THE UNIVERSITY OF
WARWICK

Original citation:
Ng, Irene C. L., Vargo, Stephen L., 1945- and Smith, Laura A. (2012) Reconceptualising service through a service-dominant logic. Working Paper. Coventry: Warwick Manufacturing Group. Service Systems Research Group Working Paper Series (Number 02/12).

Permanent WRAP url:
http://wrap.warwick.ac.uk/41099

Copyright and reuse:
The Warwick Research Archive Portal (WRAP) makes this work by researchers of the University of Warwick available open access under the following conditions. Copyright © and all moral rights to the version of the paper presented here belong to the individual author(s) and/or other copyright owners. To the extent reasonable and practicable the material made available in WRAP has been checked for eligibility before being made available.

Copies of full items can be used for personal research or study, educational, or not-for-profit purposes without prior permission or charge. Provided that the authors, title and full bibliographic details are credited, a hyperlink and/or URL is given for the original metadata page and the content is not changed in any way.

A note on versions:
The version presented here is a working paper or pre-print that may be later published elsewhere. If a published version is known of, the above WRAP url will contain details on finding it.

For more information, please contact the WRAP Team at: publications@warwick.ac.uk

warwickpublicationswrap
highlight your research

http://wrap.warwick.ac.uk

WMG Innovative Solutions

WMG Service Systems Research Group
Working Paper Series

Reconceptualising Service through a Service-Dominant Logic

Irene CL Ng
Stephen L Vargo
Laura A Smith

THE UNIVERSITY OF WARWICK

ISSN: 2049-4297
Issue Number: 02/12

Reconceptualising Service through a Service-Dominant Logic

Ng, Irene CL
Professor of Marketing and Service Systems
Service Systems Group, Warwick Manufacturing Group,
University of Warwick, Coventry CV4 7AL, UK
Tel: +44 (0) 247652 4871
E-mail: irene.ng@wmg.warwick.ac.uk

Vargo, Stephen L
Professor of Marketing, Shidler College Distinguished Professor
Shidler College of Business, University of Hawaii at Manoa,
2500 Campus Road, Honolulu, Hawaii 96822, USA
Tel: +1 (808) 956 8167
E-mail: svargo@hawaii.edu

Smith, Laura A
Doctoral Candidate
Centre for Innovation and Service Research, University of Exeter
Business School, Rennes Drive, Exeter EX4 4PU, UK
Tel: +44 (0) 1392 723200
E-mail: L.A.Smith@exeter.ac.uk

WMG Service Systems Research Group
Working Paper Series
Issue number: 02/12
ISSN: 2049-4297
January 2012

<book chapter in preparation for *Managing Services: Challenges and Innovation,* Kathryn Haynes and Irena Grugulis (Editors)>

Introduction

Defining the nature of service has been a challenge to researchers. Early work by Baker (1981) highlighted that while there seemed to be a widespread consensus on the importance of services, precise definitions are difficult, owing to the varied nature of service industries. Most service definition surround the idea of "activities" or "processes" and the word "service industry" is widely used to denote an industrial sector that "do(es) things for you, they don't make things" (Silvestro and Johnston 1990, p. 206). Current literature in service seems to suggest that the term "services" is still without a definition that is generally accepted (Blois 1974, Minter 1982, Lovelock 1983, Drechsler 1990, Vargo and Lusch 2004, 2008).

Early researchers such as Rathmell (1966) made a fundamental distinction in considering a good as a thing (noun) and a service as an act (verb). The former was an object whereas the latter was a deed or an effort. He further explained that products were located along a goods-service continuum, with pure goods at one end and pure services at the other, but with most products falling between these two extremes. Mitchell and Greatorex (1993) on the other hand, argued that goods and services are different but "what there is less agreement about is the way in which they differ and the extent to which these differences are relevant and significant from a marketing perspective" (p.179). This view is not ubiquitous as, even in the early days of service research, there were still considerable differences in opinion as to whether goods and services are fundamentally distinct (Bateson 1977; Judd 1964; Lovelock 1980; Uhl and Upah 1983; Wyckham, Fitzroy, and Mandry 1975).

Notwithstanding the lack of agreement, it has long been recognised that there is an important interdependence between services and goods, with most services requiring physical goods to support and facilitate the delivery system (Greenfield 2002; Rathmell 1974). Shostack (1977) implied that there are very few pure goods or pure services. Most attempts had been made to differentiate services and goods on one or more dimensions ultimately arriving at a continuum (Bell 1981, Liechty and Churchill 1979, Rathmell 1966). Levitt (1981) also suggested that there was considerable overlap between services and goods, and Storey and Easingwood (1998) used the term "service product" to describe the bundle of services and products offered to meet the requirements of the customer for the particular service. A contemporary definition by Kolter et al. (1996) stated that "a service is any activity or benefits that one party can offer to another which is essentially intangible and does not result in ownership of anything". Along similar lines, the American Marketing Association (AMA)'s definition of service places emphasis on two aspects of services. First, they associate services with "activities" or "processes" that are performed by the seller. This definition is similar to "deeds, acts or performances" as suggested by Berry (1980), Zeithaml and Bitner (1996) and also echoed by Grönroos (2000) who described services as "an activity or series of activities provided as a solution to customer problems". Second, the AMA also defines services by underlining its characteristics such as the degree of intangibility, heterogeneity, inseparability and perishability.

Recontextualising Services

Up until 2004, such characteristics of services have been acknowledged as the most accepted, in an overview by Edgett and Parkinson (1993) encompassing 106 publications from 1963-1990, as well as one by an earlier work of Zeithaml et. al. (1985). These are now commonly found in service textbooks, and are collectively known as "IHIP" (Lovelock 1999, Zeithaml et al 2006, Ng 2007). Yet, there is also literature that heavily criticises these characteristics, citing service industries that have tangible outputs (e.g. software), are not inseparable in production and production (car repair) or are not fully perishable (recorded lectures) (Lovelock and Gummesson 2004; Johns, 1999; Edvardsson, Gustafsson and Roos, 2005).

We argue that the inconsistent and fragmented understanding of service is due to the logic inherited from the industrial era where wealth and value were based upon tangible units of exchange, be it materials or equipment, products or services. The work of Adam Smith (1776) characterises goods through their exchange value, and exchangeable value became a characteristic of a good, transferring wealth between nations. Even though Smith did not mean for exchange to be the sole purpose of an offering, wealth created from such exchanges over a hundred years have endorsed such a view which continues in businesses today. Within such an understanding, the value of goods embodying specialised knowledge is high when characterised by their physical and tradable properties (Demsetz, 1993). With such a perspective, the original manufacturer's responsibility for creating value is considered to have ended once the production unit is exchanged and its ownership transferred to the consumer, who would then use it for their benefit in a different time and location. This leads to three consequences: the production unit would be considered as inherently valuable by the manufacturer; the unit's present value is attributed to its current owner; and value is realised when there is an exchange of the production unit between different parties (Hill 1999). Vargo and Lusch (2004, 2008) referred to these underlying schemas employed in the management of businesses where value is in the exchange of unitary outputs, as a goods-dominant logic. This logic has pervaded contemporary business thinking due to its long provenance.Within this thinking, services are also looked upon as exchangeable units and the sets of units (information, time, materials) that could be combined and exchanged that differ across sectors became different service contexts and industries, with each industry having its own language, systems, structures and practices. Substantial changes in the combinational set of units for exchange result in different 'delivery' mechanisms and a different context, leading to what we would view as increasing fragmentation of the service 'sector' with overlaps and fragmented definitions. This, we argue, also contributes to a lack of knowledge transfer between the contexts, since there may be little incentive to create sufficiently high abstraction of knowledge produced within each domain for transfer across to other contexts. Services and goods, even when combined as an offering, become recontextualised again and again for each new industry, adding to the multiple existing services industries (e.g. transportation, energy, telecoms, hotels, banking) with boundaries around delivering, configuring and operating the sets of exchangeable units between customers and firms established within the structures, language and practices of each industry.

Academia, in cooperation with firms, assist within each industry through industry-based journals and trade publications (e.g. healthcare, finance, transportation)and while often creating useful and impactful knowledge, would also by their action, endorse the same boundaries and continue to share the mental maps of the domain they are advising.

This mindset of value as embedded within 'exchange', be it for goods or services, is what we would term as a goods-dominant logic. A dominant logic is the shared mental maps used and developed by groups of individuals as part of their core activities. A dominant logic is represented by a common mindset or shared perception of how an industry such as the services industry works, and the accepted tools and approaches used by the 'dominant coalition' in their decision-making (Prahalad and Bettis, 1986). Often, contributors to an industry can only work with and apply the logics with which they are familiar, regardless of whether or not they are appropriate (Das, 1981).

We argue that a goods-dominant logic is not sufficiently integrative or robust to understand the structural changes in commerce where goods are starting to behave like services, e.g. e-fax of digitally transmitting documents through email rather than via a machine. Services are also beginning to behave like goods, such as mobile banking on devices. Commerce, in our view, is undergoing a transformation from producer push to become a world where multiple agents come together at particular times and places to meet specific individual needs. These emerging systems point to a view that value is created in use, rather than in exchange (Ng et al., 2012). Value-in-use, enabled by technology, is now being co-created between multiple entities through 'value constellations' that are geographically dispersed (Normann 2001), and in multiple partnerships that achieve value unique to individual or customer circumstances. For example, pharmaceutical companies have begun to explore the social and cultural contexts in which medicines are produced, exchanged and consumed. Each phase has its own particular context, actors and transactions and is characterised by different sets of values and ideas (Van Der Geest, Whyte and Hardon, 1996).

Reconceptualising Service

A reconceptualisation of service through a Service-Dominant Logic (S-D Logic) was introduced in 2004 by Vargo and Lusch (2004) as a novel lens that proposed a new perspective of the world, one that is markedly different from the traditional goods-dominant view (Vargo, 2011). The language of S-D Logic speaks of service, not product or services. This differentiation has created some confusion and led to criticism of the work (Deighton and Narayandas in Bolton, 2004; O'Shaughnessy and O'Shaughnessy, 2011). Vargo and Lusch (2004) defined service as the application of specialised competences (skills and knowledge), through deeds, processes, and performances for the benefit of another entity or the entity itself (self-service). They suggested that economic exchange is fundamentally about service provision; in short, everything is a service. S-D Logic consolidated previous literature such as

Prahalad and Ramaswamy (2000) who noted that appliances are "artifacts around which customers have experiences" and Gummesson (1995) who proposed that both goods and services render service. Storey and Easingwood (1998) also observed that the importance of physical products lie not so much in owning them, as in obtaining the services they render. Vargo and Lusch also suggested that fundamentally, service is the value that is being co-created between the customer and the firm through an integration of resources accessible to both parties. The S-D Logic emphasis on service as the application of resources for the benefit of other actors, looks beyond goods as the basis of economic and social exchange. This means that S-D Logic emphasises knowledge and skills (termed as operant resources) as primary resources of economic and social exchange, as opposed to goods-dominant logic, which emphasises physical resources (termed as operand resources).

Though S-D Logic may not claim to be a new insight into the nature of service (Sharma et al., 2002; Vargo and Lusch, 2004; Bolton, 2004), the proposal is nonetheless a reconceptualisation which places emphasis upon the outcomes realised with customers, instead of the processes or act of provision to customers (Vargo and Lusch, 2004). S-D Logic presents a set of 10 foundational premises seen in Table 1 (Vargo and Lusch, 2004, 2006, 2008). Whilst FP1 sets service as the fundamental basis of exchange, S-D Logic does not reject the value of goods (Lusch, 2011). FP3 identifies that goods may be integral to the value-creating process and that their effective integration along with other resource is imperative for economic success (Ballantyne and Varey 2008). In other words, goods are appliances used in service provision, and goods and service have a nested relationship. FP7 suggests that the firm can only create a value proposition and further, the customer as part of the system, realises that value in use.

Table 1 - SD-Logic: 10 Foundational Premises

FP1: Service is the fundamental basis of exchange
FP2: Indirect exchange masks the fundamental basis of exchange
FP3: Goods are a distribution mechanism for service provision
FP4: Operant resources are the fundamental source of competitive advantage
FP5: All economies are service economies
FP6: The customer is always a co-creator of value
FP7: The enterprise cannot deliver value, but only offer value propositions
FP8: A service-centred view is inherently customer oriented and relational
FP9: All social and economic actors are resource integrators
FP10: Value is always uniquely and phenomenologically determined by the beneficiary

This view of service does not sit comfortably with traditional ideas about service, although this is becoming increasingly less so. By broadening the notion of service to include goods as 'indirect service', the political economy of service scholarship suddenly also encompasses industries that had not previously regarded themselves as service. This includes manufacturing and engineering where service, even when considered within the manufacturing/engineering domain, existed within a strict boundary that differentiated between the transfer of goods ownership, and the 'servitized' offering of the good such as peripheral activities surrounding the support of the good's ongoing (e.g. maintenace and support) and enhanced (education and integration) functionality (Ren, 2009).

Yet, we argue that this reconceptualisation of service through S-D Logic could not have come at a more appropriate time. Advances in manufacturing and technology are achieving greater connectivity between entities than ever before, creating new value constellations and new demand fulfilled through hybrid offerings of physical assets, information and people. Virtual interaction is playing an increasingly prominent role in the economy and there is a need to better understand virtual worlds as a medium; ie virtual companies, brick-and-click delivery, multiple-channels, and web 2.0 in services (van Dijk *et al.* 2007). Leaps in computing power have resulted in newer technologies with greater capability such as the ability to sense facial expressions (Xia *et al.* 2009), and stress levels (Scheirer *et al.* 2002), in addition to moving technology towards a more liberated cyberspace where autonomous and intelligent entities or virtual objects can act in full inter-operability and auto-organise themselves to co-createvalue constellations, based on the concept of the '*internet of things'* (Dodson 2003) and Cloud Computing[1]. More studies are being conducted in the information technological sphere that includes customer behaviours and processes, developing knowledge around service-oriented architectures (e.g. Kounkou *et al.* 2008, Papazoglou and van den Heuvel 2007). Human-Computer Interaction (HCI)and Interaction Design, which viewsdesign for and from the user perspective (Parker and Heapy 2006, van Dijk *et al.* 2007), has tried and tested approaches to reflect the structure of user's activities in the design of products and processes (e.g., Engeström 1999, Johnson *et al.* 2000).

Given that orientation, an S-D Logic view of service would necessarily evolve its knowledge domainfrom a management and social science, to now include manufacturing/engineering ('product') and computer science and information technology (connectivity). There is therefore an urgent need for greater integrative frameworks that are transdisciplinary, and could assist firms in capitalising on opportunities to create value with customers in different ways that are not hindered by constraining logics. Indeed, Ng, Maull and Smith (2011) suggested that there is a need for service to have better abstraction for the purpose of transferability of knowledge across sectors, and for replicability and scalability of the service so that future service design by firms could be systemic, structured and yet socially

[1]Cloud computing is the development and usage of Internet-based (hence, "*cloud*") computer technology (hence "computing"). Cloud computing signifies IT-related capabilities that are provided "as a service", allowing users to access technology-enabled services from the Internet with little knowledge of, expertise with, or control over the technology infrastructure that supports them.

meaningful to ensure sustainable service excellence. In this sense, S-D Logic could provide the integrative logic required to unite and progress knowledge.

Reference is made by Vargo and Lusch (2004) to several authors who believe that a goods-dominant logic may not help further the understanding of how consumers create value from combinations of 'goods' and 'services' and the interactions between them (Grönroos 1994; Kotler 1997; Normann and Ramirez 1993). Many suggestions have been made for a holistic and systems-based approach to understanding valuecreation, one that is not constrained by the need to determine the boundaries of 'product' or 'services' (Ng and Briscoe, 2011). This is becoming more urgent given that the organisation today, whether public or private, can be seen as an organiser of value creation (Vargo and Lusch 2004, Normann, 2001). Customers may not just be the receiver of the product or a source of business, but are increasingly becoming co-producers and co-designers of value propositions. And while they have always co-created the value of offerings, their co-creating resources and contexts are gaining greater attention and prominence (Chandler and Vargo, 2011; Ng et al 2010). Value is increasingly created within an eco-system of multiple stakeholders that includes customers and their communities, a system termed as a value constellation by Normann (2001) but which is dynamic and characterised by emergent properties. Normann (2001) describes 'density' as the best combination of resources mobilised for a particular context, such as a specific customer at a given time and place. Ultimately, density means that customers could have a whole world of specialist knowledge available when and where they like, with the potential to incorporate knowledge available only to themselves. Density is increasingly enabled by technology, which liberates the world from the constraints of time (when things can be done), place (where things can be done), actor (who can do what) and constellation (with whom it can be done). Central to the value constellation is the notion of learning communities. Individuals and communities will need to be capable of sharing data, information and knowledge, and to be able to learn and uniquely apply what has been learned from elsewhere and integrate such resources for their own individualised contextual outcomes. These changes are beginning to impact on manufacturing, technology and service organisations, which are trying to understand where demand needs to be met and through what hybrid offerings of physical asset, information and people.

S-D Logic (Vargo and Lusch, 2004, 2008) provides a lens through which we can view the value-creating system as entities applying their competencies within a context for the benefit of others. In co-creating value, each entity renders a service within the system to achieve outcomes for itself, as well as at the collaborative system level. Such an approach could provide for both a macro approach that accommodates the broader picture of value-creating system communities and organisations offering a service to one another, and a narrower view of how resources (physical assets, human and information) could be reconfigured and redesigned to bring about greater benefits with reduced resources. Such an approach would also transcend the role of the product and human activities within the system, and by doing so, propose how the firm can reformulate its value proposition from the perspective of S-D Logic.

Operationalising Service from an S-D Logic Perspective

We propose that S-D Logic is useful when there is a need to have a *complete understanding of the value-creating service system* where all entities, be they product or people, render a 'service' or a 'competency' to the system for outcomes. This is particularly important to inform not merely the process design of the human activities or the supply chain, but also the *design of the equipment* itself. This is especially so when there is a need to reevaluate the role of the product, processes and technologies in the system. SD Logic could be a valuable approach in considering the design and reconfiguration of the whole system, and it proposes that in considering the whole value-creating service system, indirect service provision (e.g. tangible objects)within the system may need to be designed not merely for function (which is acontextual) but also for what the objects should afford i.e. their competency as resources for co-creation within the system. In other words, a S-D Logic approach is useful when there is a *need for tangible objects to be redesigned and re-engineered for its relationships with the human co-creators,* with other tangible objects and with formal processes. By doing so, objects within the system become true enablers of value creation.

To understand service from a S-D Logic perspective is to understand the role of exchange and use within the firm's value proposition. Traditionally, the firm's value proposition was seen as an exchangeable unit, even where it seeks to integrate its offering to be better aligned with the customer's use environment. Thus, we argue that the first step towards understanding value proposition is to disassociate exchange value from exchangeable units, and to reformulate exchange to be more aligned with customer's processes of achieving use-value. This implies that the firm's value proposition is no longer exchangeable units, but its *fit* and its contribution to value-creating activities of the customer in use situations. Such a contribution in terms of the firm's processes and activities could be enriched by linking them to the firm's internal resources and costs. By viewing the firm's value proposition as a part of the whole value-creating system, the firm's value proposition can be exchanged with customer resources such as money, but where parts of the monetary amounts could also be substitutable with other resources (other suppliers and the customers themselves) in the value-creating service system, where other resources could be more effective or efficient in use-contexts.

We argue that operationalising the firm's value proposition in this manner enables the firm to identify the resources that contribute to specific value propositions which are aligned to the value realised by customers in use and in context, without the need to predetermine the boundaries of what is served by the 'product' and by the 'service'. Only when the firm is able to visualise its offering as just a part of the value system, can it see how the propositions fit in with the customer's mission. While current research in S-D Logic suggest links between value-in-use on one end and resources (operand and operant) on the other, further elaboration is needed on the structures and boundaries that exist within this spectrum, as they could enable or impede value co-creation.

A system is made more complex by goods that are already produced and internal functional boundaries already put in place when the firm was primarily a manufacturer. The hybrid and interactive nature between human activities, equipment and technology is demonstrated by the re-specification and re-visualisation of the firm's offering into a set of value propositional attributes that are aligned to co-create value-in-use. The firm's ability to identify the resources that contribute towards these hybrid value propositions suggest a need for a re-evaluation of its internal structures and boundaries, to enable it to understand which resources are most useful in creating less easily replicable capabilities.

Conclusion

Our chapter argues for a S-D Logic perspective on service and value creation. In addition, we suggest a way to operationalise S-D Logic by redrawing the firm's value propositional attributes such that it is aligned with its realisation by the customer in use contexts. By doing so, we show that firm's offerings are immediately hybrid between product and service and connected to one another. Together with the customer, value creation becomes a constellation where resources are integrated by all stakeholders. An S-DLogic approach shows the complexity of the value-creating system but also provides a framework to understand the system. Our chapter shows how the operationalisation of a value-creating system through a S-DLogic approach could generate new insights in terms of interactions between tangible objects, human activities and customer resources.

References

Baker, M.J. (1981), "Services-salvation or servitude?", *The Quarterly Review of Marketing*, Spring, pp. 7-18

Ballantyne, D. and Varey, R.J. (2008) "The service-dominant logic and the future of marketing", *Journal of the Academy of Marketing Science*, Vol. 36, No. 1, pp. 11-14.

Bateson, John E.G. (1977), "Do We Need Service Marketing?" in Marketing Consumer Services: New Insights, Marketing Science Institute, Report # 77-115 (December)

Bell, Martin (1981), "A Matrix Approach to the Classification of Marketing: Goods and Services," in *Marketing of Services, J.H. Donnelly and W.R. George*, eds., Chicago: American Marketing.

Berry LL (1980), "Services Marketing is Different," *Business*, 30 (May-June), pp. 24-29

Blois K.J. (1974), "The Marketing of Services: An Approach", *European Journal of Marketing* Vol 8 (Summer), pp. 137-145

Bolton, R. (2004) "Invited commentaries on "Evolving to a New Dominant Logic for Marketing", *Journal of Marketing*, Vol. 68, No. 1, pp. 18–27.

Chandler, Jennifer D., and Stephen L. Vargo (2011) "Contextualization and value-in-context: How context frames exchange" *Marketing Theory,* Vol. 11, No. 1, pp. 35-49

Das, R. (1981), *Managing Diversification: The General Management Perspective*, Macmillan, New Delhi

Deighton, John, and Das Narayandas. "Commentary on "evolving to a new dominant logic in marketing".*Journal of Marketing*, Vol. 68, No. 1 (January 2004), pp. 18-27.

Demsetz, H. (1993), *The Nature of the Firm. Origins, Evolution and Development*, Oxford University Press, New York

Dodson, S. (2003, Thursday 9 October 2003) The internet of things*. Guardian*

Drechsler, L. (1990), "A note on the concept of services*", Review of Income and Wealth*, Series 36, No 3

Edget, S. and Parkinson, S. (1993), "Marketing for service industries- a review", *The Service Industry Journal*, Vol. 13 No. 3, pp. 19-39.

Edvardsson, B., Gustafsson, A. and Roos, I. (2005), "Service portraits in service research: A critical review*", International Journal of Service Industry Management*, Vol. 16, No. 1, pp. 107-121.

Engeström, Y. (1999) Activity theory as a framework for analyzing and redesigning work. *Ergonomics*, 43 (7), pp. 960-974.

Greenfield, Harry I. (2002), "A Note on the Goods/Services Dichotomy," *Service Industires Journal*, 22 (October), 19-21.

Grönroos, C. (1994), "From marketing mix to relationship marketing: Towards a paradigm shift in marketing", *Asia-Australia Marketing Journal*, Vol. 2, August, pp. 9–29.

Grönroos, C. (2000), *Services Management and Marketing: A Customer RelationshipApproach*, 2nd ed. Chichester, UK: Wiley

Gummesson, Evert (1995), "Relationship Marketing: Its Role in the Service Economy," in *Understanding Services Management*, William J Glynn and James G. Barnes, eds. New York: John Wiley & Sons, pp. 244-268.

Hill, P. (1999), "Tangibles, intangibles and services: A new taxonomy for the classification of output", *Canadian Journal of Economics - Revue Canadienne D Economique*, Vol. 32, No. 2, pp. 426–446.

Johns, Nick (1999), "What is this thing called service?" *European Journal of Marketing*, Vol. 33 No. 9/10, 1999, pp. 958-973.

Johnson, P., Johnson, H., and Hamilton, F. (2000) Getting The Knowledge Into HCI: Theoretical and Practical Aspects of Task Knowledge Structures. Schraagen, J.M., Chipman, S.F., and Shalin, V.L. (Eds.) *Cognitive Task Analysis*. Mahwah, NJ: Lawrence Erlbaum and Associates. pp. 201-214.

Judd, R.C. (1964), "The case for redefining services", *Journal of Marketing*, Vol. 28 January. pp 58-9.

Kotler, P. (1997), *Marketing Management: Analysis, Planning, Implementation, and Control*, 9th ed., Prentice Hall, Upper Saddle River, NJ.

Kotler, P., Armstrong, G., Saunders, J. and Wong, V. (1996), *Principles of all Marketing: The European Edition*, Prentice-Hall International, Hemel Hempstead, p. 588.

Kounkou, A., Cullinane, A., and Maiden, N. (2008) Using HCI Knowledge in Service-Centric Applications: the S-Cube Network of Excellence. Wild, P.J. (Ed). *HCI2008 Workshop on HCI and the Analysis, Design, and Evaluation of Services*, Liverpool

Levitt, Theodore (1981), "Marketing intangible products and products intangibles", *Harvard Business review*, May-June.

Liechty, M. and G.A. Churchill, Jr. (1979), "Conceptual Insights into Consumer Satisfaction with Services," in Proceedings, Chicago: American Marketing

Lovelock, C.H. (1980), "Towards a Classification of Services", in *Theoretical Developments in Marketing*, Charles W. Lamb and Patrick M. Dunne, ed., Chicago: American Marketing, pp. 72-76.

Lovelock, C.H. (1983), "Classifying Services to Gain Strategic Marketing Insights" *Journal of Marketing*, Vol. 47, No. 3 (Summer), pp. 9-20.

Lovelock, C.H. (1999) "Developing marketing strategies for transnational service operations", *Journal of Services Marketing*, Vol. 13 Iss: 4/5

Lovelock, Christopher and Evert Gummesson, (2004), "Whither Services Marketing? In Search of a New Paradigm and Fresh Perspectives" *Journal of Service Research*, Vol 7, No. 1, Aug, pp. 20-41.

Lusch, R.F. (2011), "Reframing supply-chain management: A service-dominant logic perspective", *Journal of Supply Chain Management,* Vol. 47, No. 1, pp. 14-18.

Minter, A. (1982), "Why have services been ignored," *The Service Industries Journal*, Vol. 2, Iss. 3, pp. 65-71.

Mitchell, V-W; Greatorex, M (1993), "Risk perception and reduction in the purchase of consumer services," *The Service Industries Journal*, Vol. 13, Iss. 4, pp. 179.

Ng, Irene C. L. (2007)*The Pricing and Revenue Management of Services: A Strategic Approach* under the Advances in Management and Business Studies series, (ISBN: 978-0-41535-077-8), Abingdon, Oxford: Routledge, Taylor and Francis group

Ng, Irene C.L., Sai Nudurupati and Paul Tasker, (2010) "Value Co-creation in Outcome-based Contracts for Equipment-based Service", AIM working paper series, WP No 77 - May – 2010 **http://www.aimresearch.org/index.php?page=wp-no-77** under second review in *Journal of Service Research*

Ng, Irene C.L., R.S. Maull and Laura Smith (2011) "Embedding the New Discipline of Service Science" in *The Science of Service Systems*, Demirkan, Spohrer and Krishna Eds., 2010 volume in *"Service Science: Research and Innovations* (SSRI) *in the Service Economy"* Book Series, Springer - ISSN: 1865-4924, *forthcoming*

Ng, Irene C.L. and Gerard Briscoe (2011) "Value, variety and viability: designing for co-creation in a complex system of direct and indirect (goods) service value proposition", The 2011 Naples Forum on Service - Service Dominant Logic, Network & Systems Theory and Service Science: Integrating Three Perspectives For A New Service Agenda, 14-17 June, Capri, Italy

Ng, Irene C.L., Ralph Badinelli, Primiano Dinauta, Sue Halliday, Helge Löbler and Francesco Polese, (2012) "S-D Logic: Research Directions and Opportunities: The perspective of Systems, Complexity and Engineering," *Marketing Theory,* forthcoming

Normann R (2001) *Reframing business: When the map changes the landscape*. John Wiley & Sons Inc

Normann, R. and Ramirez, R (1993), "From value chain to value constellation: Designing interactive strategy," *Harvard Business Review*, Vol. 71, No. 4, pp. 65–77.

O'Shaughnessy, J. and O'Shaughnessy, N.J. (2011), "Service-dominant logic: A rejoinder to Lusch and Vargo's reply", *European Journal of Marketing*, Vol. 45, No. 7/8, pp. 1310-1318.

Papazoglou, M., and van den Heuvel, W.-J. (2007) Service oriented architectures. *The VLDB Journal*, 16 (3), pp. 389-415.

Parker, S., and Heapy, J. (2006) *The Journey to the Interface.* Report, DEMOS, London.

Prahalad, C.K. and Bettis, R.A. (1986) "The dominant logic: A new linkage between diversity and performance", *Strategic Management Journal*, Vol. 7, No. 6, pp. 485–501.

Prahalad, C.K. and Ramaswamy, V (2000), Co-opting Customer Competence. *Harvard Business Review*, Vol. 78, No. 1, pp. 79-87.

Rathmell, John M. (1966), "What Is Meant by Services?" Journal of Marketing, 30 (October), pp. 32-36.

Rathmell, John M. (1974), *Marketing in the Service Sector*, Cambridge: Winthrop Publisher Inc., MA

Ren, G., 2009. *Service Business Development in Manufacturing Companies: Classification, Characteristics and Implications*. PhD Dissertation, University of Cambridge

Sharma, D., Lucier, C., and Molloy, R. (2002), "From solutions to symbiosis: Blending with your customers", *Strategy and Business*, Vol. 27, No. 2), pp. 38–43.

Scheirer, J., Fernandez, R., Klein, J., and Picard, R.W. (2002) Frustrating the user on purpose: a step toward building an affective computer. *Interacting with Computers*, 14 (2), pp. 93-118.

Shostack, L. (1977), "Breaking free from product marketing", *Journal of Marketing,* April, Vol. 41, No. 2, pp. 73-80.

Silvestro, R. and Johnson, R. (1990), "The determinations of service quality – enhancing and hygiene factors", in Proceedings of the QUIS II Symposium, St John's Univeristy, New York, USA, July

Smith A (1776), *The Wealth of Nations*, Books I-III, Wiley, Chichester, England.

Storey, Chris and Easingwood, Christopher J. (1998), 'The Augmented Service Offering: A Conceptualization and Study of its Impact on New Service Success,' Journal of Product Innovation Management, Vol. 15, pp. 335-351.

Uhl, K.P. and G.D. Upah (1983), "The Marketing of Services: Why and How is It Different," In Research in Marketing, V.6, J.N. Sheth, ed., NY: Elsevier

van der Geest S and Whyte S and Hardon A (1996) The Anthropology Of Pharmaceuticals: A Biographical Approach. *Annual Review of Anthropology* 25(1) pp. 153-178.

van Dijk, G., Minocha, S., and Laing, A. (2007) Consumers, channels and communication: Online and offline communication in service consumption. *Interacting with Computers*, 19 (1), pp. 7-19.

Vargo, S.L. (2011), "Market systems, stakeholders and value propositions: Toward a service-dominant logic-based theory of the market", *European Journal of Marketing*, Vol. 45, No. ½, pp. 217-222.

Vargo and Lusch (2004) Evolving to a new dominant logic for marketing. *Journal of Marketing* Vol. 68, pp. 1-17.

Vargo, S. L. and Lusch, R. F. (2006), "Service-dominant logic: What it is, what it is not, what it might be", In Lusch, R.F. and Vargo, S.L. (Eds.), *The Service-Dominant Logic of Marketing: Dialog, Debate, and Directions,* ME Sharpe, Armonk, NY, pp. 43–56.

Vargo SL and Lusch RF (2008) Service-dominant logic: continuing the evolution. *Journal of the Academy of Marketing Science* 36(1) pp. 1-10.

Wyckham, R.G., P.T. Fitzroy, and G.D. Mandry (1975), "Marketing of Services: An Evaluation of the Theory," *European Journal of Marketing*, Vol. 9, pp. 59-67.

Xia, M., Zheng, L., and Yuli, X. (2009) Emotional gaze behavior generation in human-agent interaction. In *Proceedings of the 27th international conference extended abstracts on Human factors in computing systems* Boston, MA, USA: ACM.

Zeithaml VA, A. Prasuraman, and Leonard L. Berry (1985), "Problems and Strategies in Services Marketing", *Journal of Marketing*, Vol. 49, (Spring) pp. 33-46.

Zeithaml VA and MJ Bitner (1996), *Services marketing*, McGraw-Hill Boston, Mass

Zeithaml VA, Bitner A.J. & Gremler D.D. (2006), *Services Marketing: Integrating Customer Focus Across the Firm* (McGrw Hill) 4th edition