

Developing Discourse on “Product Value” to attain Agile Food Networks

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While the concept of human capital often is used at a macro-economic level to determine the wealth of nations, and may be used likewise at a company level to determine the competency and labour potential of a firm (Becker 1964), here it is considered as a systems component in modelling how human capital may contribute to delivering customer value through agile food networks embedded in a ‘sea of unpredictability’. Food supply is organised through a network of cooperating firms. Each of these firms may in line with Penrose (1959) be described as a bundle of resources; classified as either human or technical resources. The concept of human capital embodies two aspects of people-related resources: 1) as knowledge and 2) as labour. Use of human capital is also dependent on emotional aspects intrinsic to humans. This mental model evokes perception of human complexity; a system of human resource and emotional components with human capability including knowledge, labour, motivation and choice for both exercising labour and management.

A fundamental organisational attribute of fresh food supply is responsiveness to multiple sources of uncertainty including sourcing, competition and demand. “Uncertainty” represents a core concept in the field of logistics management; a phenomenon that emerges when a decision-maker experiences lack of information to predict external changes (Daft 2007: 55). According to Lapidé (2006) customer-responsive product supply demands context specific solutions crafted on a strategic framework. Food is a biological material that at least at the raw material stage is produced in close interaction with nature. Important contextual features specific to food supply include the need to model end-to-end supply based on seasonality, perishability, safety and traceability factors (Van der Vorst and Beulens 2002, Taylor and Fearné 2006). In food supply networks, modelled as end-to-end structures, intermediary challenges include coordinating retail promotions with lead time requirements and in general a low degree of flexibility to fluctuating demand (Adebanjo 2009). The rise of food safety as a major societal issue, raw materials in food distribution often closely resemble the ‘finished product’, and that foods are to varying degrees perishable limiting the distribution time-frame indicate the importance of inter-organisational collaboration in food networks (Bijman et al. 2006).

The dominant approach to develop predictability in logistics has been to plan; using more or less precise knowledge of future supply to dictate operations. However as Loasby (1998) points out: “Close attention to recipes does not ensure excellent results, and even detailed manuals often make crucial, if unconscious, assumptions about the user’s skills. It is notorious that standard operating procedure, followed to the letter, produce unsatisfactory levels of performance...”. Use of plans can never be viewed as an instant recipe for success. However, the problematic nature of using plans in a volatile marketplace does not render plans worthless. It is rather the role of plans as a component in a complex network that needs further elaboration. Plans for materials flows are informational resources used together with other logistical resources including orders. Loasby (1998) points to poor coordination with

ever-fluctuating competencies as another limitation associated with using plans to govern operations. People learn in part through unpredictable trial and error processes. They also then tend to forget what they learned through both experience or information. A stressful situation may take them off balance inhibiting rational decision-making. Human capital is one of many sources of uncertainty in the food network.

Environmental complexity refers to “...the number and dissimilarity of external elements relevant to an organisation’s operations” (Daft 2007). From the perspective of the firm environments are uncontrollable and consist of nature, society and competition. When these complex environments of the firm fluctuate, routines are established to confront emergent change. Agile supply is in this picture a logistics principle where the firm acts to strategically confront this unruly environment (Christopher 2011). The individual firm may accordingly be pictured as coping with the environment using its internal controllable resources filtered through less controllable inter-organisational resources embedded in a network context of business relationships (Håkanson and Snehota 1995).

Complexity is found in the environment of the firm. Furthermore, at the “core” of the network, each firm may be viewed as a complex bundle of resources interacting with a volatile market. Firms need to balance their relatively more manageable internal resources with an unruly environment. In a network configuration, companies are interlinked through business relationships facilitating product and information flows. Business relationships represent in themselves resources (Håkansson and Snehota 1995). This resource is concerned with boundary spanning between firms including mitigating environmental risks. Business relationships in the food network are also problematical to use since they are associated with actors’ divergent perceptions of supply purpose, bounded rationality and potentials of opportunism (Williamson 1975). Food supply networks are rarely finely tuned and neatly designed value maximising systems.

A fundamental aspect of systems dynamics, according to Sterman (2001), is “...that the structure of the system gives rise to behaviour”. In a complex system, according to Sterman (2001), behavioural patterns emerge, different people behaving in the same way. However, people (managers and labour) are unaware of the impact of the structure on their behaviour. They believe that other people are cause of operations; “the fundamental attribution error” (e.g. Ross 1977). Surana et al. (2005), state in relation to the “real world” that: “Many natural systems and increasingly many artificial systems as well, are characterized by apparently complex behaviours that arise as the result of non-linear spatio-temporal interactions among a large number of components or subsystems”. A complex adaptive system (CAS) is a dynamic network of many agents interacting with other agents (Mitchell Waldrop 1994). Surana et al. (2005) discern CAS, from other forms of complex systems as being systems that accommodate for human decision-making; because of the human capital involved, a decentralized and inherently uncontrollable system. The structure of this system is accordingly time and location specific; emergent. Overall behaviour of the system is the result of numerous decisions made in dispersed events by its numerous actors. CAS points accordingly to the necessity of focus on managing people and communication between people to achieve operational qualities.

Operational connectivity is accordingly an important aspect of integration in a supply network involving crucially flows of information within firms and boundary spanning interlinking firms. According to Closs et al. (2005), information connectivity is viewed by supply network actors as playing a decisive role in achieving “successful” logistics programs. The importance

of boundary-spanning through information and communications technology (ICT) is also substantiated by Yao et al. (2009) revealing performance improvement measured by order cost reduction, inventory reduction and customer satisfaction. Boundary spanners represent technical instruments facilitating connectivity between resources to buffer a firm with its environment. Information connectivity is proposed as a supporting the key purpose of product supply associated with time, form, place and possession utility form an end-user perspective (Alderson 1957).

Normally the concept of “value” is interlinked with customer perceptions; included in discourse concerning achieving “market orientation” or “customer responsiveness”. The industrial network associated with food supply is a breeding ground for both developing trust and emergent conflicts. In this setting *discourse* is proposed as a core strategic component. Supply-related discourse can be strategically developed into a comprehensible and usable operational construct for business practitioners. It can be viewed as an element of human capital; knowledge in a business setting embedded in professional terminology and communication, knowledge expressed by people (labour) using language.

A conceptually simple facet of interconnectivity, “product value”, is proposed as a tool to facilitate boundary spanning. While “value” is an actor perception, “Products”, even though they are transformed resources, measurable physical artefacts where the transformation indicates value creation as well as depreciation. Rather than measuring precisely “customer value” in general, use of this wording in supply network professional terminology is suggested developed. “Product value” as “boundary object” in business relationships facilitates using language flexibility as a supply system component in an agile food network. According to Star and Griesemer (1989), “Boundary objects are objects which are both plastic enough to adapt to local needs and constraints of the several parties employing them, yet robust enough to maintain a common identity across sites. They are weakly structured in common use, and become strongly structured in individual-site use. They may be abstract or concrete. They have different meanings in different social worlds but their structure is common enough to more than one world to make them recognizable means of translation. The creation and management of boundary objects are essential in developing and maintaining coherence across intersecting social worlds”.

“Product value” as boundary objects combined with technical boundary spanners facilitates food network integration and agility. Human capital is, within the framework of this approach, a complex system of knowledge and labour resources. Both workers and management are represented by people exhibiting labour. How management and workers interact is dependent on their connectivity including contents of communication. A fundamental understanding, in line with Heskett et al. 2008, is that “...an organization that develops a strong and adaptive culture will enjoy greater loyalty from customers and employees alike” (ibid. p.161). This view exhibits how human capital used in operations is inherently integrated with perceptions of customer value. People are fundamentally-speaking flexible resources. Attention is therefore directed to how people interact with attention directed to language use. Boundary objects provide a path to organising capital use in relation to the evoked challenging particularities of food networks; an operational approach since the concept of product value provides a measurable objective that easily can be related to by dissimilar actors responsible for dissimilar operations in a food network. This approach focusing on “product value” as a focal mental model contributes to attaining a sustainable agile food supply network collective bound by a common and somewhat *flexible* responsibility of providing customer value. A case study should be carried out to consider this approach in food supply practice and further develop this analytical framework.

References

- Adebanjo, D. 2009. "Understanding demand management challenges in intermediary food trading: a case study." *Supply Chain Management: An International Journal*, 14(3): 224-233.
- Alderson, W., 1965. *Dynamic Marketing Behavior A Functionalist Theory of Marketing*. Richard D. Irwin, Homewood, IL.
- Becker, G.S. 1964, *Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education*. University of Chicago Press, Chicago.
- Bijman, J., Omta, S.W.F., Trienkens, J.H., Wijnands, J.H.M., Wubben, E.F.M., et al. 2006. *International Agri-Food Chains and Networks. Management and Organization*. Wageningen Academic Publishers, Wageningen, NL
- Daft, R.L., 2007. *Understanding the Theory and Design of Organizations*. Thompson Southwestern, Masin, OH.
- Christopher, M. *Logistics and Supply Chain Management*. Prentice hall/FT, Harlow, UK.
- Closs, D.J., Swink, M., Nair, A. 2005. "The role of information connectivity in making logistics programs successful." *International Journal of Physical Distribution and Logistics Management* 35(4): 258-277.
- Håkansson, H. and Snehota, I. 1995. *Developing Relationships in Business Networks*. Routledge, London UK.
- Heskett, J.L., Sasser, W.E., and Wheeler, J. 2008. *The Ownership Quotient*. Harvard Business Press, Boston Ma.
- Lapide, L. 2006. "MIT's SC2020 Project: The essence of EXCELLENCE." *Supply Chain Management Review* 10 (3): 18-25.
- Loasby, B.J., 1998. "The Concept of Capabilities." In N.J. Foss and B.J. Loasby, eds., *Economic Organization, Capabilities and Co-ordination, Essays in Honour of G.B. Richardson*. Routledge, London UK.
- Mitchell Waldrop, M. 1994. *Complexity: the emerging science at the edge of order and chaos*. Penguin, Harmondsworth.
- Penrose, E. 1959. *The Theory of the Growth of the Firm*. Oxford University Press, Oxford UK.
- Ross, L. 1977. "The intuitive psychologist and his shortcomings: Distortions in the attribution process". In L. Berkowitz (ed.) *Advances in Experimental Psychology*. Academic Press, New York NY.
- Star, S.L. and Griesemer, J.R. 1989. "Institutional Ecology, 'Translations' and Boundary Objects: Amateurs and Professionals in Berkeley's Museum of Vertebrate Zoology, 1907-39." *Social Studies of Science* 19(4):387-420.

- Sterman, J.D. 2001. "System Dynamics modelling: Tools for learning in a complex world." *California Management Review* 43(4):8-26.
- Surana, A., Kumara, S., Greaves, M. And Raghavan, U.N. 2005. "Supply-chain networks: a complex adaptive systems perspective." *International Journal of Production Research* 43(20): 4235-4265.
- Taylor, D., Fearne, A., et al. 2006. "Towards a framework for improvement in the management of agri-food SCs." *Supply Chain Management: An International Journal*, 11 (5): 379-384.
- Van der Vorst, J.G., Beulens, A.J.M., et al. 2002. "Identifying sources of uncertainty to generate supply chain redesign strategies." *International Journal of Physical Distribution and Logistics Management* 32 (6): 409-430.
- Williamson, O.E. 1975. *Markets and Hierarchies: Analysis and Antitrust Implications*. Free Press, New York.
- Yao, Y., Drener, M. and Palmer, J.W. 2009. "Impact of boundary-spanning information technology and position in chain on firm performance." *Journal of Supply Chain Management*, 45(4):3-17.