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Capturing Value in the Service Economy

By Jochen Wirtz and Michael Ehret

The benefits of specialization have been driving the rise of the service economy and pushing capability frontiers and economic growth. In service economies, almost any activity, asset, and skill can be bought on competitive markets, making it harder to build competitive advantage on those inputs. Therefore, firms have to carefully decide what to own in order to capture value, and they need to prioritize investments in those assets while outsourcing almost everything else. Service businesses capture value by connecting resource markets with service markets, and we identified three types of assets that allow a firm to connect markets and capture value in the process. They are: (1) resource-based assets shaping capabilities and capacities of services; (2) platform-based assets connecting resource owners with users, allowing to generate network effects, critical mass, volume and/or liquidity; and (3) market-based assets providing the interface for interaction with customers. We propose further three key dimensions that shape each service-asset type: Physical capital, intellectual capital and social capital including service climate as a framework for a typology of service assets. We identify further two domains of service management that allow firms to capture value: (1) business models for designing the architecture and “Gestalt” of value cre-

ation; and (2) the effective management of an integrated web of processes and activities. We discuss implications for management and further research.

1. The Rise of Service Business Models and the Reconfiguration of Value Chains

One of the most striking economic phenomena is that the services sector becomes dominant as an economy develops (Buera and Kaboski 2012). This has been persistent for developed OECD countries and has become apparent for emerging economies such as China, Brazil, and Malaysia (OECD 2007; Wirtz et al. 2015). There are many potential reasons for this development, most prominently the growth of productivity in agriculture and manufacturing that unleash resources for the supply of services offerings, and shifts in demand towards services. Contrary to common belief, economic statistics show that the share of consumer services does not show significant shifts, while business services (e.g., finance, renting or R&D) do and are the key motors behind the service sector growth (OECD 2007; Woelfl, 2005). In fact, in the US the share of consumer services of GDP has remained largely unchanged over time while business services lead the expansion of the service-sector (Ehret and Wirtz 2010; OECD 2007; Triplett and Bosworth 2003; Woelfl 2005). Debates of the service economy have ignored for a long time that reorganization and innovation of business service providers work as key drivers of service economies (Ehret and Wirtz 2010; OECD 2007; Triplett and Bosworth 2003; Wirtz et al. 2015; Woelfl 2005).

Economic and technological forces drive the transformation of business by service offerings. Economically, productivity gains unlock capital and resources for the reconfiguration of businesses, for example, for differentiation and shifting efficiency boundaries. Technological developments in information and communication technologies, and logistics and transportation are reducing physical and organizational barriers. As a consequence, managers face a growing range of options for organizing their businesses. Information technologies have been reducing the transaction costs of identifying appropriate suppliers, specifying contracts, and controlling service performance and contract compliance (Ehret and Wirtz 2010). A growing start-up infrastructure and access to venture capital facilitates and accelerates the creation of new firms which



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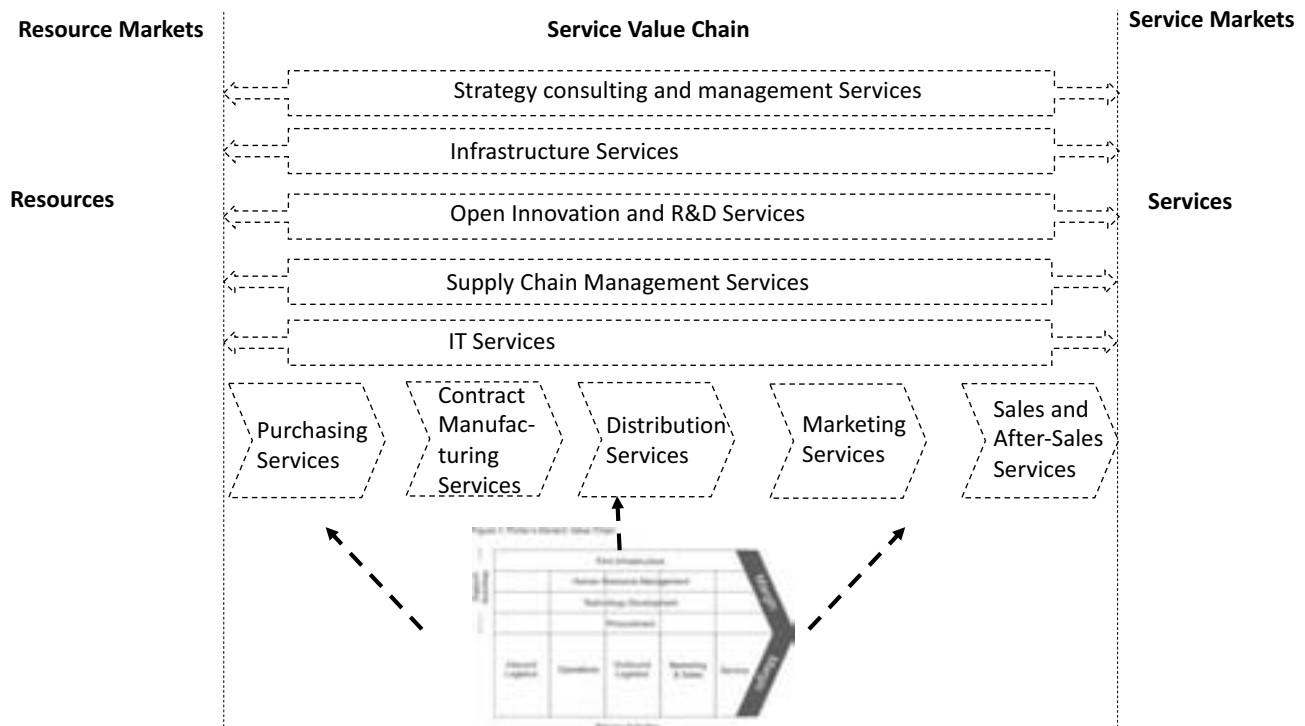


Fig. 1: The Service Value Chain – Value Creation by Reconfiguration of Service Provision (Adapted from Porter 1985).

might start as obscure outsiders but eventually may disrupt established players and create new industries at an accelerating pace.

In advanced service economies, almost any business activity can be hired as a service (see fig. 1). There is virtually no business activity that needs to be conducted in-house. Logistics has been a traditional services sector, but a broad range of business functions once deemed as mandatory for in-house control, like manufacturing or R&D, can now be hired as a service, frequently offered by firms which are unbeatable in terms of performance, quality, and cost of their operations (Ehret and Wirtz, 2010; Wirtz et al. 2015). Like at any stage of development, the key challenge in the service economy is how economic actors address the needs of humans by employing resources and transform those to the service of users (Vargo and Lusch 2004; Menger 1981). One particular phenomenon of the service economy is that a substantial share of coordination activities that were deemed exclusive to the domain of the corporation is increasingly being performed by independent service providers. For example, a firm's strategy might be developed by independent consulting companies or even venture capital firms, R&D delegated to external firms, and a substantial extent of the competitiveness of current offerings may reside on the performance of externally-provided supply chains and IT-services.

This almost wholesale shift towards a service economy has dramatic implications for strategic management: If almost any business activity can be hired by the tap on the screen, what is the economic legitimacy of a particular

firm? If almost any activity of a business can be substituted by a service provider, which activities should a company focus on in its own operations, and which ones should it delegate to outside providers?

Such questions are not entirely new. Analysing value chains for improving business focus and performance is one of the core concepts of strategic management approaches, most prominently in Porter's work on competitive advantage and competitive strategy (Porter 1980). However, service businesses entail new challenges. Porter's approach builds on competition in the context of industry structures and unfolded its practical impact mainly through increasing the transparency or redundancy of overhead costs. With the rising service economy, new challenges emerge, most notably the crossing of industry boundaries and the re-configuration of industries, most prominently in the pervasive invasion of IT companies into almost any established business, including media, retail and automotive (for a further discussion see also Amit and Zott 2001; Parker et al. 2016, 2017; Stabell and Fjeldstad 1998).

In this article, we first present business model approaches for re-configuring value chains and propose an approach for mapping out opportunities and investments in unique assets. Next, we discuss the role of specific asset types for service value creation and propose a typology of assets for capturing value in the service economy. We follow with a discussion of service management approaches, most notably the role of business models for the design of the "Gestalt" of asset architecture, and the formation of an inte-

grated web of processes. Finally, we discuss managerial implications and research opportunities and finish with our conclusions.

2. Service Business Models: Opportunities and Investments in Unique Assets

Business model approaches aim to fill the void that emerges when industry boundaries shift and are redefined. When companies face shifting industry structures, industry-driven competitive strategies like those proposed by Porter lose their point of reference and run on empty. Business models build on key elements of which four are of particular relevance for services: (1) Establishing connections between resource and service markets; (2) identifying value propositions for individual firms; (3) identifying a value appropriation mechanism; and (4) identifying a network of collaborating firms or stakeholders for complementing the firm's value proposition into a compelling solution (Chesbrough 2011; Ehret et al. 2013; Osterwalder and Pigneur 2005; Wirtz 2016; Zott and Amit 2008).

Thus, business models represent an emerging dynamic view of the business organization that contrasts with the industry structure perspective underlying Porter's value chain (Stabell and Fjeldstad 1998; Zott and Amit 2008). Industry perspectives build on a given structure of established roles like those of upstream suppliers, downstream customers, and distribution channels, as well as competitors and substituting technologies. Service economies are driven by structural shifts that cut across existing industry structures and undermine positions of existing industry leaders, and business models aim to guide firms to identify productive niches responding to opportunities in these dynamic, hypercompetitive eco-systems (Christensen 2003). This quest for opportunities and the need for capturing the created value provides a substantial shift towards service business models.

In a service business model, firms deliver benefits without the transfer of ownership (Wirtz and Lovelock 2017, p. 21). Transfer of ownership marks a crucial difference between a goods business, where suppliers transfer ownership of assets like cars or machines to their customers, and service business where providers deliver results to clients, like transportation to a required location, an education experience, or a money transfer (Chesbrough 2011; Ehret and Wirtz 2010; Lovelock and Gummesson 2004; Wittkowski et al. 2013).

For clients and providers, service business models have been opening new pathways for value creation. Clients are relieved from the need to own and operate assets for value generation by purchasing non-ownership services.

By replacing in-house assets and activities with purchasing services, they offer opportunities for service providers who specialize in managing the resource base (Ehret and Wirtz 2017).

Service research shows rationale and evidence that service business models draw benefits from non-ownership for providers, clients and eventually the economy (Chesbrough 2011; Lovelock and Gummesson 2004; Wittkowski et al. 2013). However, a growing range of researchers shows that providers struggle to profit from service business models. In the domain of industrial services, Eggert et al. (2014) find mixed results for the financial performance of industrial service business models, where some firms indeed gain revenues and profitability while a substantial share of firms is struggling in the shift towards services. Plötner (2016) identifies potential cost-traps innate to service business models, as some providers underestimate the cost implications of asset ownership while feeling attracted by the prospect of stable revenues. Also, clients can undermine their own value propositions when they outsource resources that are instrumental to their competitive advantage (see Christensen, 2003).

The diverging observations, rationales, and speculations regarding non-ownership value suggest a research gap in service research regarding the value contribution of asset-ownership. To date, the major concern of service research on non-ownership value has been focussing on its implication from the perspective of the client (Lovelock and Gummesson, 2004), understanding intentions to purchase non-ownership services (e.g. Wittkowski et al. 2013) and addressing its underlying economic rationale (Ehret and Wirtz 2010, 2017). In that light, it is tempting to take challenges of service business providers as simple evidence that ownership is mainly a burden and bears no value. Indeed, some authors (e.g. Rifkin 2014) see the rise of sharing and non-ownership- business models as evidence for the eclipse of capitalism. However, non-ownership services do not necessarily imply that ownership disappears. An alternative reading of some struggles of service providers, is that both managers and researchers have yet to face the supply-side implications of non-ownership in terms of both, opportunities and burdens for providers. Thus, service research needs to take a deeper look into the conditions that render asset ownership as building blocks for long-term competitive advantage. In the following section, we take a closer look at the role of assets in service value creation.

3. Assets for Service Value Creation

Service economies put firms under a severe dilemma. As almost any business function, operation or activity is becoming available as a service, firms are gaining flexibility

and ease of access to resources (Quinn 1992; Ehret and Wirtz 2010). This boon of resources comes with a flip-side that potentially undermines the economic legitimacy of a firm, when assets, resources, and capabilities under control by the firm become baggage, if not obsolete when they are easily substituted by competitive service providers. Searching sustainable competitive advantage, firms need to scrutinize if their assets connect them to opportunities or rather work as baggage for the firm. Thus, the challenge for identifying competitive grades of vertical integration shifts from transaction cost efficiency towards opportunities and their implications for asset ownership (Ehret and Wirtz 2010).

Such questions are at the core of the resource-based view, which is concerned with sources of economic value. The resource-based theory names four key criteria for a tangible or intangible asset to be considered a source of economic value (Amit and Schoemaker 1993; Peteraf 1993; Srivastava et al. 1998):

1. **It is convertible:** The firm can use the asset to exploit an opportunity, or neutralize a threat, and thereby enhance value.
2. **It is rare:** To the extent that the firm enjoys control of a rare resource it gets hold on a differentiation advantage.
3. **It is imperfectly imitable:** If competitors find it difficult or even impossible to duplicate the resource, the owning firm enjoys a unique value proposition.
4. **It does not have perfect substitutes:** If competitors do not have access to substituting assets, the firm maintains its unique position.

While several authors accentuate the supply-driven aspect of the resource-base, its pioneers see resources as crucial links between firms and entrepreneurial opportunities on external markets (Lewin 1999; Penrose 1959). This view finds its echo in the work of researchers who have established the resource-based view as one of the major conceptual foundation of the marketing domain (Morgan and Hunt 1994; Wernerfelt 1984).

Entrepreneurial opportunities are key drivers of resource rents and emerge when customer needs are not addressed or resource potential remains idle (Sharon et al. 2013; Kirzner 1997; Shane and Venkataraman 2000). Under equilibrium, assets can easily be substituted, pushing firms in the position of price takers. Business opportunities are neither objectively nor intrinsically given, but emerge through the relation between the needs of service users and the capabilities of the resource base to serve them. The value of a resource is driven by the relation between its intrinsic capabilities and extrinsic user needs. In the context of service management, the key criterion for judging the value

of a resource is its potential of being transformed into services that render value-in-use (MacDonald et al. 2016; Vargo and Lusch, 2014).

3.1 Asset Types in Value Co-Creation

By considering the role of transforming resource potential into user value, we can differentiate between three basic types of assets (see fig. 2). First, market-based assets enable a firm to identify needs, craft service offerings that match identified needs, and specify service contracts for organizing transactions. Basic forms of market based-assets are brand equity, customer equity, distribution and communication channels, and the point of sale. Second, resource-based assets relate to opportunities residing on capabilities and capacity of the resource base. Basic forms of resource-based assets are unique natural resources, unique equipment and facilities, and unique intellectual property. Third, platform-based assets entail all forms of social, physical or intellectual capital, including network architectures, that is predominantly built in order to connect resource owners with service users. On a qualitative level, these platform-based assets enable or facilitate the translation of user needs into effective service offerings. On a quantitative level, they provide powerful means to drive network effects, liquidity and critical mass that provide unique capabilities.

At each of these stages of the service process, we can identify three basic types of capital, namely physical, intellectual and social capital. First, physical capital entails assets like real estate, facilities or equipment that provide the material basis for differentiating services. Such assets play key roles on each stage of the service process, setting the physical stage for the scene at the point of customer interaction, in the facilities of service providers backstage and through the physical platforms that connect resources and service users.

Second, intellectual capital consists of ideas, knowledge or information that is not embodied in products but is legally protected that show the potential to differentiate and transform the service process. Platforms entail a growing range of intellectual capital with the aim of driving the artificial intelligence of service provision. At the front-end, brands shape the perception and image of the service process, while intellectual property enhances technological capabilities of services.

Third, social capital, such as trust, goodwill, commitment in the context of social relationships, cannot be legally owned by the firm, which renders it even more precious. Social capital takes the form of human resources and service climate in the domain of the provider, platform assets mainly in the form of business eco systems entailing suppliers, partners, and complementors, and not least in cus-

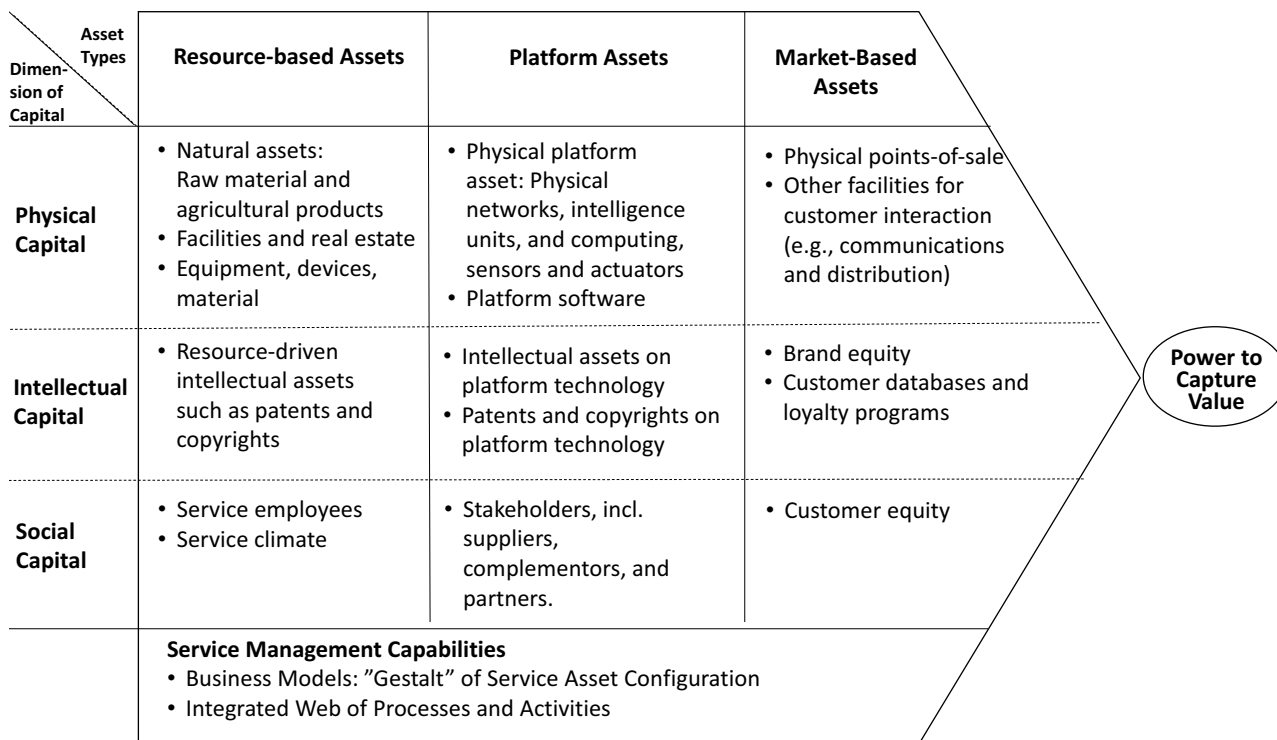


Fig. 2: Assets and Capabilities That Enable Capturing of Value in the Service Economy

customer relationships which constitute market-based social capital,

Because owners are responsible for up- as well as down-sides of their asset-base, they need to take a selective approach to asset-ownership and prioritize on those where they can hope to make the highest contribution to their clients. Thus, selective approaches to asset-ownership are key in service businesses, but not sufficient. The key to develop, enrich and maintain assets is to energize them through people, service climate and processes, as well as establish a logic that integrates distinct asset types in a virtuous manner for the benefit of both, clients and providers. In that regard, we identify two key dimensions of management capabilities: (1) the business model that represents the architecture or "Gestalt" of asset configurations as the basis for a sustainable competitive advantage of the firm, and the (2) effective management of an integrated web of processes and activities.

3.2 Resource-Based Assets

Resource-based assets represent capabilities and capacity of the supply base. One driver of service businesses is the value proposition offered by non-ownership: Clients can get the benefits from resources without the burdens of ownership. The challenge for providers, is to bear the ownership of resources as an entry-gate to opportunities. Downsides of ownership do not simply disappear because of a re-allocation from one firm to another. Thus, providers need to identify smart ways to bear ownership. Specialization on the management of a particular asset class can offer trajectories

for service providers that are out of reach for vertically integrated companies. By specializing on particular types of resources, providers can gain unique positions, differentiate assets, drive cost advantages, and also gain scale for example by furnishing general purpose resources across entire industries if not economies (see Ehret and Wirtz 2010).

3.2.1 Resource-Based Physical Capital: Real Estate, Facilities, and Equipment

Facilities and equipment define the capabilities and capacity of a service, providing clout for companies that design, own and operate physical equipment and facilities. Asset-ownership offers an entrance gate for establishing service and solution businesses for plant, machine and equipment manufacturers (Eggert et al. 2016; Ehret and Wirtz 2017).

In the domain of industrial production, suppliers have been moving towards owning and operating equipment machines and even entire plants on behalf of their customers. For example, German chemical company BASF has been moving to operate the paint shops for automotive manufacturing of its clients (Worm et al. 2017). Rolls Royce has pathed the way for such business models, by commercializing airplane engines through "power-by-the-hour" contracts. In such performance and solution schemes, providers earn revenue on the output and the benefits generated by industrial assets, rather than the assets themselves (Ehret and Wirtz 2017). While relieving their customers from risks associated with industrial assets, these risks will make a negative impact on the providers' balance sheets. However, providers also hold ex-

perience and resources that empower them to bear uncertainties in a unique way. BASF has unique capabilities in coatings, while Rolls Royce does so in engine-technology. Both invest in smart systems, that empower them to guarantee performance that relieves their customers and translates into profits in their own balance sheet.

Facilities provide the physical backbone that shapes and empowers the capabilities of service firm behind the line of visibility, like strategic management, back-office activities, and not least innovation. While the factory provided the stage for industrial production as Peter Drucker (1946) showed in his landmark study of the GM factory, the campus emerges as the dominant design of service companies in the high-tech sector. An example is Apple's new "Apple Park" that is to become its new headquarter. Crucial elements of the design include 1,000 trees that might give some employees the feeling to work in a national park, the exclusive use of renewable energies, and a theatre on the hill where Apple hopes to host future path-breaking product launches. The project was led by chief designer Jonathan Ive and co-directed by star-architect Sir Norman Foster, and it was funded by a \$5bn investment to eventually hosting 12,000 employees. Ive says: "We don't measure this in numbers of people. We think about this in terms of the future. The goal was to create an experience and an environment that feel like a reflection of who we are as a company. This is our home, and everything we make in the future is going to start here." (Levy 2017).

While Apple is just one example for high-tech multinationals who show a renewed consciousness for the facilities shaping their work environment, an emerging industry of business infrastructure providers has specialized on the creation of environments favouring the formation of start-up firms (Audretsch et al. 2015). Some sectors like biotechnology are almost unthinkable without the investment of incubators who offer office space, R&D equipment, meeting facilities and much more, thereby creating an environment where entrepreneurs can focus on their business opportunities (Ehret et al. 2012).

Not least, even natural resources can shape conditions and offer opportunities for service provision and can work as unique, hard-to-copy sources of value. Take the highest mountain of the world, the Mount Everest. It is unique and cannot be copied, but it also draws aspiration and fascination of a growing range of travellers seeking extreme experiences. Since its opening for guided tours in 1964, the Mount Everest has been developing as the backbone of growing a specialized high-value industry (Zurick 2006). As a downside, the value of unique locations becomes immediately apparent when natural conditions change and shift the fortunes of regions, for example, when climate change undermines the attractiveness of tourist destinations (Colekoglu and Mil 2014).

Not least, even modern technology markets are shaped by natural conditions, most notably in the case of renewable energy where natural conditions favour the location of key wind and solar farms. For example, the Desertec project aims to develop a highway of solar energy connecting northern Sahara with European metropolitan areas (Anyu 2017). Even seemingly pure engineering-driven resources like server farms that provide the backbone of the internet and cloud-computing services build on specific natural resources. This makes Iceland one of the privileged destinations for the location of server-farms as its climate reduces the costs of cooling high performance computers, and it sits right on one of the major data-highways connecting Europe with the Americas (Browning and Vladimerson 2012; Mortleman, 2014). While natural resources provide a boon of resources that cannot be copied, companies need to develop particular technologies, policies and business models in order to exploit their value.

3.2.2 Resource Based Intellectual Capital: Intellectual Property, Patents, and Copyrights

Technology represents human knowledge of resource potential and is driving the performance of services, as is evident in the dramatic extension of performance frontiers in key areas such as transportation, communication, manufacturing, and health. A substantial share of such knowledge is implicit and hard to communicate, therefore embedded in the company's resources and routines (Arora et al. 2004; Pisano and Teece, 2007). If technological knowledge can be made explicit it can be legally protected and become an intellectual asset, such as a patent or a copy right. Intellectual property provides a pillar for knowledge and science-based businesses and is a powerful source of competitive advantage. To a growing extent, science based companies aim to make intellectual capital the key source of revenue, paid by companies that turn patented ideas and technologies into real-world services (Arora et al. 2004; Mock. 2005; Pisano 2006).

In the mobile communication industry, Qualcomm offers an example for one of the most profitable pole position built on a so-called general purpose technology – in this case mobile communication – that nourishes innovation, capability and growth for literally any service industry (Arora et al. 2004; Mock. 2005). Qualcomm holds a pole position, by owning the biggest patent pool that is defining the fourth and emerging fifth generation of standards for mobile phone communications that together largely define the capabilities of the infrastructure for mobile services as well as the emerging internet of things (Ehret and Wirtz, 2017).

One of the striking features of the service economy is its opening up of opportunities for science businesses at the back-end of the value chain. While downstream companies prioritize investments into market-based assets, like

the pharmaceutical industry, they open opportunities for science-based businesses upstream (Arora et al. 2004; Pisano, 2006).

3.2.3 Resource-Based Social Capital: Employees and Service Climate

People make the crucial difference to any asset and the service organization as a whole. In contrast to material or intellectual assets, people have agency as well as human capabilities and traits like empathy, communication, and creativity. Service employees have the power to breathe life into assets, energize service processes, and make the difference by their efforts to understand customer needs and expectations, as well as delivering the performance that eventually leads to high service quality, customer satisfaction and loyalty (Bowen and Schneider 2014; Heskett et al. 2015; Wirtz and Jerger, 2017). Service employees represent the firm for the customer (Berry, 2009) and shape the customer experience (Verhoef et al. 2009), determine customer value and brand promise (Sirianni et al., 2013). With their potential for empathy, service employees gain an understanding of customer needs and wants, and can navigate and adapt service processes accordingly (Bove and Johnson 2001; Rafaeli, Ziklik and Doucet 2008; Söderlund and Rosengren, 2008).

Employees can build personalized relationships with customers and build loyalty, eventually driving customer equity. Service employees frequently take over sales tasks and contribute significantly to revenue generation (Jasmand, Blazevic, and de Ruyter 2012; Yu, Patterson, & de Ruyter 2012). Not least, service employees fundamentally affect operational productivity (Heskett, Sasser, and Schlesinger 2015).

The quality of a service organization's people is crucial for its market success and financial performance. However, boundary-spanning frontline jobs are challenging, they often come with role conflict and emotional labour (Wirtz and Jerger, 2017). Successful service organizations address those challenges and are committed to the effective management of human resources, including best practices related to recruitment, training, empowerment, service delivery teams, employee motivation, and creating a strong service culture, climate, and effective service leadership (Wirtz and Jerger, 2017). Excellent HR strategies with strong service leadership often result in a sustainable competitive advantage as it seems harder to duplicate high-performing human assets than any other corporate resource (Wirtz and Lovelock, 2016, p. 443).

The organizational dimension entails both, key challenges and opportunities for gaining competitive advantages in services. Employees offer the key to service excellence to the extent that they develop a shared sense of service quality, not least the policies, practices and procedures

and their impact on service quality (Bowen and Schneider, 2014). By creating a favourable "service climate" firms shape their unique competitive position (Bowen and Schneider, 2014). Service climate builds on shared perceptions, values, norms, and working styles (Bowen and Schneider, 2014).

Service climate and the employees empower a service organization with competitive advantages that are inimitable according to Barney's (1991) criteria (Bowen and Schneider, 2014).

- a) **Resource interconnectedness:** It is not trivial to establish and sustain a positive and cohesive service climate.
- b) **Social complexity:** Service climate provides the glue for a common understanding of service operations.
- c) **Causal ambiguity:** The service climate emerges through the interaction of mutually reinforcing policies, practices, procedures, and routines, as well as interaction with a diverse set of external environments and contexts in which service operations take place.
- d) **Path dependency:** Service climate emerges through a historical process and is substantially driven by interaction and learning of an organization in search for service excellence.

Employees and service climate shape in a unique and idiosyncratic way how the service organization differentiates its assets and resources. Service employees and service climate are a mandatory condition that shapes if and how a service business puts assets to higher valued uses and eventually achieves a competitive advantage.

3.3 Platform-Based Assets and Critical Mass-Related Capabilities

Most basic services are probably as old as humanity. Long before the dawn of the industrial age, people have offered bed and breakfasts, transportation services, dining services, education and much more. What is usually identified as the rise of the service economy does not necessarily indicate revolutionary new types of offerings but a re-organization of value creation processes (Ehret and Wirtz 2010). The rise of infrastructure technologies, namely IT and transportation services, offers new means for transforming resources into services. Most importantly, infrastructure technologies unlock the physical location of service provision from the location of use and experience of services. Such service platforms serve primarily the interaction between resource owners and service users. By offering virtually universal access, platforms drive scale and financial liquidity through increasing the relevant market (Chesbrough 2011; Parker et al. 2016; Rifkin 2014).

We define platforms as configurations of assets that connect resource owners with service users. Like resources,

we find three dimensions of capital that constitute the basis for platform-based assets, physical, intellectual and social capital. We propose three essential types of platform-based assets: (a) Physical network capital establishing physical connections between resource owners and resource users; (b) Intellectual platform assets built on knowledge and intelligence on connecting resources with service users, and (c) Social capital formed of social relationships, that facilitates interaction and cocreation between resource owners and service users. We discuss these in turn.

3.3.1 Physical Platform-Based Assets

Physical network capital establishes physical connections between resource owners and service users. Basic elements of physical network capital are communication networks most notably the internet and other communication interfaces that connect resource owners and service users. Key elements of such interfaces are sensors that provide real-time information about a service, like the car ride or the operation of a machine or device, as well as actuators that execute an effect directed through communication networks, like the broadcast of movies, the control of a machine or a drone. Not least, physical network capital resides on intelligence units equipped with data storage and computing power for controlling and directing services (Andersson and Mattson, 2015; Ehret and Wirtz, 2017; Geisberg and Broy, 2015).

By opening up almost universal access to resource owners and service users, physical network capital connected to the internet has dramatically increased scale and liquidity of services, offering the critical mass justifying investments into innovative service offerings. In the domain of consumer services like accommodation, car sharing or ride hailing, the rise of the sharing economy has made this apparent (Chesbrough, 2011; Economist, 2015).

Let us illustrate the key economic mechanism at work in physical network capital with the example of a prominent industrial service – the “Power-by-the-Hour”-service offered by airplane engine manufacturer Rolls Royce (Ehret and Wirtz, 2017, Wirtz and Lovelock, 2017). Instead of buying airplane engines, airlines have been shifting to service models by delegating ownership to service manufacturers who earn revenues only for those hours where the airplane is effective in operation. Thereby, airlines shift a substantial share of the financial risk related to the operation of an airplane to the service provider. Relieved from technical operations, airline management can focus on downstream opportunities, exploring the potential for attractive destinations, requirements for customer service, network extension and brand equity. Striving to succeed in attracting and serving passengers, airline managers appreciate shifting some responsibility to a service provider

and offer providers a self-enforcing incentive justifying investments into safety standards and availability of engines. As the service provider, Rolls Royce gets access to a continuous stream of service revenue and thereby gains the clout to capture the financial value for effective service operation as well as efficiency improvements.

Physical network assets are key enablers for the “Power-by-the-Hour”-service (Ehret and Wirtz, 2017; Smith, 2013). Sensors provide information that Rolls-Royce transmits in real-time to its ground-control centres. Here, Rolls-Royce gathers intelligence, with the potential for early warning of material wear, and indicate maintenance and repair needs. Passengers benefit from enhanced safety, airlines by a more efficient capital use and Rolls Royce enjoys the option on privileged profit opportunities. Not least, the physical network works as the barrier to entry for potential competitors. While there exists a differentiated market for airplane maintenance services, including airline-owned and third-party providers, competitors would need to invest into control centres, sensor-equipment, and world-wide communication connections in order to match performance levels offered by Rolls Royce (Smith 2013). Once in place, competitors would need to learn how to generate intelligence and activate it for service operations. While Rolls Royce has been investing in such systems since its pioneering investments in the 1970’s (Smith, 2013), it has reached a level of critical mass for capitalizing its services into financial liquidity, that is hard to match by fresh starters.

To conclude, physical network capital provides the backbone for driving up scale and reaching critical mass for the liquidity for capitalizing investments in services. Companies with a dominant installed base of physical network capital own a sustainable competitive advantage.

3.3.2 Intellectual Platform-Based Assets

Physical information networks produce a growing stream of information on economic activities as not only people but a growing range of devices for transportation, manufacturing or household management gets equipped with sensors and actuators and is connected to the internet (Economist, 2017; Ehret and Wirtz, 2017).

However, this exploding stream of data remains worthless without further analytical tools that generate intelligence and foster novel services. Google provided a pioneering example by developing algorithms that offer pathways for internet advertisers to find matches with valuable information searchers (Schmidt et al. 2013; Varian, 2008). In those pioneering days, information tended to be worthless without appropriate algorithms and analytical tools that foster intelligence. The exponential growth of data has reversed the process: As several algorithms now contain self-optimizing and learning capabilities, algorithms are

in need of an exponentially accelerating stream of data. Such artificial intelligence provides the backbone for a growing range of service innovations (Glushko and Nomorosa, 2013), like autonomous driving, automatic translation, real-time energy management, or predictive maintenance.

Such algorithms constitute the backbone of the intellectual capital embodied in the platform (Azevedo and Weyl, 2016; Brynjolfsson and McAfee, 2014; Ketter et al. 2016). IBM's Watson program provides a striking example how intellectual platform capital becomes the hub for a boon of service innovations, such as health, smart cities, or smart manufacturing (Hempel, 2013).

Artificial intelligence provides also the intellectual backbone of an emerging new family of industrial services and solutions where platform providers connect real-time operations data with context information for managing, learning, and improving services and solutions. For example, General Electric is using artificial intelligence for smarter management of its power plants by using data on weather, traffic and user patterns for power and network management (Ehret and Wirtz 2017).

3.3.3 Platform-Based Social Capital

The social capital of a firm consists of the network of its social relationships (Granovetter, 2005; Florin et al. 2003; Xiong and Bharadwaj, 2011). The extension of physical communication networks has stimulated dramatic shifts in the social capital of organizations, as online social networks cut across both, internal and external organizational boundaries (Huysman and Wuff, 2004; Van den Bulte and Wuyts, 2007).

While customer relationships are an essential element of social capital, platforms foster the emergence of novel relationships most notably between owners of facilities such as accommodations, cars or machines, service users, and other complementors such as coders, or financial service providers that complement towards the service experience of users (Florin et al. 2003; Granovetter 2005; Xiong and Bharadwaj 2011). In the context of networked economies, social capital is crucial for mobilizing resources and service beyond the boundaries of the firm, as well as provide the absorptive capacity that enables the firm to capture value (Florin et al. 2003; Xiong and Bharadwaj 2011).

Building on the ubiquitous access opened by physical networks like the internet, social capital provides both, the potential to increase scale for a service for capitalizing service investments, as well as the establishment of service innovations building on new types of relationships.

By connecting to social platforms, asset-owners push their outreach not unlike manufacturers using distribution

channels in industrial economies. Sharing platforms like AirBnB, Uber or Wingly increase the relevant market for both, owners and potential users of facilities or equipment like flats, cars or jets (Chesbrough 2011; Economist, 2015). Platform operators maintain business models that attract supply and demand, and complementors (Chesbrough 2011; Wirtz 2016). Two- or multi-sided business models are the key where platform providers aim to attract a critical mass of demand for the capitalization of asset-based services (Landsman and Stremersch 2011; Wirtz 2016). Media-businesses developed the blueprint, where media audiences attracted by content provide the critical mass for sponsoring by advertisers. Google translated such models by offering internet-search for free and reach the critical mass for capitalizing search sponsorships (Schmidt et al. 2014; Wirtz, 2016). Platforms work as critical backbones for developing new markets. Consider Etsy, which originally worked as an online sales channel for hobbyists and micro-entrepreneurs for commercializing self-designed accessories. Etsy's management soon had to learn that the restriction of single items offered by designers puts a barrier on growth. By connecting designers to contract manufacturers, Etsy opened new channels for small batches of attractive designs that offered growth opportunities (Ehret and Wirtz 2017).

Critical mass works as the platform for investments into service innovations. This is most apparent in software developer networks affiliated to platforms: The key driver of the attractiveness of a platform for its users is the installed base of its services and applications. Attracting an attractive base of developers, providers, suppliers or complementors – in short it's social capital – is an imperative for sustaining the competitive advantage of a platform (Parker et al. 2017). Its scale and depth of affiliated programmers give Apple a key advantage in the mobile services (Eaton et al. 2015; Harper and Endres 2010). While iPhones are occasionally beaten in terms of technical functionality and performance, Apple's mobile eco-system provides a competitive advantage that is hard to copy. Not surprisingly, its developer conference works as one of the backbones for driving its platform capabilities through maintaining and enhancing its social capital, offering scale for capitalizing investments of complementors and suppliers that attract an increasing customer base.

To conclude, social capital offers firms the lever for scaling up relevant markets, reaching critical mass for capitalizing investments, therefore, driving liquidity. Owners of platforms endowed with high social capital control a strong lever for sustaining competitive advantage.

3.4 Market-Based Assets

Market based assets empower a firm to explore and exploit opportunities related to customer needs. In market economies, value-in-use is the ultimate yardstick for economic activity where resources need to prove their worth (Macdonald et al. 2016; Menger 1981; Vargo and Lusch 2004). Market-based assets connect businesses to customers and enable businesses to explore customer needs, design service offerings and specify service contracts for effective service delivery. Essential market-based assets consist of the physical capital constituting the point-of-customer interaction, intellectual capital underlying brand equity, and social capital constituting customer equity. We discuss these in turn.

3.4.1 Market-Based Physical Capital: Point of Customer Interaction

Service demand emerges through interaction between customers and providers, revealing customer needs, specifying requirements and creating orders (Grönroos, 2012; Vargo and Lusch, 2004). In a service economy, points of customer interaction (e.g., a servicescape, website, app or call centre) constitute the front ends of the service value chain, sensing customer needs, identifying potential service offerings, specifying potential third-party orders and not least, handling transactions including financial payments (Agrawal and Schmidt 2003; Evans et al. 1999). In many service industries, like retailing, accommodation, education, health, transportation or entertainment services, facilities constitute the physical centre-stage that shapes key characteristics of the service experience in a fundamental manner.

The history of the retailing industry provides an intriguing case. Retailers emerged as the Trojan horse that nested services in the context of goods-dominant industries. Retailers established themselves through taking a crucial role for manufacturers, extending market reach, increasing economies of scale and thereby competitiveness of manufacturers. With the maturing of the manufacturing base, retailers have been gaining a pole position at the front-end of value chains, getting insights into customer behaviour and substantial clout for affecting the fortunes of manufacturer brands (Frazier and Summer 1984; French and Raven 1959; Hunt 2012; Lusch 1976). Powerful retailers like Walmart have been pushing leading consumer brand manufacturers like Procter & Gamble to place heavy investments into innovations in order to stave off commoditization of their brands and regain attractiveness (Huston and Sakkab 2006).

At the high-end of the market, manufacturers try to regain strength by maintaining their own exclusive retail channels, allowing them to get direct customer contact and shape customer experiences and learning. For example,

Burberry used a retailing strategy by investing in a global retailing network as a key element in the recent relaunch of its fashion brand built around its classic trench coat (Ahrendts 2013). A growing range of high-end and luxury manufacturers like Tesla in electric cars (Hull 2015), Apple in computer electronics (Cojet 2011) or Nike in sports fashion, is investing in its own retailing facilities in order to shape the experience and gate the customer.

To conclude, in the service economy, points of customer interaction constitute powerful assets opening pathways to customers, exploring customer needs and generate demand that strengthens the power of their owners within the service value chain.

3.4.2 Market-Based Intellectual Capital: Brand Equity

Prior to the purchase, services exist as mere promises of companies or expectations of customers. This puts brands on the centre-stage of service businesses. By positioning their brand personality, providers signal their capabilities, potential service-benefits, as well as showing commitment and accountability (Chang and Liu 2009).

We find striking evidence in service industries like hotels (O'Neill and Matilla 2006; Rao et al. 2009), retailing, or integrated health systems (Zisner 2013) where brand owners govern the front-end of the service value chain, shaping expectations and perception of clients, while outsourced specialized service providers manage facilities, property, and capabilities for service delivery. Brand equity works as the key lever for conveying quality into financial value and therefore is a pillar for the pole position in the service value chain (Aaker and Jacobson, 1994; Rao, et al. 2009). Once a provider has succeeded to establish a service-brand, it is hard to copy (Bronnenberg et al. 2009, Du-Wors and Haines, 1990; Yeoman et al. 2005).

Not least, in complex services like system-technologies or knowledge-intensive services, brands hold providers accountable (Aaker and Jacobson 2001). With their brand-image, brand-owners offer their clients a self-enforcing mechanism, as opportunistic or un-ethical actions of providers jeopardize brand-equity. Positive brand-image shields providers of complex services against technically competent competitors who will need to build up brand-equity in order to enter the evoked set of service clients (Corkindale and Belder 2009).

To conclude, brand equity orchestrates client expectations with providers' brand personality and is the key to creating the trust basis enabling service transactions and mutual co-creation in the service process. By building brands providers create a unique, sustainable competitive advantage that is hard to copy and constitutes the pole position at the service value chain.

3.4.3 Market-Based Social Capital: Customer Equity

Customers are the key drivers of value creation in services. Customers co-create value with the firm, customers are indispensable in the value creation process, while customer perception ultimately determines the value of service (Kumar and Reinartz 2016; Macdonald et al. 2016). Financially, customer revenues constitute the top-line of the income statement. Customer relationship management researchers reflect this when they define customer equity as “the total of the discounted lifetime values of all of its customers” (Rust, Lemon and Zeithaml, 2000, see also Kumar and Reinartz, 2016; Srivastava et al. 1998). Thus, customer behaviour furnishes the cash-flows of the firm and has substantial impact on the financial health of a firm (Shah et al., 2017). Customer equity builds on customer relationships which constitute the market dimension of the social capital of a firm.

Customer equity is a strong source of competitive advantage with direct financial impact. We see its differentiating impact as soon when we compare companies with a customer focus to companies prioritizing on a technical operational focus. For example, compare two credit card companies in the wake of the 2007 financial crisis. Capital One prioritized on customer relationships backed with substantial investment in customer database while First USA competed with a functional approach organized around products on the market for credit card services and lacked a customer data warehouse. The subprime mortgage financial crisis pushed First USA towards its first ever reported financial loss, drove attrition rates by 50 percent, whereas Capital One made 43 % more profit per customer. Capital One outshined its competitor primarily with its excellent customer intelligence (Kumar 2008).

Customer equity relates to key characteristics of services. Because economic performance is determined by the value-in-use of customer benefits, the customer context is decisive for the valuation of services as well as a potential source for the exploration of new offerings (Rust et al. 2000; Kumar and Reinartz, 2016). Besides actual transactions, customers offer value for the firm through their engagement. They affect the firm’s fortunes through word-of-mouth, work as ambassadors for the firm through referral programs, and hold valuable knowledge through their user experience of the firm’s offerings. Over time, customers are the source of future demand. Products can be copied and re-engineered by competitors and thereby will commoditize offerings and drive down profits. Well-established customer relationships provide knowledge and insights into user contexts and future needs, offering companies with opportunities to learn customer requirements as lever for differentiating future offerings (Haenlein et al. 2006; Rust et al. 2000).

Customer equity constitutes also the centre-stage for building other types of market-based assets. Brand equity builds on customer equity, as customers form their brand image through their experience over time, as well as through peer-referrals through brand communities and social networks (Leone et al., 2006; Rego et al. 2009; Raitel et al. 2016).

In short, customer equity is a powerful asset connecting its owners to their customers, providing privileged insights into customer needs, attracting service orders, effectively delivering services through customer co-creation. These critical, potentially long-term benefits cannot be copied by the tap on a screen. Relationships emerge through recurring interactions, driven by satisfaction, service quality and trust in competencies and good-will of providers (Morgan and Hunt, 1994; Ndubisi et al. 2016). While customer equity is crucial for converting resources into service performance, it is hard to build and copy – driving the asset-character of customer equity.

4. Employing Assets for Capturing Value: Business Models and Management Processes

The service process is the moment of truth for the contribution of any asset for its contribution towards value creation and capture. So far, we have mainly discussed the potential offered by assets. But left on their own premises, assets remain idle and will devalue over time. In services, action drives value creation. While assets do not drive agency, people do. Because both, clients and providers co-create services, providers need to develop processes for the effective interaction of the service partners. We discuss both dimensions in the following subsections. People and their embedding in organizational cultures, as well as service processes, are key conditions for transforming assets into value as well as differentiate the service firm and navigate it towards competitive advantage.

4.1 Business Models: Shaping the “Gestalt” of Asset Configurations

The large-scale adoption of IT- and internet-technologies has been stimulating reorganization of business. Internet-infrastructures disrupt established industries and transcend traditional trade-offs between cost leadership and differentiation. With dramatic improvements in the economies of customization, companies can find cost-effective ways towards differentiation. Platform assets have been opening paths for the transformation of industries by exploiting the strong customization potential offered by information technology and create new pathways connecting clients and providers. On a large scale, Amazon pioneered this approach first for books and then for an

almost infinite sequence of categories. A growing range is establishing business models that build on unique asset configurations. Designer platform Etsy increased its market of online sales of designer accessories, by creating a platform connecting designers with small-batch manufacturers. One key element in Rolls Royce “Power-by-the-Hour” business model was the investment in a real-time ground-control system that allows early identification of engine disruption and an effective management of maintenance activities (Ehret and Wirtz, 2017). Arguably, the platform is becoming a paradigm for service firms employing the internet infrastructure (see Chesbrough, 2011, Parker et al. 2016, 2017).

At a minimum, business models ask for the unique value proposition of the firm, translating this into a revenue model and identify the network of partners, complementors, and suppliers needed to make competitive offerings. Thus, business models provide the basis for designing an architecture of service assets and identify the “Gestalt” of their configuration.

Business models offer architectures for the configurations of assets, that open potential for value-creation out of reach of established industries. Research has identified a range of archetypes of such business models (e.g. Chesbrough, 2011; Osterwalder et al., 2014). For example in the unbundling model, companies focus on critical assets while leaving opportunities for complementing services. A notorious example is the telephone industry where integrated network companies have given way to networks of infrastructure providers, network operators and a growing universe of mobile applications and services (Osterwalder et al. 2014). Another type is the multi-sided business model, where the platform connects different types of markets, for example, internet search with advertisement as in the case of Google. Yet other models build on the razor-blade model, where a core product serves as the platform for commercializing complementing products and services.

Such business model archetypes provide the basis for designing the “Gestalt” of configurations of assets (Wirtz, 2016). While platform assets play a key role in such business models, they bear implications for resource- and market-based assets.

4.2 Integrated Web of Processes and Activities

Firms differentiate their assets through processes and activities. As Porter (1996) puts it: “Competitors can quickly imitate management techniques, new technologies, input improvements, and superior ways of meeting customer needs.” (Porter, HBR, 1996, p. 63). Rather, it is the “fit, whereby the whole matters more than any individual part. Competitive advantage grows out of the entire system of activities.” (Porter 1996, p. 63).

Services offer strong opportunities for creating unique webs and systems of processes and activities (Wirtz and Lovelock 2017). First, as customer’s perceptions drive service quality, service firms willingly or unwillingly differentiate themselves when performing with customers. Showing service effort and creating customer delight paths the way towards a unique image of the firm. Showing empathy and interacting with customers, empowers firms to differentiate themselves.

Second, services reside on multiple sets of activities, integrating resources and using technologies guided by people who show the potential for understanding and interacting with customers. Thus, service organizations have a broad spectrum of choices for designing processes and orchestrate them towards unique service experiences. Such processes reside on organic eco-systems rather than vertical value chains. Singapore Airlines provides a telling example, as it links its service culture and climate for a continuous learning and adaption of processes and activities (Heracleous and Wirtz 2010). With a joint focus of service staff on driving prioritizing service quality and efficiency at the same time, the airline fosters a virtuous learning cycle that is hard to replicate by outsiders.

5. Managerial Implications

Assets offer firms entry gates to profit opportunities but can turn easily into liabilities. Thus, on the path towards sustainable competitive advantage managers need to understand the relation to opportunities. In our article, we identify three major domains as sources for opportunities which call for particular asset-types. Resource-based assets offer unique capabilities and capacity fostering service performance. Main types of resource-based assets are physical assets like unique equipment and facilities or unique natural assets, unique intellectual capital and the social capital of the company, driven by employees and the service climate. Platform-based assets drive competitive advantage through service innovation, by enabling new connections between the resource base and service users. Platform-based assets provide the crucial means for driving scale, liquidity and critical mass for capitalizing investments into services. Market-based assets open pathways for companies to exploration and exploitation for unmet demand by potential service clients, namely through points of customer interaction, brand equity, and customer equity.

5.1 The Case for Selective Ownership Approaches

The key implication for management is the urge for selective approaches to asset-ownership. Management concepts like outsourcing or non-ownership have raised the

awareness of alternatives to ownership as well as questioning the scope of ownership. Despite the rise of effective alternatives, ownership of strategic assets remains a key pillar for differentiation and capturing profits. Thus, managers should strive for selective ownership rather than simple non-ownership approaches. As a general rule, managers should identify, establish and nurture the key assets as sources of their competitive advantage, and complement these with external services offered by excelling service providers. Key assets should be tied to market opportunities. Thus, managers need a dynamic approach towards asset ownership as the market environment can shift in favour of particular kinds of assets while commoditizing others. For example, technology developments can raise the attractiveness of ownership of assets. In the car industry, batteries used to be outsourced to component suppliers, while they have now reached the centre stage of in-house development and eventually manufacturing. The rise of artificial or augmented intelligence has been strengthening the urge of Apple to grow its scope its own processor, which it had outsourced for a substantial time.

5.2 Asset Configurations and the Case for Business Services

Critical assets can be found on all stages up- and downstream along the value chain. Thus, managers should keep a clear mind and open view especially on assets that are positioned in seemingly distant areas in the value chain. Especially companies that have a reputation for strong outsourcing maintain a variety of critical assets along each step of the value chain in-house. For example, Nike might have a justified reputation for extreme outsourcing but owns critical assets on each stage of the value chain, including resource markets, for example, the design of critical materials and textiles, in addition to signature shops and internet-sales platforms besides investing in one of the most valuable sports and fashion brands. Apple may build its strengths on platform assets and a world-leading brand, but it keeps investing into in-house technology development and eventually manufacturing. Thus, outsourcing to external services constitutes the flip-side of smart, selective ownership strategies.

One of the main reasons is linked to the key characteristics of resources: In order to be valuable, they need to be unique. Ownership is the main tool that empowers managers to establish and protect distinctive resource combinations. At the same time, resources need to be conversible, urging managers to establish and maintain interfaces downstream with customers and marketing channels. These conditions of uniqueness and conversibility of resources urge companies to invest into configurations of assets where some assets provide unique sources of value while others might path ways towards customers.

In that regard, platforms offer a useful metaphor for the business model design of almost any business. As most businesses start from stronger positions either in the downstream product or upstream resource markets, strategic and attractive positions are intrinsically linked to both. Even when companies feel far off world-market dominating positions like Qualcomm, Google or Apple, they face similar challenges on smaller levels in different contexts: How can they provide unique value and maintain a strong bargaining position with their revenue generating customers? Here competitive advantages build on strong positions in both up- and downstream markets.

6. Research Opportunities

Service research needs to come to terms with the dual role of assets. In our article, we provide a starting point by identifying the roles of assets in the process of exploring and exploiting opportunities. Our resulting service-driven typology offers a first step for a thorough study of conditions and approaches enabling clients and providers to realize the potential promised by non-ownership. In the following section, we identify potentially interesting research opportunities.

6.1 Selective Ownership and the Service Economy – Exhausting the Potential of the Non-ownership Perspective

The non-ownership perspective has provided a useful and theoretically well-founded criterion for the definition of services (Lovelock and Gummesson 2004). The rise of the service economy goes in hand with a growing range of external services that provide alternatives to value creation by operating self-owned assets (Ehret and Wirtz 2010; Quinn 1990). In order to exploit the full potential of this approach, service research needs to look at the flip-side of non-ownership – asset ownership. The hidden assumption underlying the viability of non-ownership service business models holds that there exists an actor who takes-on ownership of the assets that are used for service-delivery.

To some extent, non-ownership provides business opportunities to service providers who are willing and capable of taking on ownership deemed worthless by other participants in the value creation process. Thus, service research needs concepts that reflect the full implications following from selective ownership approaches. What conditions, capabilities and resources empower service providers to handle assets that fall out of the scope of potential clients? Ownership offers crucial incentives for companies to focus on specific domains of value creation, mainly by vesting power towards service providers and offering them profit opportunities. Still, the question remains, what factors render an asset valuable useful for one firm while it seems to have become worthless to others.

Property-rights theory offers a valid starting point for understanding such phenomena in static positions by looking at the transaction cost implications of asset specificity, rendering ownership valuable for companies with comparable higher opportunity costs, while favouring service-sourcing with lower opportunity costs (Barzel 1986; Ehret and Wirtz 2010; Grossman and Hart 1986). As we show in our discussion, such perspectives are snapshots of dynamic processes. In the face of increasing competitive pressure, both researchers as well as managers, need an understanding of dynamic factors that drive the specificity and opportunity costs of assets beyond the transaction cost implications. This is the background of the growing efforts in entrepreneurship research as well as in business model design (Chesbrough 2011; Amit and Zott 2008).

6.2 The Elephant in the Room: The Asset Base of Service Companies

Conceptual reflections regarding asset ownership reveal a greenfield of research opportunities for service research. While some sort of asset ownership is a mandatory condition for service businesses in a non-ownership setting, empirical research has remained almost blind on the role of assets in service provision. However, the rise of platform companies shows at least some anecdotal evidence that service growth goes in hand with a growth of assets on the balance-sheet. The currently most valuable brands on world markets are the platform brands of Apple and Google. Both companies hold a significant share of tangible assets on their balance-sheet, most notably their server farms but also their company campuses where employees and strategic suppliers convene for the design of new features of the platform or offerings commercialized (Wirtz 2016). Here we need a better understanding of the types of assets owned by such service companies, particular asset configurations, for example, the combination of intangible assets like brands or patents with tangible assets like technological equipment or real estate. Such typologies of configurations would mark the first step in systemizing our understanding of ownership of service assets. Ultimately, we need a better understanding of how particular asset configurations affect the performance of firms, the quality of their services as well as an economic and social value on a macro-level.

6.3 Service Pricing and Asset Valuation: The Potential of Real-Options

Nonownership value propositions build on the asymmetric perception of uncertainties. Service providers embrace uncertainties that their clients loathe and are willing to pay service fees for discarding them. Arguably, asymmetric uncertainty is a key condition and source of nonownership value, if not service value in general. From a financial perspec-

tive, service contracts share some features with financial options. Service clients enjoy the right to benefits of a service without the obligation to bear the downsides. Thus, service clients enjoy benefits quite comparable to those of option holders who hold the right, but not the obligation, to sell a stock at a certain price at a certain time. Like option holders only risk the option price, service clients limit the financial risk to the service fee (McGrath et al. 2004).

Service research has not yet reflected the potential offered by real-options for the systematic valuation of non-ownership services and services in general. While research still faces methodological challenges in real-option valuation, researchers are making progress and can look forward to being furnished with an advanced understanding of uncertainties driving financial valuation and the environment of services (Taleb 2012).

6.4 Competencies, Service Culture and Asset Creation

We have stressed the managerial challenge in matching assets and with a firm's capabilities and organizational cultures. However, we have scant evidence that competencies and the culture of a firm shape the types of assets employees develop and managers seek to control. Companies cultivating research cultures tend to develop higher shares of intellectual assets. Business architecture, like the recently developed campuses of Silicon Valley companies, represent cultural roots, even those far back in the 1960's counter culture that can eventually translate into unique value propositions. We have strong reasons to assume that assets hold the potential to work as a strategic repository for values, knowledge, and competencies cultivated within a firm. These open up opportunities for research to explore systematic trajectories between corporate cultures and the acquisition, creation, and management of strategic assets within a firm.

7. Conclusions

The service sector is growing and has reached or even exceeds 80 % of employment and GDP in developed economies. Business services are the major drivers of the rise of the services sector. The B2B growth is a result of an increasingly selective approach of firms towards asset ownership which resides on delegating control and operation of non-critical assets to the domain of business service providers. Consequently, firms should own assets that meet the resources-test. The key in resource-driven service businesses resides on smart specialization: Specialization should render the providers' capabilities and assets unique and valuable. Finding smart ways for specialization enables providers to connect to users and customers as well as handle uncertainties and downsides of asset ownership.

As a major implication, the emergence of service business models reflects the pressure of hyper-competition forcing

companies to focus ownership on those assets that show the highest potential for value appropriation, while delegating ownership of non-essential assets to service providers. Non-ownership contracts offer an entry-gate to potentially profitable service businesses. In order to exploit this potential, providers need to be prepared to master the un-avoidable downsides that come with ownership in a unique manner. As a major implication they need to identify a path towards smart specialization, employing business models, develop a service climate and establish an integrated web of processes, empowering them to excel at handling uncertainties in a unique manner.

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Keywords

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