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Service Systems and Service-Dominant Logic: Partners or Distant Cousins?

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This article explores potential relationships between service systems (S. Alter, 2008b) and S. L. Vargo and R. F. Lusch's (2004) service-dominant logic (S-D logic). Both approaches explicate fundamental ideas but at different levels of analysis and for different purposes. S-D logic characterizes intersections between marketing and economics, whereas service system frameworks and concepts were developed to help business and information technology professionals understand, analyze, implement, and improve service systems in organizations. The service system lens illuminates many system-related areas to which S-D logic might apply; it ignores other topics concerning markets. Concepts in S-D logic related to customers, services, and economic exchange might enrich service system analysis. Overlaps and synergies might lead to insights into both approaches.

KEYWORDS service-dominant logic, service system, work system

INTRODUCTION

Vargo and Lusch (2004) argued that traditional goods-dominant logic is insufficient for understanding current markets, economic exchange, and marketing. Traditional goods-dominant logic focuses on "tangible resources, embedded value, and transactions." New perspectives that focus on "intangible resources, the co-creation of value, and relationships . . . are converging to form a new dominant logic for marketing, one in which service provision rather than goods is fundamental to economic exchange" (p. 1).

In addition to catalyzing debates, Vargo and Lusch's service-dominant logic (S-D logic) is often cited in discussions of service science (Chesbrough

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& Spohrer, 2006; Spohrer, Maglio, Bailey, & Gruhl, 2007; Spohrer, Vargo, Caswell, & Maglio, 2008). The final white paper from a service science symposium attended by many researchers stated, "Service Science embraces the world view of the service-dominant logic" (IfM and IBM, 2008, p. 17).

In a contemporaneous paper on service system fundamentals, Alter (2008b) mentioned Vargo and Lusch (2004) as part of its rationale for explaining three frameworks that it argued were fundamental for understanding and analyzing service systems.

Four Levels for Understanding Services

This article assumes that services and service thinking can be studied, understood, and applied at four levels that address different issues:

- Markets and economic exchange: How can ideas related to service help in understanding the nature of markets, economic exchange, and marketing?
- Service systems: How can one understand and analyze internally and externally directed systems through which services are co-created by service providers and service consumers? This level focuses on service operations.
- Service activities: How can an organization describe and improve specific service activities performed by service systems?
- Service computing: How can client–server computing architectures maximize flexibility, productivity, and reliability?

The first three levels are related hierarchically. Markets and economic exchange provide the context within which specific service systems perform value co-creation. Service activities occur within those systems. Some service activities are frontstage activities (within the view of the internal or external customer), and others are backstage activities. Some involve person-to-person interactions; others are partially or totally automated. Transitional variations between manual, partially automated, and totally automated could lead to new classification schemes for service activities.

Focusing on the first two levels, this article explores whether an understanding of service systems might complement or extend S-D logic, thereby creating a richer and deeper view of both service operations and marketing fundamentals. Service systems deserve a prominent place in the discussion because all services of consequence are produced through service systems. Anyone wanting to understand, analyze, or improve service offerings cannot avoid dealing with service systems that generate service results.

Organization of the Article

After illustrating two of three frameworks from Alter (2008b), this article uses four service system examples to explore overlaps and possible

contradictions between Alter's view of service systems and Vargo and Lusch's eight "foundational premises" of S-D logic. Certain aspects of S-D logic are directly relevant to service systems; other aspects are at a different hierarchical level of analysis. Finally, the contributions of this article are summarized, and areas for future research are identified. Given the extensive and well-documented discussions of S-D logic and Alter's view of service system fundamentals, this article avoids unnecessary repetition of arguments and cites readily available literature.

BASIC IDEAS ABOUT SERVICE SYSTEMS

Three frameworks summarize the fundamentals of service systems from a business viewpoint by using concepts that reflect the semantics and business context of services:

- The *work system framework* (WSF) identifies nine elements for summarizing any system that performs work within or across organizations. Service systems are work systems (Alter, 2003, 2006, 2008a).
- The *service value chain framework* (SVCF) augments the WSF by introducing functions that are associated specifically with services. Its bilateral view of service processes reflects the S-D logic claim that services are co-produced by service providers and service consumers (Alter, 2008b).
- The *work system life cycle model* looks at how work systems (including service systems) change and evolve over time. This model represents iterations involving planned and unplanned change (Alter, 2003, 2006, 2008a).

The first two frameworks are shown in Figures 1 and 2, respectively. The work system life cycle model is not discussed here because it concerns the way in which systems change over time, which is not a central concern of S-D logic.

In combination, the three frameworks provide a rich and broadly applicable model of how services operate and evolve. They create a platform for comparing service situations, identifying special cases of services, and describing service design strategies. These ideas can contribute to research about the advantages and disadvantages of different service methods and approaches in the presence of specific situational characteristics. Figure 3 shows how the three frameworks can be used together when analyzing, designing, or improving a service system.

FOUR EXAMPLES OF SERVICE SYSTEMS

Vargo and Lusch (2004, p. 2) defined *service* as "the application of specialized competences through deeds, processes, and performances for the benefit of
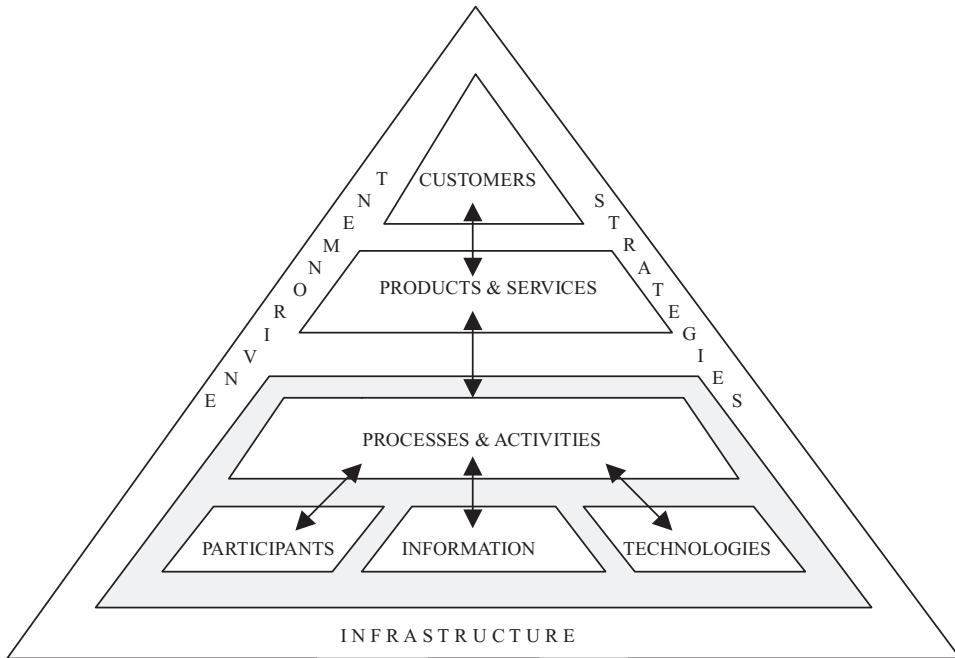
FIGURE 1 The Work System Framework, Slightly Updated From Alter (2006).

another entity or the entity itself." The following four situations satisfy that definition:

- A semiconductor company's manufacturing system produces flash memory chips for USB flash drives.
- A hospital emergency room provides emergency care.
- University students register for classes using an online registration Web site.
- A famous jazz combo plays a concert at a large concert hall.

These four situations serve as a basis for exploring overlap or conflicts between S-D logic and Alter's (2008b) view of service systems (see Table 1). An observer of these situations could summarize each as a service system using the WSF and SVCF.

APPLICABILITY OF THE EIGHT FOUNDATIONAL PREMISES OF S-D LOGIC

This section examines Vargo and Lusch's (2004) eight foundational premises of S-D logic. Table 2 presents these eight foundational premises (FP1–FP8)

TABLE 1 Customers, Competences, and Intangibles in Four Examples

| Example	Customers	Application of Specialized Competences	Intangibles
Manufacturing System for Flash Drives	Customers include end users of flash drives, distributors, and, most immediately, the company's shipping department. Different customers have different goals and concerns.	Manufacturing applies specialized competences of manufacturing staff, who use complex machinery that embeds competences of machinery manufacturers.	Flash drives are tangible goods with specific, documented data storage capabilities that are invisible to users and seem intangible.
Hospital Emergency Room	The patient is the customer. The paying customer may be any combination of the patient, relatives, insurance companies, government agencies, or the hospital itself if the patient lacks insurance.	The emergency room applies specialized competences of doctors, nurses, pharmacists, X-ray technicians, and many others.	The patient's experience in the emergency room is largely intangible. Specific emergency services can be described and documented based on well-known and well-practiced techniques and knowledge.
Online Course Registration	Students are customers of their own self-service efforts. Other customers include instructional departments and whoever decides whether specific course sections should be cancelled.	Self-service applies the student's knowledge of the registration system and available/desired courses.	The customer's goal is to register with minimal inconvenience. The state of enrollment is tangible. The experience of enrolling is intangible.
Performance by Jazz Combo	Service recipients are audience members who may or may not have paid for tickets.	The performance uses specialized competences. Reactions of individual audience members depend on their knowledge of jazz.	The performance is intangible.

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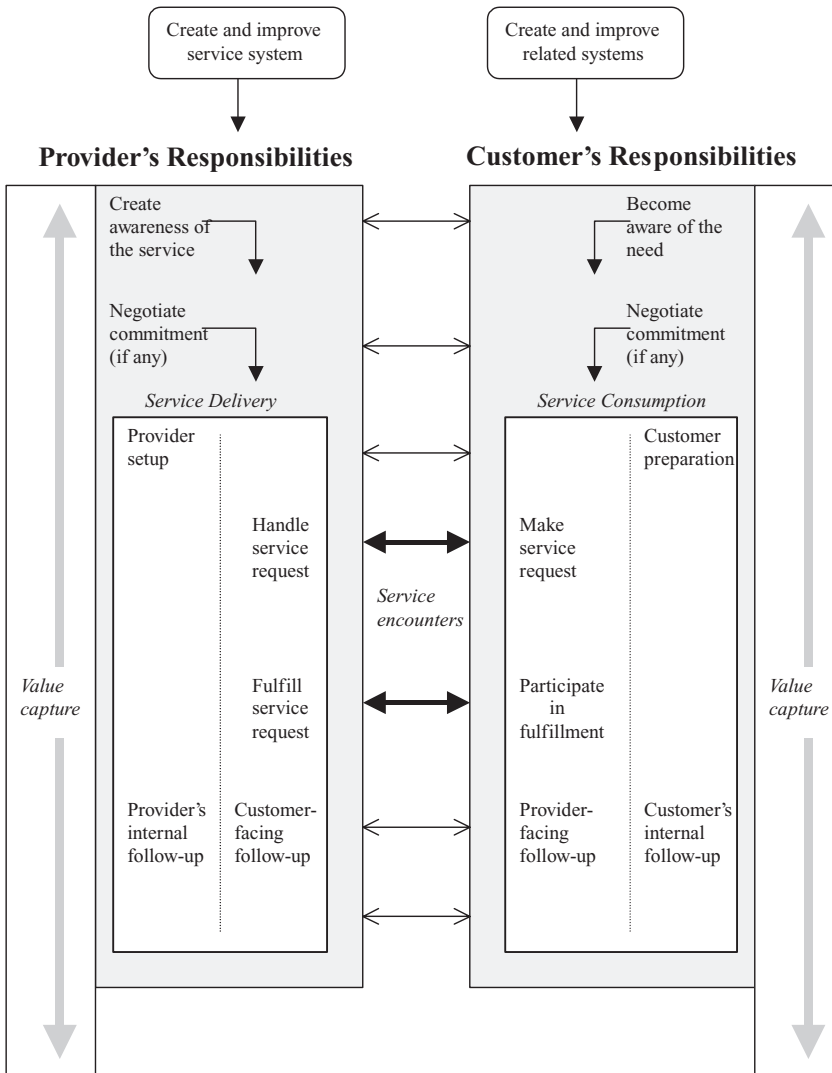
FIGURE 2 The Service Value Chain Framework, Revised From Alter (2008b).

and six attributes (A1–A6) of S-D logic. This section does not explore the attributes because such discussion would repeat many of the same points. Attributes are mentioned later in comparisons between S-D logic and service system fundamentals.

FP1. The Application of Specialized Skills and Knowledge Is the Fundamental Unit of Exchange

The analysis of any service system should include the skills and knowledge of its participants (operant resources in S-D logic). However, it is unclear
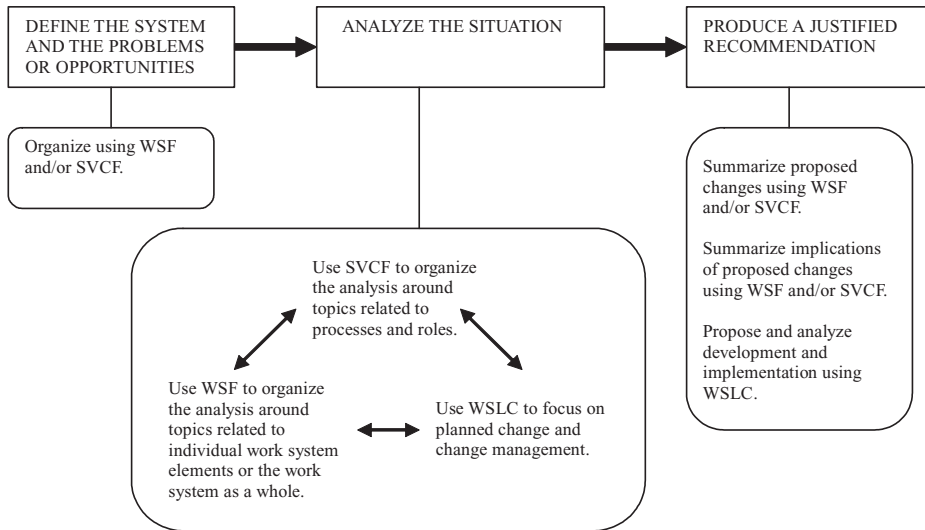
FIGURE 3 Use of Three Frameworks When Analyzing, Designing, or Improving a Service System. WSF = work system framework; SVCF = service value chain framework; WSLC = work system life cycle model.

how FP1's reference to the fundamental unit of exchange would provide additional insight for analyzing or improving most service systems. Economic exchange occurs at the level of the entire firm; for specific service systems, economic exchange may be achieved by other service systems. For example,

TABLE 2 Foundational Premises and Attributes of Service-Dominant Logic (Vargo & Lusch, 2004)

Eight Foundational Premises (pp. 6–12):
- FP1. The application of specialized skills and knowledge is the fundamental unit of exchange.
- FP2. Indirect exchange masks the fundamental unit of exchange.
- FP3. Goods are distribution mechanisms for service provision.
- FP4. Knowledge is the fundamental source of competitive advantage.
- FP5. All economies are service economies.
- FP6. The customer is always a co-producer.
- FP7. The enterprise can only make value propositions.
- FP8. A service-oriented view is customer oriented and relational.

Six Attributes (p. 7):
- A1. Primary unit of exchange (benefits of specialized competencies, not just goods)
- A2. Role of goods (goods as intermediate products used by customers in value creation processes, not just end products that are transferred)
- A3. Role of customer (co-producer of service, not just recipient of goods)
- A4. Determination and meaning of value (determined by customer based on value in use, not determined by producer)
- A5. Firm–customer interaction (customers as active participants, not just acted upon in transactions)
- A6. Source of economic growth (application and exchange of specialized knowledge and skills, not just surplus tangible resources and goods)

in the emergency room mentioned in Table 1, key issues probably include triage methods, communication between different specialists, coordination methods, adherence to medical protocols, and other operational topics. Economic exchange is important for paying the hospital and its medical staff but usually is a secondary or tertiary topic in an analysis of process efficiency or medical outcomes.

FP2. Indirect Exchange Masks the Fundamental Unit of Exchange

Indirectness of exchange is only indirectly related to the analysis of most service systems. In each example in Table 1, monetary transfers, technologies, and other factors might be viewed as masking the exchange of specialized skills and knowledge (FP1). This "masking effect" helps in analyzing service systems by simplifying the analysis. For example, the analysis of a system of manufacturing flash drives can assume that service system participants will exchange their efforts for money, working conditions, and other job and career benefits. Consequently, the analysis need not focus on the exchange of skills and knowledge with customers.

FP3. Goods Are Distribution Mechanisms for Service Provision

This premise encourages system participants, designers, and managers to explore different ways of meeting customer needs. For instance, both product developers of flash drive manufacturers and managers and system designers in organizations that use flash drives might assume that flash drive users really want not flash drives themselves but rather the ability to store and transfer data quickly and conveniently. This point mirrors Leavitt's (1960) argument in his classic "Marketing Myopia" article that "people don't buy a quarter-inch drill. They buy a quarter-inch hole. You've got to study the hole, not the drill. The drill is just a solution for it."

FP4. Knowledge Is the Fundamental Source of Competitive Advantage

Although certain service systems contribute to competitive advantage for particular firms, most service systems are internally directed and have little or no competitive impact. The analysis of these systems should emphasize finding efficient and effective ways to meet the needs of internal and/or external customers. Those analyses should always consider knowledge, however, because knowledge appears in many different places in the WSF. It is embedded in structured processes and in software that supports or controls those processes, participants use their own knowledge to perform work,

knowledge may be codified in databases, and customers use knowledge when they co-create value.

FP5. All Economies Are Service Economies

This premise operates at a different level than the analysis of specific service systems. However, if one accepts FP3, then all purposeful systems (even those that produce goods) are service systems. Because organizations operate through service systems, one might conclude directly that all economies are service economies because most or all business activity occurs in service systems.

FP6. The Customer Is Always a Co-Producer

The SVCF (see Figure 2) is based on the premise that co-production of value, at least to some extent, is a general characteristic of services. The use of service responsibility tables, an informal analysis tool that is based on co-production by service providers and consumers (Alter, 2008b), usually shows that co-production occurs at some points in a service system and not at many others. The issue when analyzing service systems is not whether the customer is a co-producer but rather where co-production should or should not occur.

FP7. The Enterprise Can Only Make Value Propositions

An enterprise's value propositions to its customers appear at a different level of discussion than the design or analysis of specific service systems. However, the term *value proposition* appears in analysis based on the WSF. Strategies, the ninth WSF element, combine internally directed production strategies and externally directed value propositions for customers. The issue concerning value propositions is whether an improved service system might generate better value propositions.

Unfortunately, the espoused value propositions of many enterprises are inconsistent with the capabilities of their service systems. For example, the value proposition of "friendly skies" corresponds minimally with many travelers' experience of coach class air travel on financially strapped airlines. Also, value propositions often ignore important issues, such as common frustrations in dealing with telecom service providers. Mismatches between firms' value propositions and their service system capabilities might be an interesting research topic in marketing (e.g., to what extent is financial success related to whether enterprise value propositions accurately reflect service system capabilities?).

FP8. A Service-Oriented View Is Customer Oriented and Relational

The content and form of the WSF show that the analysis and design of service systems should be both customer oriented and internally oriented because service systems should be effective (addressing customer needs) and efficient (addressing internal productivity needs). Well-designed and well-managed service systems achieve appropriate tradeoffs between effectiveness and efficiency. Thoughtful analyses of service systems should consider both types of goals.

FP8 is not particularly helpful in understanding the four examples being considered here. Typical end customers for flash drives are uninterested in relationships with the manufacturer or the distributor. They want a cheap, reliable flash drive that they can use without any relationship to a manufacturer or distributor, whether or not flash drives and other goods are distribution mechanisms for service provision (FP3) and whether or not the customer is always a co-producer (FP6). In the emergency room example, most patients have no prior relationship with the emergency room staff, and most patients probably are uninterested in ongoing relationships. In the registration example, one might claim that the Web interface is part of a student's relationship with the university. However, given the connotations of the word *relationship*, most students associate university relationships with other students and professors, not with registration Web sites. Most jazz combos probably prefer warm feelings from their audience that do not generate two-way relationships in any genuine sense.

OVERLAPS AND NON-OVERLAPS BETWEEN S-D LOGIC AND SERVICE SYSTEMS

In general, the previous section reveals two things: (a) some commonality of vocabulary between S-D logic and service systems and (b) many areas of non-overlap in central concerns. S-D logic focuses more on the nature of markets and economic exchange. A service system approach focuses more on understanding, analyzing, implementing, and improving systems through which services are co-created by service providers and service consumers.

Given the "patchwork" (Vargo & Lusch, 2004, p. 6) nature of S-D logic, an effective way to examine overlaps and non-overlaps is to search for S-D logic ideas related to the various elements of the WSF and SVCF (see Figures 1 and 2, respectively).

S-D Logic and the WSF

This section identifies overlaps and non-overlaps between each element of the WSF (see Figure 1) and attributes and foundational premises of S-D

logic (see Table 2). As does the previous section, it demonstrates that S-D logic addresses some topics related to customers and products and services but says rather little about the other seven WSF elements. The main topics related to customers and products and services involve co-production of services by providers and consumers (FP6) and the treatment of goods (products) as distribution mechanisms for service provision (FP3).

CUSTOMERS

In the WSF, customers include direct recipients or users of whatever is produced, plus other customers with less direct interest and involvement. Whether to consider paying customers depends on the purpose of the analysis. For example, an analysis attempting to improve an inwardly directed human resources service system may not need to consider how the human resources staff is paid. The WSF assumes that customers receive products and services from the work system, but it also allows customers to be work system participants, such as in self-service work systems. Analysis based on the WSF assumes that both effectiveness and efficiency are important. However, it contains no general assumptions about whether or how customers co-produce value. That is where the SVCF takes over, because it is organized around the assumption that customers co-produce value, at least to some extent.

According to FP6 in S-D logic, the customer is always a co-producer. Vargo and Lusch's (2004, p. 7) discussion of the six attributes of S-D logic includes a summary of A4 that says, "Value is perceived and determined by the customer on the basis of 'value in use.'" Their summary of A5 says, "The customer is primarily an operant resource. Customers are active participants in relational exchanges and co-production."

Thus, S-D logic makes assumptions about customers that are allowed but neither explicit nor required in the WSF. The SVCF addresses those points in its attempt to embody a service metaphor for thinking about systems. It expresses a less assertive version of the ideas in FP6, A4, and A5. Its representation of co-production assumes that the extent of service co-production of services and value co-creation varies depending on the design of specific service systems. The examples in the service systems in Table 1 illustrate the range of possibilities. Co-production of services and co-creation of value is of minimal importance in regard to flash memories. It is more important in the other examples.

PRODUCTS AND SERVICES

The WSF contains the term *products and services* rather than *goods and services* because the former fits with system terminology, whereas the latter

fits better with economic terminology. Even when a work system is viewed as a service system, the WSF assumes that the work system produces products and services because its actions for its customers might include the creation and transfer of physical things or information as part of the services provided.

Vargo and Lusch's (2004, p. 7) summary of A2 refers to goods as "transmitters of operant resources (embedded knowledge); they are intermediate 'products' that are used by other operant resources (customers) as appliances in value creation processes." FP3 states that goods are distribution mechanisms for service provision. Using A2 and/or FP3 when analyzing a service system would require determining how any goods that are produced are transmitters of operant resources and how the goods are distribution mechanisms for service provision.

Although interesting and valuable for thinking about economies and economic exchange in general, that level of abstraction is beyond the capabilities and interests of most systems analysts. By training and inclination they tend to focus on system specifics rather than abstract theory.

PROCESSES AND ACTIVITIES

The WSF views all actions as processes and activities, thereby covering a full range of situations, including highly structured workflows and "artful processes" whose sequence and content "depend on the skills, experience, and judgment of the primary actors" (Hill, Yates, Jones, & Kogan, 2006, p. 665). Although the WSF says nothing about whether value is co-created, the SVCF is organized around that assumption. The WSF also says nothing about specific service functions included in the SVCF, such as creating awareness, negotiating, preparing, handling service requests, fulfilling service requests, and performing follow-up.

Other than positing the co-creation of value, the six attributes and eight foundational premises of S-D logic say little or nothing about processes and activities that produce products and services. The definition of *service* refers to those processes activities indirectly as "the application of specialized competences (knowledge and skills) through deeds, processes, and performances" (Vargo & Lusch, 2004, p. 2).

PARTICIPANTS

The WSF contains the term *participants* (not *users*) because people who are not direct users of relevant technologies may nonetheless perform important roles in a service system. The WSF makes no assumptions about whether customers are participants in work systems but allows customers to be participants if that is appropriate for the analysis.

The six attributes and eight foundational premises of S-D logic refer to customers as participants (A3, A4, A5, FP6) but speak of other service system

participants quite indirectly, as in FP1 (the application of specialized skills and knowledge is the fundamental unit of exchange).

INFORMATION

The *information* in a work system might include computerized databases, documents, shared knowledge, or even unrecorded discussions and commitments.

S-D logic does not mention information in general but does refer to knowledge. FP4 states that knowledge is the fundamental source of competitive advantage. As mentioned earlier, knowledge can exist in many different places in a work system. It can be embedded in structured processes and activities, it can be in the heads of participants (who might include customers), and it can be codified in databases. Also, there are many commercial examples, such as commercial marketing databases, in which owning a vast store of information is probably more of a source of competitive advantage than superior knowledge.

TECHNOLOGIES

Technologies in the WSF include both tools and techniques embedded in tools. The term *technologies* is used rather than *information technology* per se because multiple technologies may be relevant.

The six attributes and eight foundational premises of S-D logic speak of technology only indirectly in the guise of knowledge. Specific references include the "application of specialized skills and knowledge" (FP1) and "knowledge [as] the fundamental source of competitive advantage" (FP4).

ENVIRONMENT

A work system's environment includes organizational culture and relevant regulations, policies and procedures, competitive issues, organizational history, and technical developments.

Six of S-D logic's attributes and foundational premises (A1, A6, FP1, FP3, FP4, FP5) focus on the environment within which economic exchange occurs. However, the level at which these statements focus on the environment is too far removed from operational issues to be useful in analyzing or designing most service systems, especially those with internal customers.

INFRASTRUCTURE

A work system's infrastructure consists of human, information, and technical resources that are used by the work system but are shared with other work systems and managed and controlled outside of the work system.

S-D logic does not mention infrastructure directly.

Although it recognizes that strategies often are not articulated clearly, the WSF includes the term *strategies* because misalignment in strategies of the firm, organization, and work system are usually problematic. An articulated work system strategy includes the work system's internal production strategy and its value propositions for its internal and/or external customers.

S-D logic has many implications for firm strategy at an abstract level (e.g., FP3, which holds that goods are distribution mechanisms for service provision). FP7 refers to value propositions, one part of a firm's strategy, by saying that the enterprise can only make value propositions. Once again, these statements are too far removed from operational issues to be useful in analyzing or designing most service systems.

S-D Logic and the SVCF

The WSF implies a service metaphor by including the customer and placing the customer at the top, which itself provides more of a service focus than most frameworks used in systems analysis for information technology professionals.

The SVCF expresses a service metaphor more fully by identifying service components.

A detailed comparison between the SVCF and S-D logic is not presented here because it would echo the observations in the previous section. Several additional observations are worth noting, however.

S-D logic addresses similar topics related to co-production but uses an all-or-nothing tone through statements such as the customer is always a co-producer (FP6). In contrast, the SVCF expresses a less assertive version of ideas in A3, A4, A5, FP6, and FP8. It assumes that services are co-produced by providers and consumers while recognizing great variability in the extent to which customers co-produce services and co-create value in different types of situations. In other words, a yes/no distinction concerning whether services are co-produced in general is not particularly important for service system design. The important question is the desired extent of co-production in the particular situation being analyzed.

The SVCF's phases and two-sided form are generally consistent with FP8, which states that a service-oriented view is customer oriented and relational. The consistency is partial, however, because the SVCF's symmetrical two-sided form gives equal weight to the provider and customer.

The SVCF represents service interactions explicitly but recognizes that provider–customer interaction is not the core of service and value creation for many services in which most of the work occurs backstage. The recognition that important service-related activities and responsibilities of providers may be invisible to consumers conflicts with A5 and FP8, at least to some extent.

The phases of the SVCF are indirectly implied in some of the attributes and foundational premises of S-D logic. For example, the SVCF negotiation and service request phases are indirectly related to A1 and FP1, which say that the application of specialized skills and knowledge is the fundamental unit of exchange. It is questionable whether people negotiating service contracts and service requests governed by those contracts actually focus on the exchange of skills and knowledge. In particular, non-paying internal and/or external customers probably focus on specific services that will be provided in return for money or other forms of value that they do not control or influence in any way. (This is consistent with the masking effect in FP2.)

PARTNERS OR DISTANT COUSINS?

This article has explored the relationship between S-D logic and an extension of the work system approach that focuses on service systems. The two approaches attempt to explicate fundamental ideas at different levels of analysis and for different purposes. S-D logic explores the intersection of marketing and economics, whereas the WSF and the SVCF are designed to help business and information technology professionals understand, analyze, implement, and improve service systems in organizations.

The most direct overlap involves the role of customers and the co-creation of value. The S-D logic attributes and foundational premises most directly related to these topics are A3, A4, A5, and FP6. The most directly related aspects of the service system approach include the placement of the customer at the top of the WSF and the inclusion of responsibilities of service providers and service consumers across the phases of the SVCF.

Continued development of each approach is surely possible without consideration of the other. However, possible areas of synergy might lead to insights into both approaches.

Linking Service Systems With Markets and Economic Exchange

S-D logic focuses primarily on markets and economic exchange, which actually operate through service systems. It speaks about customers and goods and services but says little about processes, participants, information, and technologies through which service systems operate. Future extensions of S-D logic could certainly delve into those topics.

It is unclear what a system-oriented version of S-D logic might look like, especially given the current patchwork appearance of S-D logic as a set of attributes and foundational premises. Incorporation of system-related ideas might generate additional attributes and foundational premises or might associate system-related concepts with existing attributes and foundational premises.

Perhaps a different view of service systems might be more effective as a starting point for developing a system-oriented version of S-D logic. For example, Mathiassen and Sørensen's (2008) theory of organizational information services "distinguishes between four types of services: computational, adaptive, networking, and collaborative services (p. 313)." Comparing their approach with S-D logic might prove fruitful.

Using S-D Logic for Understanding and Analyzing Service Systems

S-D logic provides a possible direction for extending Figures 1 and 2 and the related analysis approach. For example, the ninth WSF element, strategies, includes both production strategies and value propositions. Perhaps S-D logic could offer a deeper understanding of value propositions. Similarly, distinctions involving relational versus transactional aspects of economic exchange might be incorporated into service system analysis and design efforts.

Addressing Central Concerns in Marketing

Synergies between S-D logic and a service system approach might result from applying both approaches to central marketing issues, such as designing products and services, finding sales prospects, performing transactions with customers, establishing relationships with customers, and performing market research.

Seeking Links With Service Computing

This article has explored whether S-D logic and service systems are partners or distant cousins. One might ask whether service computing, service-oriented architectures, and Web services should be included in the same discussion. Although they share the word *service*, it is unclear whether the latter three terms belong in the same family, and, if so, how closely or distantly they are related. Chen and Vargo (2007) presented a three-layer model linking customer relationship management and service-oriented architecture. Alter (2008b) noted that the SVCF concepts map into certain concepts in Umapathy and Purao's (2007) reference model for classifying Web services standards. Such potential links call for more exploratory work.

Other View of Service Systems

Spohrer et al. (2008) view service systems as negotiated arrangements for service provision rather than operational systems of co-producing value. That view is more aligned with S-D logic and service system governance and less involved with how service systems actually operate in producing

or co-producing value for customers. Further discussion of other definitional approaches to service systems is beyond the scope of this article.

Contributions of This Article

Vargo and Lusch (2004) catalyzed extensive debates about the fundamental nature of products and services and about the centrality of service concepts in markets, competition, and the field of marketing. The realization of those ideas in practice necessarily occurs through service systems. The coherence and continuing development of those ideas would benefit from links to the world of service system theory and practice. This article makes several contributions to that effort:

- It identified the challenge of linking four levels of analysis: markets and economic exchange, service systems, service activities, and service computing.
- Its exploration of links between S-D logic and service systems identified areas of overlap, complementarities, and conflicts in approach or rhetoric.
- It demonstrated a way of exploring relationships between different levels of analysis related to services. In some areas there was agreement, such as in the treatment of all purposeful business activity as services. In other areas, differences in emphasis revealed important issues.

It is too early to decide whether S-D logic and service systems are potential partners or distant cousins. Currently they seem like second cousins with some commonalities but little familiarity.

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