THE KEY BUSINESS QUESTION IN THE KNOWLEDGE ECONOMY is, "How is value created?" The traditional answer to that question is, "Through the value chain." But value chain thinking is rooted in an industrial age production line model that gradually has been superceded by the new enterprise model of the value network or value web. A major strategic challenge is reconfiguring a business from value chain organization to the more fluid structure of the value network.

In the fast-moving world of e-commerce there is increasing buzz about e-webs and business webs. But business webs are just one type of value network. Virtually any organization can be understood as a value network. Yes, any organization, including government agencies and non-profits.

Although interest in business webs is fueling development of new types of analysis, these value network perspectives can help explain the dynamics of non-profits, economic clusters, and national economies as well. Earlier issues of the Journal of Business Strategy have explored this shift by featuring new thinking about value clusters, value webs, and value networks, and our understanding is continuing to grow. However, most approaches to analyzing and reconfiguring value networks have not taken into account the role of knowledge and intangible value exchange as the foundation for these emerging networked enterprises. Even with the widespread interest in the knowledge economy, intellectual capital, and intangibles, these generally have not found their way into our business models. As a result, efforts to understand value networks often confuse rather than help.
The Three Currencies of Value

The key to reconfiguring business models for the knowledge economy lies in understanding the new currencies of value. A value network generates economic value through complex dynamic exchanges between one or more enterprises, its customers, suppliers, strategic partners, and the community. These networks engage in more than just transactions around goods, services, and revenue. The two other currencies are knowledge value and intangible value or benefits. I call these currencies because all three serve as a medium of exchange, which is the basic definition of currency. All three are important in a value network.

1. Goods, Services, and Revenue (GSR). Exchanges for services or goods, including all transactions involving contracts and invoices, return receipt of orders, requests for proposals, confirmations, or payment. Knowledge products or services that generate revenue or are expected as part of service (such as reports or package inserts) are part of the flow of goods, services, and revenue.

2. Knowledge. Exchanges of strategic information, planning knowledge, process knowledge, technical know-how, collaborative design, policy development, etc., which flow around and support the core product and service value chain.

3. Intangible benefits. Exchanges of value and benefits that go beyond the actual service and that are not accounted for in traditional financial measures, such as a sense of community, customer loyalty, image enhancement, or co-branding opportunities.

These value exchanges lie at the heart of a value network. Further, every exchange of value is supported by some mechanism or medium that enables the transaction to take place. For example, if two people want to exchange messages about a meeting, they may use the mechanism of e-mail or voice mail to support the exchange.

Consider a more detailed example. Let's say a technology vendor would like to provide an on-line user group discussion for its customers for a fee of $20 per month. The mechanism of an interactive user group allows several exchanges of value to take place between the provider and the user. Exhibit 1 lists the value exchanges that might be enabled through such a mechanism.

■ The traditional value chain exchange is the provision of moderated discussions, information, and responses to questions in exchange for a fee.

■ The knowledge flow may involve exchanges of customer usage data and feedback that is valuable to product development. As a result of their participation, users receive in exchange value-added knowledge, which may take the form of personally targeted news or offerings based on their unique personal preferences.

■ By tracing the intangible benefits that accrue in the network, one finds that the underlying logic for creating such a discussion group is not only about gaining revenue from the service (indeed it may barely break even). The user group may really be about providing a sense of community on the part of the user. In return, of course, one would hope to receive an increase in customer loyalty. The intangible value exchange is the real reason for engaging in the activity.

Mapping the Value Exchange

Using the same example we can "map" these value exchanges as a flow diagram showing goods, services, and revenue (GSR), knowledge flow, and creation of intangible value. To be sure that nothing is overlooked it is best to consider each flow separately. See Exhibit 2.

Exhibit 1: TABLE OF VALUE EXCHANGES

<table>
<thead>
<tr>
<th>Mechanism</th>
<th>Provides Value</th>
<th>Returns Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interactive On-Line Discussion Group</td>
<td>GOODS, SERVICES</td>
<td>REVENUE</td>
</tr>
<tr>
<td></td>
<td>— Moderated discussions</td>
<td>— Subscription fee</td>
</tr>
<tr>
<td></td>
<td>— Responses to questions</td>
<td></td>
</tr>
<tr>
<td>KNOWLEDGE</td>
<td>KNOWLEDGE</td>
<td></td>
</tr>
<tr>
<td></td>
<td>— Personally targeted news</td>
<td></td>
</tr>
<tr>
<td></td>
<td>— Offerings based on user</td>
<td></td>
</tr>
<tr>
<td></td>
<td>— Preferences</td>
<td></td>
</tr>
<tr>
<td>INTANGIBLE BENEFITS</td>
<td>INTANGIBLE BENEFITS</td>
<td></td>
</tr>
<tr>
<td></td>
<td>— Sense of community</td>
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</tbody>
</table>

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Revenue-generating value exchanges are just a part of the picture in a value network. The flow of knowledge value and intangible value is of equal importance. Please note there are no double-headed or unlabeled arrows in this analysis approach. Unlabeled or double-headed arrows are meaningless. Diagrammed this way, however, we know exactly who initiates the exchange, what specific value or product is being conveyed, and who receives it. With this level of detail we can analyze value creation from multiple perspectives such as time, goals, resources, results, costs, or value added by linking the diagram to analysis tables. Note also that the originators and recipients are real people or groups of people. In the rush to understand the wild and woolly world of e-commerce, people often confuse the mechanism with the exchange. New technologies are only pipelines for knowledge and value exchange. The exchange is what is really important.

**As more and more products and services depend on the exchange of knowledge and information, knowledge and intangibles become mediums of exchange or currencies in their own right.**

As more and more products and services depend on the exchange of knowledge and information, knowledge and intangibles become mediums of exchange or currencies in their own right. The exchange is what is really important.

This example shows a straightforward exchange of goods and services for revenue, knowledge exchanged for knowledge, and an intangible exchanged for an intangible. Knowledge is the most interesting currency of all, because knowledge can be exchanged for any of the three! We can exchange knowledge for money in the form of a knowledge product or service, we can exchange knowledge for knowledge, and we can exchange knowledge for an intangible.

An example of exchanging knowledge for an intangible would be when Sun Microsystems gave away its Java technology in hope of generating a web of loyal users, thus exchanging knowledge for loyalty. Unfortunately for the Java alliance, the dynamics of this were only partially understood, and the returns were not fully realized.

**Mapping the Value Network**

Mapping a value network involves diagramming all three value exchanges with each and every member of the business or organizational network. Let's explore some of the insights that surface from this perspective. Exhibit 3 is a diagram of a pharmaceutical company that we will call PharmCo. To keep this simple, we will look only at a few of its interactions, focusing on the first two currencies: goods, services, and revenue (GSA) and knowledge.

The analysis revealed that even...
though Pharmco respected its financial relationship with medical providers, it neglected knowledge exchanges, which were handled inconsistently across the company. From this new perspective, it gained appreciation of the importance of feedback about medications from the providers, and of how the communication loop about disease was vital to smooth the way for providers to prescribe Pharmco products. It also realized that other than marketing materials, there was no real exchange of knowledge and that it could deepen the relationships by concentrating on knowledge and intangible value that could flow both ways.

Reconfiguring for E-Commerce

A value network perspective can expand the strategy toolkit for any company as the above example shows. However, it is especially critical for moving into the world of e-commerce. Web investments are not like traditional marketing. Using the same return on investment criteria that one does for marketing campaigns or other technology investments simply doesn’t work. The net is web of conversations, as the provocative book *The Cluetrain Manifesto*, by Christopher Locke, Rick Levine, Doc Searls, and David Weinberger (Perseus Books, 2000), so aptly demonstrates. Net strategies that succeed concentrate on knowledge value exchanges and intangible benefits such as brand recognition and loyalty.

The value network diagram in Exhibit 4 shows how knowledge and intangibles can be leveraged in an Internet strategy. A clothing manufacturer moved into e-commerce through the mechanism of providing free marketing Web sites to its distributors. In this case, the manufacturer also allowed competing manufacturers to sell products via the same Web site. Whoa! What’s going on? Why in the world would a company provide a marketing channel to its competitors? In this example, the selling of competitor products on a manufacturer’s Web site only makes sense if we understand the flow of knowledge and intangible benefits that the manufacturer gains. The company gained usage data not only about sales of its own products, but also about those of its competitors. This very savvy company focused on the intangible benefits of building closer relationships with its end users and gaining market intelligence, customer feedback, and competitive intelligence. Knowledge value and intangible value in this case outweighed the financial return. More examples of value network analysis applied to e-business webs are featured in the recent book, *Digital Capital*, by Don Tapscott, David Ticoll, and Alex Lowy (Harvard Business School Press, 2000).

In the Knowledge Economy

Value networks are complex. They encompass much more than the flow of products, services, and revenue of the traditional value chain. Whenever there is a transaction in a complex enterprise, there is an exchange of value. Yet only a portion of value exchange can be tracked or measured through service delivery or revenue generation.

As more and more products and services depend on the exchange of knowledge and information, knowledge and intangibles become mediums of exchange or currencies in their own right. Direct revenue exchanges are only part of the picture. Knowledge and intangible value are of equal importance, and success depends on building a rich web of trusted relationships. In the knowledge economy these may indeed tell much more about the enterprise’s present and future capability to achieve sustainable advantage.

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2. Padmakshi Rana, Samuel W. Short, Steve Evans, Maria Holgado Granados. Business Models and Business Modelling: State of the Art 75-93. [CrossRef]

3. T. Peltola, L. Aarikka-Stenroos, E. Viana, S. Mäkinen. 2016. Value capture in business ecosystems for municipal solid waste management: Comparison between two local environments. *Journal of Cleaner Production* 137, 1270-1279. [CrossRef]


5. Sergio Barile Department of Management, Sapienza University of Rome, Rome, Italy Robert Lusch Eller College of Management, University of Arizona, Tucson, Arizona, USA Javier Reynoso EGADE Business School, Tecnologico de Monterrey, San Pedro Garza Garcia, Mexico Marialuisa Saviano Department of Management & Information Technology, University of Salerno, Salerno, Italy James Spohrer IBM Research-Almaden, San Jose, California, USA. 2016. Systems, networks, and ecosystems in service research. *Journal of Service Management* 27:4, 652-674. [Abstract] [Full Text] [PDF]


7. Gianluca Elia, Alessandro Margherita A Collective Intelligence Platform for Developing Technology Entrepreneurship Ecosystems 195-220. [CrossRef]


9. Unathi Mahola, Louwrence Erasmus Emerging revenue model structure for mobile industry: The case for traditional and OTT service providers in Sub-Sahara 1485-1494. [CrossRef]

10. Mark de Reuver, Wally Keijzer-Broers Trade-offs in designing ICT platforms for independent living services 1-6. [CrossRef]


12. Evert Gummesson Cristina Mele Francesco Polese Jaqueline Pels Business School, Universidad Torcuato Di Tella, Buenos Aires, Argentina Sergio Barile Department of Management, Sapienza, University of Rome, Rome, Italy Marialuisa Saviano Department of Management & Information Technology, University of Salerno, Salerno, Italy Francesco Polese Department of Business Studies and Research, University of Salerno, Salerno, Italy Luca Carrubba Department of Economics and Law, University of Cassino and Southern Lazio, Cassino, Italy. 2014. The contribution of VSA and SDL perspectives to strategic thinking in emerging economies. *Managing Service Quality: An International Journal* 24:6, 565-591. [Abstract] [Full Text] [PDF]

13. Arash Golnam Ron Sanchez Paavo Ritala Alain Wegmann The Why and the How of Coopetition: Modeling the Incentives and Design of Coopetitive Value Networks 29-60. [Abstract] [Full Text] [PDF] [PDF]


16. Aneta Kabreva, Joachim Gotze, Paul Muller Service Network Modeling Approaches: Overview, Classification, and Analysis 451-458. [CrossRef]


18. Aurelio Tommassetti, Giuseppe Festa. 2014. An Analysis of Wine Tourism in Italy from a Strategic Service-Based Perspective. *Service Science* 6:2, 122-135. [CrossRef]


20. Arto Ojala, Nina Helander Value Creation and Evolution of a Value Network: A Longitudinal Case Study on a Platform-as-a-Service Provider 975-984. [CrossRef]


47. Dennis Kundisch, Thomas JohnBusiness Model Representation Incorporating Real Options: An Extension of e3-Value 4456-4465. [CrossRef]
48. José Maria Viedma Marti, Maria do Rosário CabritaSocial Capital Benchmarking System (SCBS) 258-281. [CrossRef]
49. José Maria Viedma Marti, Maria do Rosário CabritaEntrepreneurial Excellence in the Knowledge Economy Context: The Theoretical Foundations 40-109. [CrossRef]
50. Mohd Rizaimy Shaharudin, Suhaiza ZailaniSustainable services in Closed Loop Supply Chains (CLSCs) 871-876. [CrossRef]
51. Arto OjalaSenior Researcher at the Cloud Software Program in the Department of Computer Science and Information Systems at the University of Jyväskylä, Jyväskylä, Finland Pasi TyrväinenProfessor of Information Systems at the University of Jyväskylä, Jyväskylä, Finland. 2011. Value networks in cloud computing. Journal of Business Strategy 32:6, 40-49. [Abstract] [Full Text] [PDF]
52. Thomas Breashearth�AlbadviDepartment of Industrial Engineering, Faculty of Engineering, Tarbiat Modares University, Tehran, Iran Monir ech HosseinilInformation Technology Department, K.N. Toosi University of Technology, Tehran, Iran. 2011. Mapping B2B value exchange in marketing relationships: a systematic approach. Journal of Business & Industrial Marketing 26:7, 503-513. [Abstract] [Full Text] [PDF]
53. Adetunji Olufemi Edun, Long WeiKnowledge Management and Innovation for Firms Competitiveness: A Strategic Approach for African SMEs 1-5. [CrossRef]
54. Zhicheng LiuService Strategies Based on Customer "Second Satisfaction" 1-4. [CrossRef]
55. Luis M. Camarinha-Matos, Hamideh AfsarmaneshBehavioral aspects in collaborative enterprise networks 12-19. [CrossRef]
58. Jane McKenzieDirector of the KN Forum at Henley Business School, University of Reading, Henley on Thames, UK Christine van WinkelenVisiting Academic Fellow at Henley Business School, University of Reading, Henley on Thames, UK Sindy GrewHead of Knowledge Mobilisation at the National Audit Office, London, UK. 2011. Developing organisational decision-making capability: a knowledge manager’s guide. Journal of Knowledge Management 15:3, 403-421. [Abstract] [Full Text] [PDF]
59. Zhang Zhi-ze, Liu Shuang-liangGovernment process reengineering based on knowledge management 1-4. [CrossRef]
60. Wei-Lun Chang, Yu Jyun LinUsing Fuzzy theory to Explore the Appropriateness of Customer-Oriented E-Service Cooperation 828-832. [CrossRef]
61. Ji Hwan Lee, Dong Ik Shin, Yoo S. Hong, Yong Se KimBusiness Model Design Methodology for Innovative Product-Service Systems: A Strategic and Structured Approach 663-673. [CrossRef]
64. Xu Wenzhe, Sun QinghuaResearch on collaborative supply chain management of automotive manufacturing industry based on value net 478-482. [CrossRef]
65. T. He, W. Ho, X.F. XuA value-oriented model for managing service supply chains 193-197. [CrossRef]
66. Jianliang Zhang, Yushun FanCurrent state and research trends on business ecosystem 1-5. [CrossRef]
67. Zhongjie Wang, Dianhui Chu, Xiaofei XuValue Network Based Service Choreography Design and Evolution 495-500. [CrossRef]
68. Mikko V.J. HeikkiläBased at the Department of Communications and Networking, TKK Helsinki University of Technology, Espoo, Finland Thomas CaseBased at the Department of Communications and Networking, TKK Helsinki University of Technology, Espoo, Finland Fabio HechtBased at the Department of Informatics, University of Zurich, Zürich, Switzerland. 2010. Value analysis of centralized and distributed communications and video streaming. info 12:5, 42-58. [Abstract] [Full Text] [PDF]
69. Zhongjie Wang, Xiaofei Xu, Dianhui Chu, Chao MaValue-Driven Approach for the Determination of Global Optimization Objective of Service Composition 210-217. [CrossRef]
70. Xiaobo Wu, Xiaochu Zhang, Xiaoling ChenThe Business Model Innovation of Mobile Operators: A Case Study on ADC/MAS Model of China Mobile 96-99. [CrossRef]
72. Thomas Casey, Timo Smura, Antti Sorri. 2009. Value Network Configurations in wireless local area access 1-9. [CrossRef]
74. E. Gummesson, C. Mele and F. Polese. Sergio Barile. Università of Rome “La Sapienza”, Rome, Italy Francesco Polese. Department of Diam, University of Cassino, Cassino, Italy. 2010. Linking the viable system and many-to-many network approaches to service-dominant logic and service science. *International Journal of Quality and Service Sciences* 2:1, 23-42. [Abstract] [Full Text] [PDF]
75. Maria Solitander. Department of Management and Organization, Hanken School of Economics, Helsinki, Finland Annika Tidström. Department of Management and Organization, University of Vaasa, Vaasa, Finland. 2010. Competitive flows of intellectual capital in value creating networks. *International Journal of Quality and Service Sciences* 2:1, 23-42. [Abstract] [Full Text] [PDF]
76. Carol Ann Zulauf Sharicz, Christine van Winkelen. 2010. Deriving value from inter-organizational learning collaborations. *The Learning Organization* 17:1, 8-23. [Abstract] [Full Text] [PDF]
77. Daniele Joseph Dubois, Christos Nikolaou, Manolis Voskakis. A Model Transformation for Increasing Value in Service Networks through Intangible Value Exchanges 185-189. [CrossRef]
78. D. Adebanjo. Business models and sustainability of e-clusters: A case study 1045-1049. [CrossRef]
79. Zhongjie Wang, Xiaofei Xu, Dianhui Chu, Chao Ma, Xu Shao. Value Annotation for Service Model Analysis 219-225. [CrossRef]
82. S.J. Habib. Optimization of value-network through clusters consolidation 1-6. [CrossRef]
84. Rahul C Basole. 2009. Visualization of interfirm relations in a converging mobile ecosystem. *Journal of Information Technology* 24:2, 144-159. [CrossRef]
85. Jeannine M. Siviy, Christopher Alberts, Andrew P. Moore, Carol Woody, Julia Allen. Value mapping and modeling SoS assurance technologies and supply chain 236-240. [CrossRef]
86. Sami J. Habib, Paulvanna Nayaki. Mariamuthu Service Innovation in Value-Network through Clusters Consolidation 505-508. [CrossRef]
87. Zhongjie Wang, Xiaofei Xu. SVLC: Service Value Life Cycle Model 159-166. [CrossRef]
88. Chunhua Tian, Rongzeng Cao, Hao Zhang, Feng Li, Wei Ding, Bonnie Ray. Service analytics framework for web-delivered services 635-640. [CrossRef]
92. Mark de Reuver, Harry Bouwman. Governing Mobile Service Innovation in Converging Value Networks 134-144. [CrossRef]
95. Rahul C. Basole. Visualization of Interfirm Relations in a Converging Mobile Ecosystem 65-74. [CrossRef]
96. Feng Li, Chunhua Tian, Rongzeng Cao, Shun Jiang. Value network model for service ecosystem in business environment 955-958. [CrossRef]
98. Yiche Chen, Yan-Ru Li, Pi-feng Hsieh, Chung-Shing Lee. Strategies of Developing Deep Ocean Water Industry - Cluster and Value Network Views 351-357. [CrossRef]


102. S. Passey, N. Goh, P. Kil Targeting the Innovation Roadmap Event Horizon: Product Concept Visioning & Scenario Building 604-607. [CrossRef]

103. Annie Green George Washington University, Washington, DC, USA. 2006. The transformation of business knowledge into intangible assets. *VINE* 36:1, 27-34. [Abstract] [Full Text] [PDF]

104. Annie Green George Washington University, Washington, DC, USA. 2006. The transformation of business knowledge into intangible assets. *VINE* 36:1, 27-34. [Abstract] [Full Text] [PDF]

105. Isabelle Szmigin The University of Birmingham, Birmingham, UK Louise Canning The University of Birmingham, Birmingham, UK Alexander E. Reppel The University of Birmingham, Birmingham, UK. 2005. Online community: enhancing the relationship marketing concept through customer bonding. *International Journal of Service Industry Management* 16:5, 480-496. [Abstract] [Full Text] [PDF]


107. Yafang Tsai, Jersan Hu Value creating from exchanges among organizational value chain activities - the case study of District Educational Hospital 470-475. [CrossRef]

108. Jersan Hu, Yayen Chou Construct exchange value model: toward a dynamic B-to-B relationship marketing theory 1438-1441. [CrossRef]

109. Isabelle Szmigin The University of Birmingham, University House, Birmingham, UK Louise Canning The University of Birmingham, University House, Birmingham, UK. 2005. Online community: enhancing the relationship marketing concept through customer bonding. *International Journal of Service Industry Management* 16:5, 480-496. [Abstract] [Full Text] [PDF]


111. Isabelle Szmigin The University of Birmingham, University House, Birmingham, UK Louise Canning The University of Birmingham, University House, Birmingham, UK. 2005. Online community: enhancing the relationship marketing concept through customer bonding. *International Journal of Service Industry Management* 16:5, 480-496. [Abstract] [Full Text] [PDF]

112. John Van Beveren John Van Beveren is a Lecturer at the School of Business, University of Ballarat, Victoria 3350, Australia (j.vanbeveren@ballarat.edu.au). 2003. Does health care for knowledge management?. *Journal of Knowledge Management* 7:1, 90-95. [Abstract] [Full Text] [PDF]


114. Chao Ma, Zhongjie Wang, Xiaofei Xu Preliminary Discussions on Several Characteristics of Service Value 228-241. [CrossRef]

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