories. Corporations that have relied on industrialization will have to learn to produce and deliver these outcomes to markets of one, rather than target segments and do this using the technology to produce even more value at even lower cost. With value propositions spanning time, they will have to learn that durability is a better offering and more cost-effective for them and be prepared to adjust their financial models to suit the subscription paradigm.

When this new model of servitization becomes the norm, so will the true meaning of lifetime value, using data to ensure that brands know more about individual customers than anyone else, and through machine learning and AI, not only become the undisputed leaders but hold that position, because they will be constantly be giving and therefore getting value, in a reinforcing loop.

However, technology and its ever-advancing capabilities cannot make this new servitization happen or work. They can only facilitate it.

The rest is up to people.

So we offer these challenges to top management:

- Can you place your enterprise/brand on the servitization chart in Table 1?
- Should this change and, if so, where should you position your enterprise/brand for the future?
- How is the “anything as a service” servitization model likely to impact your industry, now and in the near future?
- What role can your enterprise/brand play in taking the lead in your industry, in moving to this new servitization model?
- What role can you personally play?

And to academics:

- Can you track and find successful pathways to servitization, as technology gathers momentum and enables new innovations through value-adding services to manifest globally?

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