

# **The Impact of Information Technology Enabled Services on Value Co-Creation**

Value co-creation and changing role of suppliers and customers

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# **The Impact of Information Technology Enabled Services on Value Co-Creation**

## **Abstract**

**Purpose** – Information technology enabled services, wherein transactions are digitized and codified through information and communications technology (ICT), bear potential to transcend the inherent limitations of traditional, labor-intensive “in situ” service models. As the production and consumption of service are spatiotemporally separated, information technology enabled services eliminate the need for human interaction in service transactions and thus limit value co-creation upon service fulfillment. In the information technology enabled services, the co-creation shifts to a higher level of leverage, commensurate with the increasing embrace of complexity of Service-Dominant Logic.

**Methodology/approach** – Conceptual analysis based on a literature study.

**Findings** – The diffusion of information technology in creation of information technology enabled service systems has shifted the IT focus to operant resources: discretionary measures and systemic competencies that effectively address the changing requirements. In the wake of digitization, codification and automation of services through ICT, the locus of human labor in service provision is moving up in the capability hierarchy: from delivery of services to handling of exceptions and (re)definition/(re)negotiation of services. This places new requirements on the service provider competencies and management capabilities.

**Originality/value** – Despite the pervasiveness of information technology enabled services, relatively little research has been done on how IT actually impacts value co-creation in services. Our paper denotes a step towards the direction of providing an analytical account thereupon.

**Key words** – Service-Dominant Logic; information technology enabled services; value co-creation

**Paper type** – Conceptual paper

## 1. Introduction

Services, service business models and service innovation have gained wide attention in the past few years. As the focus of economic activity is moving from goods production to service provision, organizations are adopting service business models and even manufacturing-centric organizations are adding service components to their offerings in order to differentiate in the market place. Increasingly these new services are based on the extensive use of information technology as a platform for the actual service provisioning. The successful deployment of information technology and systems in building these *information technology enabled services* contributes more and more directly to the competitiveness of organizations and industries.

In the recent academic discourse on services, two ideas have been of particular influence: Service-Dominant Logic formulated by Vargo and Lusch (2004; 2008a) and the Service Science initiative launched by IBM (Chesbrough and Spohrer 2006). Vargo and Lusch (2004) define service as the application of competencies for the benefit of another and formulate the notions of Goods-Dominant Logic (G-D logic) and Service-Dominant Logic (S-D logic). Similarly, Service Science is an interdisciplinary study of service systems and how the resources of one or more service systems are applied for the benefit of another service system in economic exchange (Spohrer et al., 2008). In both of these views, services are about networked value co-creation, where both provider and customer resources actively partake and where interaction is as important as the resulting outcomes.

S-D logic poses a new paradigm for understanding the basis of economic exchange; it is argued that service is the true basis for understanding value creation (Vargo and Lusch 2004; 2008a). Value is primarily considered as “value-in-use” rather than “value-in-exchange”. Whereas in G-D logic, value is seen embedded in the products manufactured by “producers” and distributed in the market to distinct “consumers”, value in S-D logic is jointly and reciprocally co-created through interaction and integration of resources within and among providers and beneficiaries.

Maglio and Spohrer (2008) call for a multi-disciplinary approach – Service Science – to understanding value co-creation in socio-technical systems. Service system (Spohrer et al., 2008) is a value co-creation configuration of resources that can be dynamically configured and connected to other service system’s resources. The service system is by nature complex and dynamic, involving people, technology, shared information, and value propositions connecting internal and external service systems (Maglio and Spohrer 2008). It is centered on provider–consumer interactions and is capable of improving its own state and the one of another system through acquiring, sharing or applying resources, with the aim of creating a basis for systematic service production and innovation. These resources can be competencies, knowledge, shared information, technology, people, and organizations.

In this paper, we discuss how ‘digitalization of services’ impacts the focus and locus of human labor in service processes and activities and how concepts such as value co-production and co-creation are manifested in these information technology enabled services. We argue that the role of human labor on the provider side is moving up in the capability hierarchy: to handling of exceptions, (re)definition/(re)negotiation of value propositions and designing and implementing entire service systems (e.g. value facilitation). As a vessel of our analysis, we utilize the work levels approach (Jaques, 1998; De Visch, 2010; Hoebeker, 1994; Rowbottom and Billis, 1987), which has been applied to information systems research on several occasions (Bartenschlager and Goeken, 2010; Cashman and Stroll, 1987; Gould, 1986; Korhonen, Hiekkanen and Heiskala, 2010; Korhonen and Hiekkanen, 2010).

The rest of the paper is structured as follows. Chapter 2 discusses value and value co-creation in service drawing from S-D logic and relevant literature. Next, Chapter 3 presents the work levels

approach we use as a basis of analyzing role of human labor in service. Chapter 4 then presents the main contribution of our paper, the discussion of how human labor and value co-creation manifest themselves in information technology enabled services. Finally, we end the paper with some concluding remarks.

## 2. On Value and Value Co-creation in Service

Service has often been discussed in literature from three viewpoints:

- *As a category of offerings*, services have been mostly discussed by their characteristics and how they differ from the characteristics of other categories of offerings. A common stream of this discussion is the IHIP characteristics attributed to services: intangibility, heterogeneity, inseparability, and perishability.
- *As activities or a process of activities* assisting the customer.
- *As a perspective on value creation*, which has gained a lot of momentum in recent years. A lot of the discussion has been triggered by the 2004 Vargo and Lusch paper about service-dominant logic (S-D logic) of marketing.

In this paper, we will focus on the last two viewpoints on service and especially in the context of information technology enabled services.

In S-D logic, service is defined as the application of specialized competences (operant resources-knowledge and skills), through deeds, processes, and performances for the benefit of another entity or the entity itself (Vargo and Lusch, 2008a). In our view, S-D logic combines the viewpoints of service as an activity and as a perspective on value creation. In S-D logic, it is seen that *value* “is uniquely and phenomenologically determined by the beneficiary”, i.e. the customer. Vargo and Lusch (2008a) also discuss the context and nature of value creation and entities taking part in it. They see that value creation is interactional and that supplier organizations can interactively co-create value after customers accept their value proposition-and only after acceptance of the value proposition. Two fundamental premises of S-D logic are that organizations can only offer value propositions and that customers are always co-creators of value (Vargo and Lusch, 2008a). Organizations cannot create or deliver value independently of the customer. There is no value before an offering, be it goods or service, is used by the beneficiary. Value created is called *value-in-use*. Value creation happens in the context of networks of networks of resource integrators. Relatedly, Spohrer et al. (2008) propose “service system” as an abstraction that will help understanding the nature of “service” and the respective S-D Logic. A service system is conceptualized as a configuration of resources partaking in reciprocal value co-creation with other service systems. The broad notion of service system is applied at different levels of scale, ranging from individual people to human organizations, industrial systems, and nations.

Vargo and Lusch (2008b) make a distinction between operant and operand resources. *Operant resources* can act on or in concert with other resources to provide benefit, i.e. create value. *Operand resources*, in turn, require action to provide benefit. In S-D logic, one fundamental premise is that operant resources are the fundamental source of competitive advantage. Vargo and Lusch (2008b) also discuss two different kinds of co-creation: direct and indirect service provision. In *direct service provision* organization’s operant resources are more central; whereas in *indirect service provision* customer is mostly using his or her operant resources to act upon resources provided by the organization (like goods).

Grönroos and his colleagues (Grönroos, 2008; Grönroos and Helle, 2010; Grönroos and Ravald, 2011) offer a somewhat different view on value creation. Grönroos and Ravald (2011) make a clear conceptual distinction between two processes involved in creating customer value. The first process, *production*, is the organization’s process of providing resources for customer’s use. The other process, *value creation*, is the customer’s process of turning resources provided into value (-

in-use). The skills of the customer as resource integrator affect value creation. Whether customers purchase goods or service activities (both of which can be considered distribution mechanisms for service) they *consume* them as a service (Grönroos and Ravald, 2011). When customers take part in service activities they are *co-producing* a distribution mechanism for service, or in other words they co-produce the service embedded in the resource. They are not, however, co-producing the value that is embedded in the use of the resources. Grönroos and his colleagues (Grönroos, 2008; Grönroos and Helle, 2010; Grönroos and Ravald, 2011) point out that if value-in-use is what is created in service then the customer must be the value creator, not the organization. However, the organization may get an opportunity to *co-create value* with their customers provided there are interactions between them where the organization may directly and actively influence the customer's value creation process. If there are no interactions between the organization and the customer, there is no value co-creation. Customer is always a value creator, whether solely or jointly with the organization as a co-creator. When providing input resources into the customer's value creation process, the organization is *facilitating* customer's value creation. During *value facilitation* no value-in-use is yet created (Grönroos and Helle, 2010).

When comparing ideas of S-D logic (Vargo and Lusch, 2004; 2008a; 2008b) and Grönroos and his colleagues (Grönroos, 2008; Grönroos and Helle, 2010; Grönroos and Ravald, 2011) a few similarities and differences can be found. They both focus mostly in the simultaneous interaction and joint value creation between the organization and the customer. Moreover, both agree in principle that what is valuable is determined by the customer, i.e. the beneficiary, and that value cannot be created without the customer. However, Grönroos and his colleagues propose that customer is always the value creator – and not a value co-creator. In their view, it is more accurate to state that the organization is a co-creator of value (given the opportunity) as value cannot be created without the customer. Hence the customer is always a creator of value, with or without the organization. Moreover, Grönroos and his colleagues note that the organization can influence customer's value creation and not only offer value propositions like S-D logic states. They do not explicitly discuss resources taking part in value creation in terms of whether they are operant or operand. However, there seems to be an implicit assumption that the resources which carry out value co-creation must be operant. Active and direct influencing of customer's value creation process seems to necessitate operant resources from the supplier organization as operand resources, by definition, cannot actively influence anything.

In the focus of our paper, information technology enabled services, a few observations can be made of the above discussion. Is information technology an operant resource? As IT can act upon user inputs and information it is can be considered as an operant resource, albeit limited to certain boundaries in its capability to process inputs. However, it is arguable whether IT can actively influence customer's value creation in the sense Grönroos and his colleagues (Grönroos, 2008; Grönroos and Helle, 2010; Grönroos and Ravald, 2011) discuss it. If this is the case, no value co-creation is possible with (purely) IT enabled services. On the other hand, IT enabled services seem to correspond to indirect service provision, or co-creation, discussed in S-D logic (Vargo & Lusch, 2008b). To sum both views to IT enabled services, there is no active co-creation of value between the organization and the customer or it can at best be considered indirect. Human labor is not involved from the supplier organization.

### **3. Work Levels Approach to Organizational Service Systems**

In our previous research (Korhonen, Hiekkanen and Heiskala, 2010; Korhonen and Hiekkanen, 2010), we have analyzed service-oriented business and IT concepts in the context of organizational service systems, building on the work levels approach (Jaques, 1998; De Visch, 2010; Hoebeke, 1994; Rowbottom and Billis, 1987) that derives from the work of late organizational psychologist Elliott Jaques (e.g. Jaques, 1964, 1976, 1986, 1998, 2002; Jaques and Cason, 1994).

In his conceptualization of Requisite Organization, Jaques (1998) recognized that organizations exhibit a hierarchical ordering of work complexity that reflects the discontinuous developmental stages in the nature of human capability. The role complexity increases in discontinuous steps, stratifying varying kinds of work into natural layers, or “requisite strata”, in the organization.

Jaques (1998) distinguishes two orders of complexity: *symbolic-verbal* order of complexity that covers strata I through IV, pertaining to activities from first-line work to the middle management and expert levels within “unified whole systems”; and *conceptual-abstract* order of complexity that covers strata V and beyond, pertaining to the higher metasystemic levels such as executive corporate management.

**Table 1. Work levels and service concepts**

Order of complexity (Jaques, 1998)	Stratum (Jaques, 1998)	Work domain (Hoebeke, 1994)	Service concept category (Korhonen and Hiekkänen, 2010)	Service-related internal concepts (Korhonen et al., 2010)	Externally manifested service concepts (Korhonen et al., 2010)
Conceptual-Abstract	VII	Value systems domain	Service Exploration	Vision	Service economy
	VI			Business portfolio model	Service ecosystem
	V			Business model	Value proposition
Symbolic-Verbal	IV	Innovation domain	Service Negotiation	Product/service mix	Service portfolio
	III			Business process / capability	Service offering
	II	Added-value domain	Service Fulfillment	Activity	Service
	I			Event or transaction	Client interaction

Hoebeke (1994) and De Visch (2010) group requisite strata into three-strata domains. The *added-value domain* (Hoebeke, 1994), or domain of operational decision-making accountability (De Visch, 2010), pertains to the lowest three strata. In the organizational service system context, we refer to this domain as *Service Fulfillment* – activities pertaining to bringing into actuality the services that constitute the value proposition. The focus is on efficiency, operational quality and reliability of service delivery. In the wake of information technology enabled services, human judgment and error is increasingly removed from service transactions that are codified, digitized and automated through IT.

Hoebeke (1994) refers to Strata III–V as the *innovation domain*, De Visch (2010) as the strategic decision-making accountability. Stratum III forms a hinge between the added-value domain and the innovation domain, as the relations between two domains need an overlapping set of common activities. We view that this domain is the locus of *Service Negotiation* – the process of conferring and co-defining the value proposition of an organization with its customers. The focus is on effectiveness, coverage and validity of service provisioning. The role of information technology at these levels is an enabling one; the focus shifts from operand to operant resources: systemic competencies and human ingenuity in the proper use of technology.

The focus of the *value systems domain* (Hoebeke, 1994; De Visch, 2010) at Strata V–VII is *Service Exploration* – the search for and experimentation of novel value constellations within the service ecosystem. Again, Stratum V forms a hinge between the innovation domain and the value-systems

domain. Stratum VI widens the perspective from an individual system, such as organization, to the larger ecosystem, where service providers compete with their complementary service portfolios. The focus is on long-term viability and resilience as well as societal relevance and impact. Information technology bears potential in discovering transformative new value propositions and business models.

#### 4. Information Technology Enabled Services and Value Co-creation

The rise of information and communication technologies has brought increased automation, advanced modes of communication and unparalleled scalability transcending the inherent limitations of traditional, labor-intensive “in situ” service models. Service activities are automated, when they are being converted into formalizable, codifiable, computable processes with clearly defined rules for execution (Zysman, 2006). Moreover, most information technology enabled services are inherently ubiquitous – the use of service is independent of time and space. Thus, production and consumption of service can be described as *spatiotemporally separated*, especially in terms of human labor involved (see Figure 1).

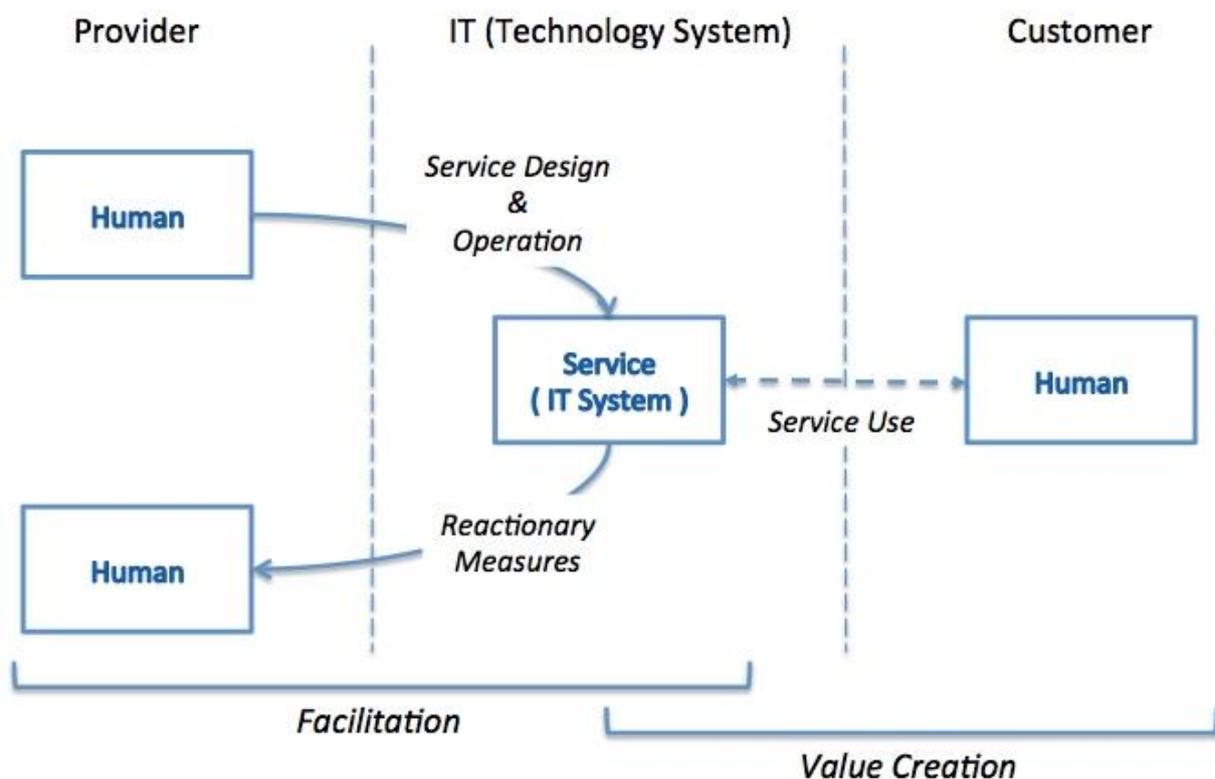


Figure 1. The role of human labor in information technology enabled services.

This digitalization of service processes and actions also means that the locus and focus of the human labor in service processes will change. As human interaction is mostly eliminated from direct “first-line” customer interaction, the locus of labor is moving up in the capability hierarchy: from delivery of service to handling of exceptions, (re)definition/(re)negotiation of value propositions and designing and implementing entire service systems (e.g. value facilitation). Human insight, intelligence, and knowledge will be key factors in designing, implementing and operating these services. On the provider side, the focus of human labor concentrates on service facilitation and handling exceptions and the actual service transaction (e.g. service fulfillment) is handled by automated systems. The variation in service is limited to pre-defined boundaries – defined by the

provider at “design time”. From the temporal viewpoint, the human labor on the provider side concentrates mostly before and/or after the use of the service by the customer thus limiting the direct interaction between human participants.

Like discussed earlier, in IT enabled services there is only limited interaction involving human labor from the organization during the creation of value-in-use for the customer. Service Fulfillment (see Table 1) is mostly done via IT systems and technology – in a reliable, predictable, and consistent manner and probably more efficient than with human labor. Any human labor during Service Fulfillment is involved in reactionary measures like handling exceptions and redefining service agreements. In most cases, such work probably is more complex than “business as usual” service delivery. Therefore most of the human labor in organizations offering IT enabled services takes place at a higher organizational strata, or at least the need for human labor at the lowest strata is mostly eliminated. This has implication on the capabilities the organization needs to acquire and develop. Developing and implementing an IT enabled service system capable of being a useful resource for customers during their own value creation process (of value-in-use) requires capabilities of a higher order. Focus of human labor is moving towards Service Negotiation (see Table 1).

The fact that in IT enabled services the organization has no direct way to co-create value with its customers does not mean it can ignore value-in-use, quite the opposite. A deep understanding of how customers create value-in-use for themselves and how their IT enabled services might be of use in the customer’s value creation process is a necessity for the organization. Whereas humans can flexibly cope with unexpected inputs from the customer and still co-create value, IT technology is inherently limited to dealing within the range of inputs and requests it was designed to do. The design of an IT enabled service is therefore very important. The organization must seek to improve its capabilities in understanding its customer’s value creation processes. One way to do this could be to incorporate customers in the innovation, conceptualization, and development activities of IT enabled services. This would mean that organizations need to move towards more open, outside-in approaches in their innovation activities. Compared to the more traditional, closed, and inside-out approaches, the open approaches in innovation are arguably more complex, requiring different capabilities from the organization. In a sense this would mean that while direct co-creation during creation of value-in-use is eliminated in IT enabled services, the interaction between the organization and customers would take place during the development of the service system. Interaction would therefore be aimed at improving the capabilities of the service system to fulfill a range of value propositions – and not at fulfilling a specific value proposition a particular customer has accepted and agreed with the organization.

## **5. Conclusions**

We have conceptually analyzed both value creation and co-creation and nature of human labor in the context of digitalized, information technology enabled services. IT enabled services eliminate human labor from direct co-creation of value. This has a two-faceted effect. On one hand, customers receive predictable, reliable, and consistent outcomes from the service. On the other hand, the supplier organization has no direct, active way to co-create value with the customer. We argue that human labor in information technology enabled services moves to higher strata of work complexity, to handling exceptions and (re)defining service agreements, and to designing and implementing service systems that are capable of being useful during the customer’s own value creation process. Interaction between the customer and the organization shifts from taking place during fulfillment of value propositions to involving customers in designing and improving the service systems capabilities of fulfilling value propositions. From the customer’s point of view, the shift represents a dual benefit of both reliable service delivery and services fulfilling their needs. From the supplier organizations point of view, the shift represents a need to develop organizational capabilities of a higher work level complexity.

We hope that our research provides insights into the changing focus and locus of value co-creation and human labor in the information technology enabled service systems context.

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