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Ilmenauer Schriftenreihe zur Betriebswirtschaftslehre, No. 2/2026

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Suggested Citation: Richter, Magnus (2026) : Why services are not immaterial goods: Additional comments on a long-standing debate, Ilmenauer Schriftenreihe zur Betriebswirtschaftslehre, No. 2/2026, ISBN 978-3-940882-60-8, VERLAG proWiWi e.V., Ilmenau, https://nbn-resolving.de/urn:nbn:de:gbv:ilm1-202620010

This Version is available at:
https://hdl.handle.net/10419/343988

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2/2026

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Additional Comments on a long-standing Debate

Magnus Richter

Ilmenauer Schriften zur Betriebswirtschaftslehre

TECHNISCHE UNIVERSITÄT
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Ilmenauer Schriften zur Betriebswirtschaftslehre

Herausgeber:
Univ.-Prof. Dr. rer. pol. habil. Norbert Bach
Univ.-Prof. Dr. rer. pol. habil. Anja Geigenmüller
Univ.-Prof. Dr. rer. pol. habil. Michael Grüning
Univ.-Prof. Dr. rer. pol. Rainer Souren

ISSN 2192-4643
ISBN 978-3-940882-60-8
URN urn:nbn:de:gbv:ilm1-202620010

Ilmenauer Schriften zur
Betriebswirtschaftslehre
2/2026

Why Services are not immaterial Goods: Additional Comments on a long-standing Debate[1]

Magnus Richter[2]

[1] This paper is a translated and modified version of the paper *Richter, M.: Warum Dienstleistungen keine immateriellen Güter sind – Kritische Anmerkungen zu einer zweifelhaften Wesensbestimmung*, Ilmenau 2024.

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1. Outline of a fundamental misunderstanding

How much does a concert weigh?

How big is a massage?

How long does a stamp take?

How often is a door?

The critical reader will certainly frown at all these questions and wonder what their point is – and rightly so! Strictly speaking, none of the questions make any sense at all because they characterize things categorically incorrect. A concert, for example, is a process, something procedural, which *per se* cannot have a weight. Similar with a massage: it is something that is *done*, a procedure which is carried out. Attributes such as size just cannot be meaningfully applied here. In contrast to a concert and a massage, a stamp is a thing – something that cannot have a duration per se. And a door is a thing, an entitiy, too, something that per se cannot be described with the attribute frequency.

As trivial as these considerations may seem, as absurd as the mind game with the "wrong" questions is – a misconception like this is characteristic for service science, the discipline that deals with the description, explanation, planning and design of the world's largest economic sector. After all, there is still a prevailing conviction that services are immaterial goods. While there can't be any doubts about the goods characteristics of services – »goods« in the sense that they can satisfy needs or solve problems, not in the sense of »things«! – the claim of services being immaterial is wrong. This attribuation is actually wrong, because services are processes that – as discussed above – cannot be described by object related characteristics, such as (im)materiality.

If the misspecification of services as immaterial goods were a purely definitional matter, it could possibly still be accepted and legitimized with the common pluralism of definitions in science. After all, everyone is free to define things as they want. On closer inspection, however, it becomes obvious that defining services as immaterial goods is based on a striking ontological misconception, that goes beyond mere quibble – it causes serious factual errors and confusion: on the one hand, the association with immaterial goods obscures the "true" service characteristics and, on the other hand, confuses them with

the quite different category of *truly* immaterial goods, such as information and knowledge.

The misconception of services as immaterial goods is highly problematic both for theoretical analysis as well as for practical planning purposes (cf. Sampson/Froehle 2006, p. 329). In the following, an additional attempt will be made to clarify the problem of interpreting services as immaterial goods and to present approaches to a new conception. Thus, more convincing services characteristics are highlighted, and the distinction between services and immaterial goods becomes clear. To this end, in Chapter 2, services are first characterized – in contrast to the generally different view in the literature – on the basis of *processual* characteristics. A corresponding definition of services is then presented. Chapter 3 contains a brief excursion into the theory of immaterial goods, which shows that their characteristics do *not* apply to services. In addition, simple input/output graphs are used to show that the concerns regarding service characteristics is essentially based on a confusion between immateriality and capacity utilization. Finally, chapter 4 presents examples of service outputs of different materiality in order to show that the distinction between »material« and »immaterial« *can* make sense, but *only* when referring to service *outputs*! Chapter 5 summarizes the results.

2. Critical definition of the nature of services

2.1 The historical view of services

Classical economics was (at least initially) mainly concerned with the causes and nature of wealth (cf. Stavenhagen 1969, p. 53, p. 62 and p. 88) and the question of how the wealth of nations can be increased. Increasing wealth was generally associated with the production and storage of things or objects (cf. Rück 2000, p. 4). Consequently, analyses of the production processes themselves faded into the background, and services – »procedural goods«, so to say – were also given little attention, as their intrinsic value was underestimated or even denied (cf. Malthus 1820, p. 44). Although SAY already extended the concept of production to services at the beginning of the 19th century and emphasized their usefulness (cf. Stavenhagen 1969, p. 97), the so-called »result orientation« – i.e., the one-sided, reductionist focus on outputs and material goods – still characterizes fundamental viewpoints and paradigms of service management (cf. Sampson/Froehle 2006, p. 330). Services are still quite

often defined as »immaterial« or »intangible«, especially in marketing management (cf. Haller/Wissing 2022, p. 10.).

At first glance, this may sound plausible, after all, a car repair shop does not produce cars, i.e., the customer does not receive an additional »thing« when using its services, a cab driver does not create new people at the destination, but only drops off those passengers who have previously boarded, and an orthopaedist does not 'produce' new limbs, but only changes some physical characteristics of his patients' bodies. It is therefore somehow understandable that the question may arise as to what a service provider 'produces' – in any case it's not physically completely new, separable entities, as in the case of cars at FORD or metals at US STEEL (cf. Hill 1999, p. 428; Mudie/Pirrie 2006, p. 3). And yet the reverse conclusion that their output must therefore consist of something »immaterial« – or »intangible« – is wrong.[1]

HILL already noted this in 1977. He says that it is inappropriate "to think of services as "immaterial goods" … . Goods and services belong to quite different logical categories. For example, the transport of goods from one location to another is a clear example of a service, but the change of location is not to be regarded as an "immaterial good" as if it were some kind of ghostly vehicle. A surgical operation is not some kind of immaterial drug; the cleaning of clothes is not some kind of immaterial detergent. Such statements are nonsense." (p. 318)

Analogous to the author's argumentation, HILL's criticism focuses on the previously discussed categorial error of characterizing services, something *processual*, by means of *static* object characteristics. According to HILL, the process of service production is more like an

[1] Sometimes, the immateriality paradigm leads to the questionable conclusion that services cannot be touched, seen, heard, felt, smelled, or tasted (cf. Flipo 1988, p. 287; Haller/Wissing 2022, p. 10). However, this is easily contradicted by visits to manicures ('touched'), theatres or cinemas ('seeing' and 'hearing'), massages and dental treatments ('feeling'), as well as aromatherapies and cooking classes ('smelling' and 'tasting'). The frequently heard claim that services cannot be stored is also based on the fatal immateriality postulate: The assertion that services cannot be stored is only true – but then also trivial – if services are understood as processes, because processes (or flows) are by nature *dynamic* phenomena that can only manifest themselves over time, but – by their very nature – not *statically* (cf. Gadrey 2000, p. 373). Even in cases where services are associated or equated with their output, the claim of non-storability is just false: a haircut does not reverse itself as if by magic – the cut hair does *not* reconnect to the customer's head, and the materially consolidated service does not evaporate with the completion of a service (cf. Gadrey 2000, p. 374). What is propably really meant by non-storability is the impossibility of producing services in advance (cf. Rück 2000, p. 230–237), i.e., without the customer's specific demand and participation. So, here again, the confusion about the very nature of services stems purely from conceptual vagueness and a lack of terminological precision, respectively.

"activity which affects the person or goods belonging to some economic unit" (Hill 1977, p. 318, and for a similar approach Lovelock/Wirtz 2011, p. 15). This description clearly focuses on the process characteristics of services and thus sets a counterpoint to the immateriality or result paradigm.

2.2 A modern view on services

HILL is by no means alone in his criticism.[2] Since the 1980s, a number of other authors have also pointed out inconsistencies in the use of service definitions and proposed new concepts. The reason for this has been the observation that there is disagreement regarding the concept of services (cf. Sampson/Froehle 2006, p. 329) and that the formulation of a precise definition is difficult, especially due to the diversity of services (cf. Corsten 1985, p. 175; Lovelock/Wirtz 2011, p. 15; Haller/Wissing 2022, p. 9). RÜCK has presented an elaborated analysis of service definitions in economics and states that it is curious that although there is agreement that the tertiary sector is constantly growing, economists are still unable to define what services actually *are*. A central result of his work is the following service definition (Rück 2000, p. 277): "Services are transformation processes that ... are performed on external factors ... and cause a change in the properties of these factors."[3] Chapter 3 explains why a paradigmatic shift – away from immateriality and output orientation towards process orientation – seems much more fruitful for planning and analysis purposes. To this end, services are distinguished from immaterial goods and deceptive, alleged commonalities are revealed.

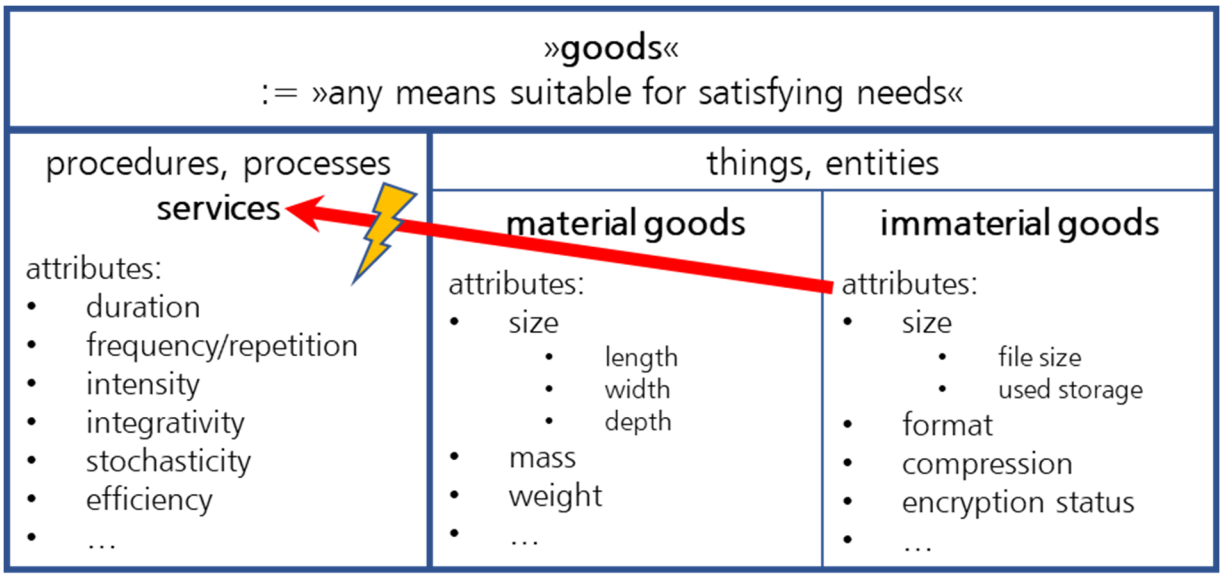
3. Theory of immaterial goods and capacity management

3.1 The distinction between immaterial goods and services

Before discussing the distinction between immaterial goods and services, we have to define the term »goods«. In a broad sense it refers to any means that are suitable for satisfying

[2] EDVARDSSON/GUSTAFSSON/ROOS 2005 claim – in the author's view, somewhat too optimistic – that „most scholars consider services to be activities, deeds or processes and interactions" (p. 108).
[3] Translated by the author.

needs. Tab. 1 distinguishes between »procedural« or »processual« goods – including services – and goods in the sense of »things« or »entities«, whereas the latter include material goods (e.g. bread, steel, water) as well as immaterial goods (mp3 files, data sheets, website contents). Tab. 1 also provides a list of possible attributes that can be used to describe these goods categories. As explained in chapter 1 such attributes are strictly – and exclusively – tied to their respective goods category. The inappropriateness of applying attributes of immaterial goods to services is illustrated in Tab. 1 by the red arrow and the orange zigzag arrow.[4]



Tab. 1: Distinction between procedures/processes and things/entities

In this study, the refutation of the equation of services with immaterial goods has thus far been based primarily on the (onto-)logical argument that attributes of a specific goods category can be applied *only and exclusively to this exact goods category*, i.e., not to any other goods category (see Tab. 1[5]). To a particularly critical reader, this may seem like a mere assertion, that requires further substantial justification. For this reason, the two *core characteristics* of immaterial goods – as described in economic theory – are discussed next to demonstrate that services do *not* exhibit these characteristics.

[4] It should be noted that it would be equally inappropriate to apply the attributes of *material* goods to services. However, there is no need to analyze this any further, since the same logical arguments apply.
[5] The attributes listed in the right-hand column of Tab. 1 for describing immaterial goods refer (primarily) to information as a specific form of immaterial goods. Information is inherently non-rival (cf. Varian 1998, p. 7)

Economic core characteristics of immaterial goods, which are also of central importance for the following considerations, are »nonrivalry« and »quasi-arbitrary copyability« (or »replicability«) (cf. Lev 2001, p. 22). Nonrivalry implies that the use, input or consumption of an immaterial good by one economic unit does not restrict the use, input or consumption possibilities of the same good by other economic units (cf. Lev 2001, p. 23). The listener of an mp3 file, e.g., will not perceive less of the mp3 file simply because other people are listening, just as the reader of a book will not get less to read simply because someone else is reading along. Quasi-arbitrary copyability implies that the reproduction of any immaterial good is possible with relatively little effort compared to the effort required for its initial creation (cf. Lev 2001, p. 23). E.g., mp3 files and books can be copied relatively easily and quickly, whereas their original (initial) production requires considerable effort.

If services were truly immaterial, both nonrivalry and quasi-arbitrary copyability would apply to them. But is this really the case? To test this, we will now analyze two examples of services whose service characteristics should be indisputable: a massage and a cab ride. Since in service science there is disagreement as to whether services should be understood as processes or as outputs, it is first necessary to distinguish accordingly.

Let's start with the analysis of the massage (as a process): Person A massages the shoulder of person B, applies work, *does* something. How should this action of A be replicable at all or even without any additional effort? A's actions cannot be 'cloned' as in the land of milk and honey. An additional massage simply requires *doing again* what A has done before, namely massaging! The same test result is obtained when the massage is considered as *output*: How is the quasi-arbitrary *copying of an intact shoulder* – the output! – supposed to take place? As far as the author is aware, the energy conservation laws of physics, which rule out a land of milk and honey, speak against such 'miracle productions'. The characteristics of immaterial goods in massage are therefore not verifiable, neither from a process-oriented nor an output-oriented perspective. An examination of nonrivalry leads to the same result: It is obvious that the patient's consumption level decreases if the masseur tried to massage several patients at the same time!

Now to analyze the cab ride (as a process): It is impossible to 'replicate' any transportation process without additional effort, without doing anything again – as demanded by quasi-arbitrary production of immaterial goods. In order to complete another transportation service, the driver has only one option: He has to *drive again*! The same applies when the

cab ride service is seen as an *output*: Person X transports person Y to his destination, spends time driving the cab. X thereby achieves the output that Y is at his destination. It is impossible to replicate this result, which manifests in the change in Y's location, at will. Replicating the output of having taken a passenger to his destination is therefore only possible by using resources again with approximately the same effort, i.e., an additional transportation process has to take place.

The characteristics of immaterial goods are therefore *by no means* fulfilled – neither from a process-oriented nor an output-oriented perspective.

3.2 The capacity of service systems

Nevertheless, the cab ride example differs significantly from the massage example – in terms of capacity management –, which could lead to the assumption that *at least some* services can be copied almost at will: Assuming that a cab has a capacity of three passengers, but only one passenger is transported, the output quantity y of the transportation process could be increased by adding two more passengers. However, this can be refuted: The possibility of increasing the output of one specific cab ride by adding more passengers without significant additional expense is due to the lack of capacity utilization of the cab to date! However, increasing capacity utilization is not the same as copying something.

This is also shown by the massage example: Here, the masseur is the crucial potential factor from a capacity perspective, who can only massage one person at a time. In the case of the potential factor masseur, there is therefore no option for greater capacity utilization once he has started a massage – he simply has to massage again and again if more people than just one are to be massaged. Fig. 1 illustrates the difference between quasi-arbitrarily reproducing (copying) an immaterial object (original file) and service production using input/output graphs (cf. Dyckhoff 2006, p. 35f.).

The graphs in the upper part of Fig. 1 compare *the* single (left side) and multiple (right side) copying of an original file (input). This shows that in order to generate a certain number of copies (outputs), exactly the same number of copying processes has to be carried out, if – as assumed for the basic activity shown on the left – exactly one file (intensity $\rho = 1$) per process is copied. The output quantity of copies y that can be produced with this basic activity then corresponds to the number of repetitions λ of the basic

activity. This is modeled in the graph (top right) for $\lambda = 3$ repetitions. This process results in an output quantity of 3 copies ($y = \lambda \cdot \rho$, with $\lambda = 3$ repetitions and a unit intensity/workload of $\rho = 1$). It is important to note that the original file depicted as an input (in the upper graphs) is an immaterial good and therefore can be copied arbitrarily, that is any number of times and with infinitesimal small quantities of labour input (modeled as $x = \varepsilon$ in Fig. 1).

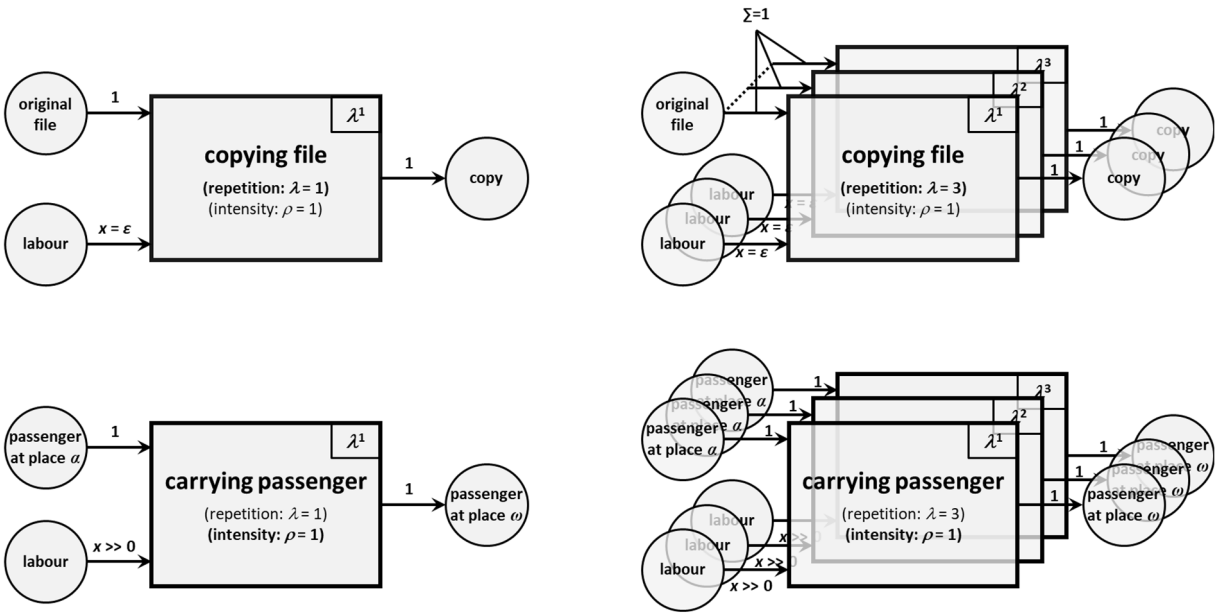


Fig. 1: Arbitrary reproduction of immaterial goods vs. service production

The possibility of arbitrarily reproducing the original file – and therefore arbitrarily generating copies (outputs) – is due to the generic characteristic of immaterial goods called *nonrivalry in consumption*, which is a well known concept in economics. Nonrivalry in consumption of the original file is modeled in the upper right graph using three lines, each of which leading to an input arrow and being connected with the symbol »$\sum = 1$«. This means that only one original file is required as an input, regardless of how many copying processes are performed and regardless of how many copies (as outputs) are needed, respectively. The simplicity of reproduction also results from the high level of development of computer technology, which leads to infinitesimally small quantities (ε) of labour for copying (see again $x = \varepsilon$ in Fig. 1).

The graphs in the lower part of Fig. 1 illustrate transportation processes of a passenger from a starting location α to a destination ω. The graph on the left side can be interpreted as a basic activity in which always exactly one passenger at a time is transported from

location α to destination ω. At this point it is important to note that there is perfect congruence between the two graphs on the left side of Fig. 1 – the only difference between the generic copying process (with $\lambda = 1$ and $\rho = 1$) and the generic carrying process (with $\lambda = 1$ and $\rho = 1$) consists in the input quantities of labour required for processing (labour for copying a file: $x = \varepsilon$; labour for carrying a passenger: $x >> 0$).

When looking at the multiple output cases depicted on the right side of Fig. 1 the two graphs however show a significantly different structure: Whereas the copying example, as described, allows for arbitrary reproduction ($y > 1$) with a single file ($x = 1$) and an infinitesimally small quanity of labour for each repetition ($x = \varepsilon$), the output of the transportation process cannot be increased arbitrarily. This is due to its physical/material input (passenger), which induces rivalry, and the (before mentioned) quantity of labour, which is significantly larger than zero ($x >> 0$). In order to increase the number of passengers transported to location ω (that is the output quantity y), the basic activity with a workload of one passenger (intensity $\rho = 1$) has to be repeated correspondingly often ($\lambda > 1$). Those repetitions each require significant additional input of labour as well as an additional passenger. The total number of passengers y carried to location ω still corresponds to the number of transportation processes λ, because $y = \lambda \cdot \rho$, still applies – but there is no option of arbitrary production.

Nevertheless, there is in fact an option of increasing the output of carried passengers without repeating the carrying/transportation process: An increase of the processes intensity ρ. This is depicted on the right side of Fig. 2 for an intensity of $\rho = 3$ passengers.

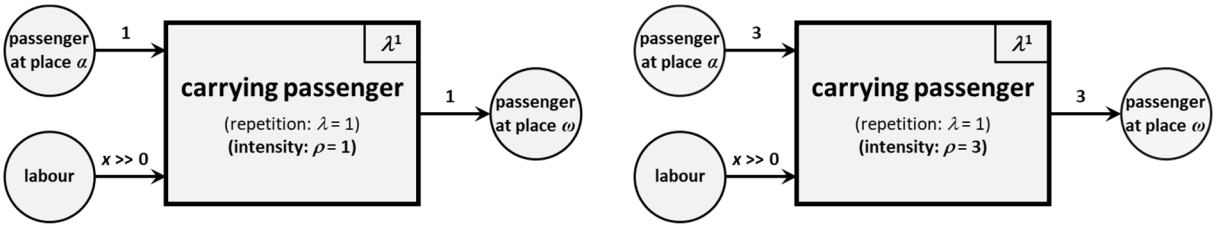


Fig. 2: Increasing capacity utilization and output through higher intensity

Just by increasing the quantity of passengers ($\rho = 1 \rightarrow 3$) being carried by the process, which is proceeded once ($\lambda = 1$), the output is increased, too ($y = \lambda \cdot \rho = 1 \cdot 3 = 3$). Due to the fact that this output increase does not require any additional labor input of the cab driver (in both cases $x >> 0$) and the marginal fuel consumption would propably remain

very low a 'hint' of arbitrary production possibility – which would be typical for immaterial goods – is 'in the air'. However, it has to be noted that the increase of the output quantity depicted in Fig. 2 *is solely the result of a higher capacity utilization* (see again $\rho = 1 \rightarrow 3$) – *it's not due to any increase in repetition* (which remains at $\lambda = 1$)!

The explanations show that, due to the equation $y = \lambda \cdot \rho$, there are two generic options for increasing the output quantity y: An increase on the repetition λ of an activity as well as an increase of the intensity ρ of an activity. With regard to the copying example, this of course does not exclude the possibility that several files can be copied at the same time ($\rho > 1$). The examples merely illustrate that there is a *major difference* in production economics between repeating a production process ($\lambda\uparrow$) and increasing its intensity ($\rho\uparrow$). Overlooking this distinction is mainly responsible for the fact that the occasional possibility of increasing service output with negligible additional effort is explained by the supposed immateriality of services, although in reality this is due to an increase in capacity utilization!

To summarize: Immaterial goods do exist, of course – such as, e.g., information and software (cf. Sampson/Froehle 2006, p. 330). The simplicity and cost-neutrality of their replication, reproduction, and duplication can be explained with their immateriality, which implies nonrivalry and arbitrage – the latter additionally favored by very high degrees of automation of computer technology, which leads to infinitesimally small quantities of labour input required for processing. But services are not immaterial goods! However, *if* a certain service output can be increased in an almost cost-neutral manner, this is only due to an increased capacity utilization of the service system – or an increased efficiency. Incidentally, nonrivalry does not stand up to comparison with services either: *if* services were nonrival, which would necessarily be the case with immateriality, the consumption level of their users would not depend on the number of other users being served – any reader who has ever traveled in overcrowded trains knows that rivalry does indeed exist.

4. Distinguishing services according to the materiality of outputs and the time-relatedness of satisfying needs

Services have just been highlighted as processes that can logically only be described by means of process characteristics such as, e.g., repetition, intensity, integrativity, contingency as well as stochasticity (cf. Richter 2012, p. 162), efficiency or contact duration

between provider and customer (cf. Souren/Richter 2015, p. 47). However, the fact that services *are* processes by no means excludes the possibility of adopting an output-oriented perspective (in addition to analyzing the processes themselves), i.e., examining the specific service outputs (cf. Gadrey 2000, p. 372.) as well as their material properties (»material« versus »immaterial«). The lack of distinction between a service itself and its output is partly responsible for the widespread confusion surrounding the concept of services.[6] For example, the immaterial nature of services has repeatedly been questioned by the illogical objection that certain services produce material outputs (cf. Drechsler 1990, p. 310). This illustrates the tendency to equate services with service outputs. In the context of *output* analyses, a distinction between »material« and »immaterial« can easily be made, without repeating the categorical error that occurs when applying the concept of materiality to services, i.e., processes. Tab. 2 depicts some examples of material ('tangible') and immaterial ('intangible') service *outputs*. The two examples at the top of both cells represent object-related outputs and the two examples below represent subject-related outputs, i.e., those that are attached to people. It is clear that concentration is required in order to distinguish precisely between *what services are* and *what they produce*. In order to avoid misunderstandings, it should be emphasized that this article is based on a very broad understanding of »output«. This is necessary in order to be able to contrast the examples of material outputs listed in Tab. 2 with immaterial outputs. This is a deliberate shift from the traditional view of associating the term »output« solely with material entities.

The fact that immaterial outputs always adhere to material carriers, such as a digitized image on a hard drive, follows from the fact that in our material world every output must inevitably materialize on some kind of thing (cf. Rück 1992, p. 162, quoted from Bode/Zelewski 1993, p. 597). However, this does not change the immateriality of the immaterial entity itself (cf. Hill 1999, p. 439). A digitized image is and remains something immaterial, even if the hard drive on which it is stored is material (cf. Betancourt 2015,

[6] See also GADREY 2000 who highlights „that the outcomes or "outputs" of many service activities are lasting and may even be susceptible of accumulation, since they constitute genuinely material changes in the realities on which service providers work, whether they be goods, individuals, organizations or information. … As far as the "output" of services is concerned, it is clear that the evanescence assumed by Smith, drawing on the example of servants' work, is based on a convention … that equates output with the immediate act of delivery, with the work itself. … the output or outcome of the servant's efforts does not vanish when the work is done. The result is visible, tangible or easy to spot; it is semi-durable and can be evaluated on the basis of material criteria … . What is true of servants' work also applies to health, education, consultany, repair and social services, among others. In none of these cases does the output "vanish"". (p. 371f.)

p. 218). And knowledge is also immaterial, even if it is attached to the human brain (cf. Bode 1993, p. 12 and p. 17).

	material/tangible service output	immaterial/intangible service output
outputs	▪ repaired **vehicle** ▪ painted **wall** ▪ ... ▪ extended **hair** ▪ implanted **hip joint** ▪ ...	▪ digitalized **picture** ▪ legally secured **claim** ▪ ... ▪ conveyed **knowledge** ▪ procured **right of usage** ▪ ...

Tab. 2: Examples of material and immaterial service outputs

The comparison of service outputs with different material characteristics shows that the distinction between »material« and »immaterial« can therefore be quite useful *in the context of output analyses*, but it should *not* be used to characterize *the processes* that produce these outputs, i.e., the services themselves.

Another special feature of services – which has repeatedly led to misunderstandings when distinguishing between service and service output – is the *purpose* for which the customer asks for a particular service. A customer, e.g., who buys a ticket for a boat trip may simply be interested in *getting to a specific destination*, as was the case in the cab ride example. On the other hand, he might ask for the boat trip because he *enjoys the interesting impressions during the boat trip*. In the first case, the boat trip – with regard to the satisfaction of needs it brings about – could be referred to as a 'moment- or result-related' service, in the second case as a 'time span- or procedure-related' service (cf. Corsten 1985, p. 85 and p. 181; Rück 2000, p. 179, footnote 543; Berekoven 1974, p. 25).

Of course, the assignment of a certain service to one of the before mentioned categories is at the individual discretion of the customer concerned, as everyone has different needs, and one person simply wants to arrive at the destination, while another person enjoys the journey itself – and both at the same time are not ruled out. What a service is *requested for*, however, must be logically separated from the question of what a service *is*. The fact that passenger X just wants to arrive, whereas passenger Y enjoys the trip itself, therefore changes neither the objective nature of shipping nor the definition of »service«!

5. Summary

The article has shown that services are goods – but not *immaterial* goods. The classification of services as immaterial goods is based on the ontological-conceptual misunderstanding of describing *processes* with the help of *object* characteristics, i.e., characteristics that refer to *things or entities*. It was shown that the core characteristics of immaterial goods – nonrivalry and quasi-arbitrary copyability – do *not* apply to services, neither from a process-oriented nor an output-oriented perspective. The misconception that services are immaterial goods stems from a lack of differentiation between »service«, i.e., a process or activitiy and »service output«, i.e., a material or immaterial entity. In addition, the possibility of increasing the output quantities of certain services with negligible additional effort is often (incorrectly) attributed to their alleged immateriality, although this is merely due to an increase in capacity utilization of the service system in question and its potential factors, respectively.

Since the proposed process perspective on services by no means excludes a differentiation of service *outputs* into »material« and »immaterial«, additional examples of services were then presented whose outputs differ in terms of materiality. A distinction was also made between object-related and subject-related outputs.

The conceptual analysis presented here is more than just nit-picking – a precise definition or conceptualization is the indispensable basis of the scientific community *par excellence*, as it shapes all models, analyses and design decisions based on it. In the author's opinion, it would be advisable to handle the concept of services more carefully, as it refers to by far the largest economic sector and also to one of the most important subject areas in economics. Clinging to the concept of the immateriality of services can have 'unpleasant consequences' (cf. Hill 1999, p. 445). It can be assumed, for example, that the analysis of economic development differentiated by sectors would produce a completely different picture if the tertiary sector were adjusted for the many pseudo-services, which include insurance (cf. Rück 2000, p. 298), rental (cf. Rück 2000, p. 284), trade (cf. Rück 2000, p. 289) and many others. Furthermore, for marketing research the present study raises the question of whether the classification of services as credence or trust goods can be maintained without further ado, given that this is often justified by immateriality.

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Ilmenauer Schriften zur Betriebswirtschaftslehre

Institut für Betriebswirtschaftslehre der Fakultät für Wirtschaftswissenschaften und Medien der Technischen Universität Ilmenau

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Univ.-Prof. Dr. rer. pol. habil. Anja Geigenmüller
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ISSN 2192-4643
ISBN 978-3-940882-60-8
URN urn:nbn:de:gbv:ilm1-202620010

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