Shifting the Paradigm:
Value-Chain Analysis Applied to Online Learning

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Abstract: This paper supports an interactive session focuses on participating in shifting the paradigm toward learner-centered curriculum delivery. The key factors for adult education are maturity, accumulation of experience; readiness for learning; being problem vs. subject centered; intrinsic vs. extrinsic motivation; and curriculum that is anchored as problem-centered rather than content-oriented. Where there is a challenge achieving true innovation, this paper and the planned interactive session offers a series of framework based on Porter's idea on *Value Chain Analysis* to identify factors which leverage activities along a "chain" of delivering an educational service to self-directed learners. Specifically, course design for online delivery is the scenario for open dialog on shifting the paradigm. This paper contains diagrams for discussion slides that introduce the topic and support open dialog among practitioners at the TCC conference.

Background

This conference paper extends some practical tips for shifting toward becoming learner-centered paradigm. This paper contains a practitioner's direct experience about leveraging product life cycle and service delivery to known and prospective customers. The application of Value Chain Analysis is the focus of this conference proceeding paper and interactive dialog prepared for discussion about "Emerging Technologies, Making it Work" specifically for perspectives about managing information technology and change. Twelve tips were presented at the Technology, Colleges and Community (TCC) conference in the Spring 2010 (Lauridsen, 2010). VCA applies to the last tip, "Participate in shifting the paradigm". The working scenario is that the customers of a university are the enrolled learners and sponsoring agencies for research. The service providers are the school, publishers, teachers and designers of the learning media environments.

Introduction to Value Chain Analysis (VCA)

The concept of value chains is useful for documenting and improving any complex life cycle such as delivering online education to adults. The lesson offered in this conference session is to introduce VCA in the context of manufacturing of products, delivery of services to customers and then to focus on application of VCA to delivery of educational courseware to learners.

Value chain analysis is a story involving producing and delivering goods or services, a concept articulated by a Harvard Professor, Michael Porter (1985, 1996, 1997, 2001, 2004, 2009). Numerous authors, scholars, consultants and practitioners have adapted the VCA model to guide decisions about allocation of resources and have persistently acknowledged and cited this course. Whereas in the 1980s, the early models of value chain stressed competition and rivalry, the concept has been evolving. In 2008, the VCA concept became tolerant of coexistence of competitors who may also be partners in a supply chain.

Definition for Value Chain

Whereas a supply chain involves suppliers and buyers of goods or services, a value chain focuses on the materiel or services provided by participants as the transactions reporting movement also track increase in asset value. Ideally each member in the chain makes a profit. A value chain concentrates on the actions taken to add value, such as ordering and receiving goods, releasing materiel to a job order, shipping finished products, receiving revenue, and financial accounting for the aggregate cost of doing business. Ward and Peppard (2002) cite Porter's work in the context of an industry as a set of value-added activities in which the "value chain of any firm … is part of the larger 'system' of related value chains – those of its suppliers, customers and competitors, before it can be optimized" (p. 244). With labor applied, the movement of goods adds to the inventory value of the assets measured by the cost of the labor. For the education industry, tracking costs would be for infrastructure, maintaining the facilities, administration, learning management system operations, technology and teachers. Porter defined the value chain as a "framework for identifying all these activities and analyzing how they affect both a company's costs and the value delivered to buyers" (2001, p. 74). Porter found that economies of scale are found in every activity within the value chain; with variations by industry.

Context for Value Chain Analysis (VCA)

In framing ideas about generic strategy, Stonehouse and Snowdon (2007) defined value chain analysis as "Porter's technique for understanding an organization's ability to add value through its activities, and their internal and external linkages, and allows managers to identify where value is currently added in the system and where there is potential to create further value in the future by reconfiguration and improved coordination of activities" (p. 258). ***Value chain analysis*** documents *activities* involving inbound logistics, operations, outbound logistics, marketing, sales, accounting which are known as *linkages* across activities, focusing on "value flows across activities and in particular, how activities in one category impact the cost of other activities" (Santos et al., 2009, pp. 8-10). A typical architecture diagram (Figure 1) illustrates left-to-right identified processes finishing as a product or service for which revenue is generated.
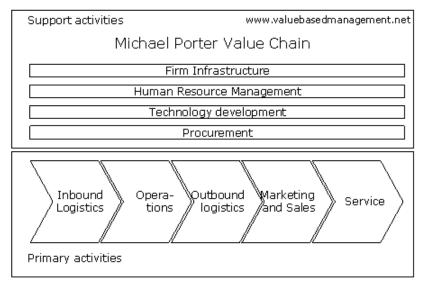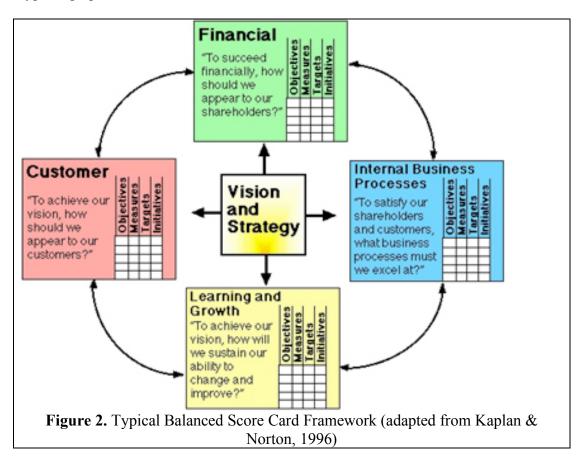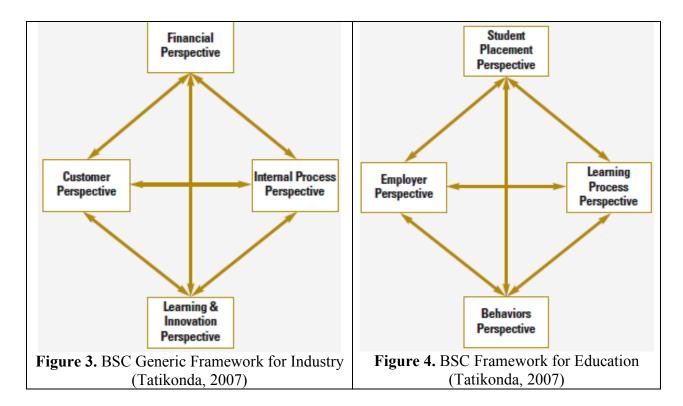
Figure 1. Porter's Value Chain Model (Value Based Management, 2009).

Measuring Success is critical. One perspective for monitoring the life cycle of delivering products or services is the Balanced Score Card (BSC), a discipline for measuring the impact of strategies after delivering a product or service to customers. Figure 2 shows a typical graphic worksheet.

Figure 2. Typical Balanced Score Card Framework (adapted from Kaplan & Norton, 1996)

| **Figure 3.** BSC Generic Framework for Industry (Tatikonda, 2007) | **Figure 4.** BSC Framework for Education (Tatikonda, 2007) |

What behaviors are most relevant to Learner-Centered programs?

The Balanced Score Card's purpose is about assessing a current situation in order to detect ways to streamline or improve it. Measuring money is not the most important effort. The sage advice about what is measured can become improved applies to education as well. Figure 3 shows the generic framework for four perspectives about measuring what the industry cares about, such as profits, whereas Figure 4 is an adaptation of the framework for delivery of educational services (Tatikonda, 2007, p. 36). The arrows indicate the relationships using symantics of If-then, for example, "*If* internal processes are improved (e.g., cycle times, defects, on-time deliveries), *then* customer satisfaction increases" or "*If* students apply knowledge and skills, *then* they can retain them better and be able to use them when needed" (Tatikonda, 2007, pp. 35-36). Tatikonda makes a strong case for academicians to apply lessons from the industry. The rewards for success are more than to balance revenue from tuitions with costs for delivery of course. It is about students' perspectives and behaviors to retain lesson content and persist until they actually complete a degree. Practitioners in education have responded to this call (Hill, 2008; van der Merwe & Cronje, 2004; Sasse et al. 2008).

Value-Chain Analysis Applied to Product Life Cycle

In their empirical study, Nicovich, Dibrell, and Davis (2007) put into perspective that market orientation is "associated with an organization's value chain position and competitive strategy, but not with organizational performance" (p. 91). The study examines the value-chain perspective which generalizes that "value creation is the ability of the components of the value system or chain to work together as a cohesive whole in

determining the level of value provided to the ultimate consumer" (p. 92). Using the supply chain vocabulary *downstream* and *upstream* exposes "potential shifts in the value creating processes" in a model where the value chain offers insights into balancing key constituencies across the competitive landscape. To the extent that universities compete for the best students, faculty and researchers, this perspective fits within an educational service delivery value chain.

Value-Chain Analysis Applied to Service Delivery

Two European business professors, Stonehouse and Snowdon (2007) synthesized the familiar concepts of the five forces, generic strategy, and value chain frameworks as the competitive positioning paradigm which was taught in most business school strategy courses. In an interview, Michael Porter answered questions about current academic research and publishing in which he said "There is a tremendous pressure in U.S. academia to publish scholarly papers, and usually, it is quite difficult to break away from the existing structure of that literature and develop ideas that are orthogonal to the mainstream. This makes it more difficult to achieve true innovation" (Porter, 2007, p. 270). Seeking proven solutions, practitioners bring forward ideas about *value chain analysis* that are meaningful because the ideas actually work.

What product(s) or service(s) are essential for Learners?

Value-Chain Analysis Applied to Online Learning

Calling their framework "Value Co-creation Model for Services", Makkar, Gabriel & Tripathi (2008) illustrate necessary components within the higher education service industry with need to co-create value. Their perspective is that "When value is co-created it implies that both service providers and users are involved" (2008, p. 197). This justified in a context of considering the "role of higher education, the socio-economic development of the country largely depends on the performance of our higher educational institutions" (p. 185). The Value Chain Analysis starts with investor's injection of capital, the service product designers who are often faculty or program creators, all service provider staff and facilities, the infrastructure and supporting utilities, the target market of customers, citizens or people and those companies, communities or agencies that they belong to.
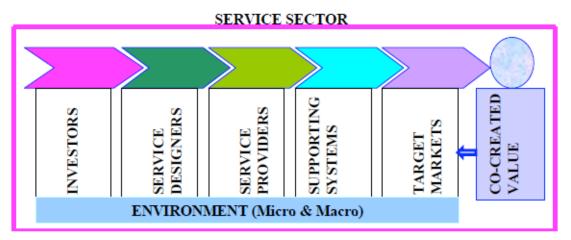
SERVICE SECTOR

Figure 5. Value Co-creation Model for Services (Makkar, et al., 2008, p. 197).

What service(s) are essential for Learners in an online environment?
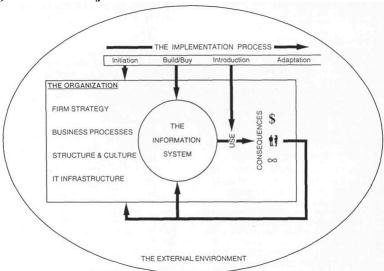

Figure 6. IT Interactions Model (Silver, et al., 1995, Figure 3)

Silver's 1995 framework (Figure 6) represents the implementation process with the university providing strategy, business processes (enrollment, transcripts, book and e-book distribution, etc), the structure and culture as well as the infrastructure for course delivery (both campus facilities and Internet access to a Learning Content Management System) followed by IS applications which for IT delivery and outcomes (revenue, students and alumni, and reputation. A *value-chain analysis* for a coherent understanding of successful model of IT delivery of education can reference these as a way to avoid a program being misguided. This diagram serves as a very basic single tier value chain framework. It follows a convention of left-to-right flow with loop backs for activity or results achieved.

Motivated and Skilled Faculty is essential. Sasse, Schwering, and Dochterman (2008) apply *value chain analysis* to identify creating leverage among activities performed by teachers and to focus on work located along the chain for delivering an educational

service. "This analysis yields a shift in faculty focus 'downstream' in the value chain, where more is expected of faculty in the areas of course design and student learning and assessment" (Sasse, et al., 2008, p. 35). The study offered ideas about online programs that differentiate faculty roles based on type of service delivery. The source will offer ideas about using *value chain analysis* as a lens for examining how faculty work and compare the dual roles of research and teaching emphasis. Sasse, et al. (2008) offer a series of model diagrams to distinguish a basic, teacher-centric and learner-centered dimension. See figures 7, 8, and 9.
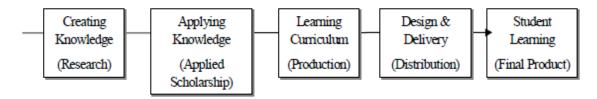
Creating Knowledge (Research)	Applying Knowledge (Applied Scholarship)	Learning Curriculum (Production)	Design & Delivery (Distribution)	Student Learning (Final Product)

Figure 7. Academic Value Chain (Sasse, et al., 2008, Figure 2, p. 39)

A trusted framework for both business and technology can guide a shift of scenario for academic research and publishing. Michael Porter said "There is a tremendous pressure in U.S. academia to publish scholarly papers, and usually, it is quite difficult to break away from the existing structure of that literature and develop ideas that are orthogonal to the mainstream. This makes it more difficult to achieve true innovation" (2007, p. 270). This notion brings forward ideas from the paradigm of value chain analysis that are meaningful to building upon prior knowledge and defining a holistic approach for integrating Porter's ideas with curriculum for practical interactive skills for today's industries. Essential is the involvement of faculty with a pragmatic mindset. Sasse et al. (2008) conclude that "institutions will need to become more creative in how they acknowledge faculty work. Rank and tenure is typically wedded to the three categories of scholarship, teaching, and service" (p. 46). The faculty role is essential for a complete picture of value chain analysis when the product being delivered is learning content.

This model contrasts the familiar traditional teacher-centric discipline with a proposed learner-centered dimension, see Figures 8 and 9. The teacher-centered paradigm ends with students' learning being appraised in an objective manner using exams that maps back to the assigned readings and course content and participation. The learner centered paradigm aims at appraising assessments from which course grades are merely a metric that meets formalized and approved curriculum guidelines.
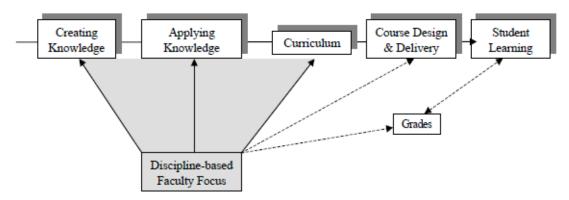
Figure 8. Faculty Focus in Academic Value Chain (Sasse, et al., 2008, p. 40)

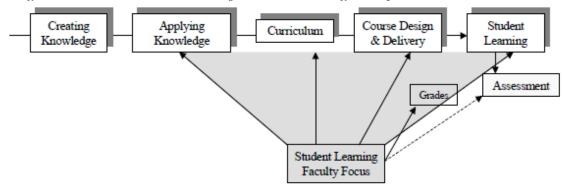*Are grades a reasonable measure of student learning? Why not?*

Figure 9. Downstream Faculty Focus for Student Learning (Sasse, et al., 2008, p. 42

Motivated and Skilled Faculty.

Sasse, Schwering, and Dochterman (2008) apply value chain analysis thinking to identify, creating leverage among activities performed by teachers and to focus on work located along the chain for delivering an educational service. "This analysis yields a shift in faculty focus 'downstream' in the value chain, where more is expected of faculty in the areas of course design and student learning and assessment" (p. 35). This study offered ideas about online programs that differentiate faculty roles based on type of service delivery. This resource offers ideas about applying value chain analysis as a lens for examining how a diverse faculty contributes and for comparing the dual roles of research and teaching.

Course Content Development.

From South Africa, van der Merwe and Cronje (2004) introduce the "educational value chain" as a graphical tool that developers may use in re-engineering efforts to identify possible bottlenecks that are likely to occur, as well as providing a route to follow when determining the value added elements by technology. Further, support processes include those identified by Porter with student systems being the "driving force behind technological innovations such as e-learning" … and technology "which adds value to the

educational value chain even if it is not seen as a primary activity within the chain"
(2004, p. 126). The authors determined that the *value-chain* approach for higher
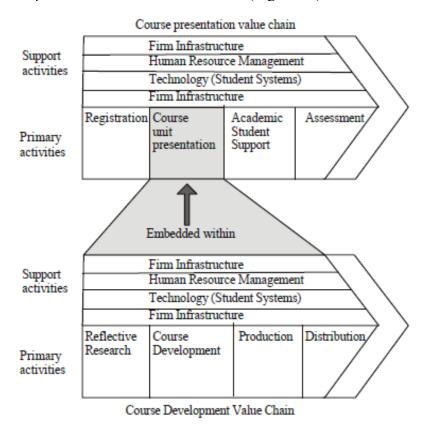education can help detect where bottlenecks occur (Figure 10).

Figure 10. Education value chain course development (van der Merwe, et al., 2004, p.
127)

A remarkable model (Figure 11) features the educational high-level process which
graphically illustrates relationships between research, course development and delivery,
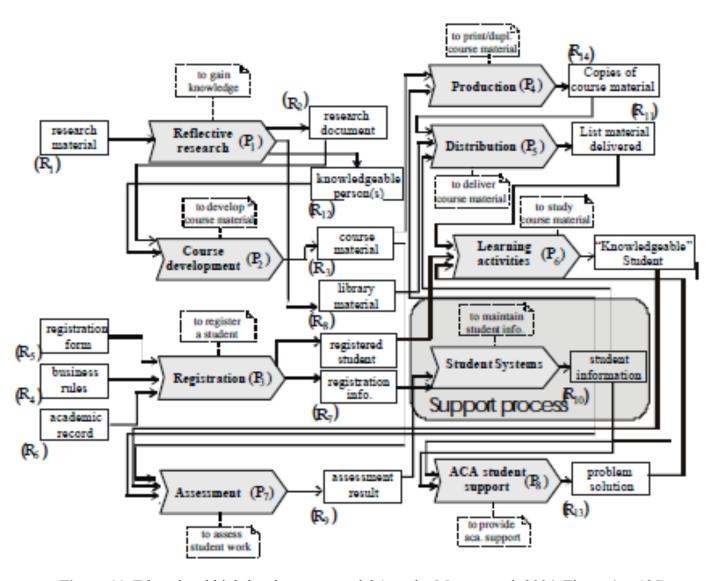student systems, and assessment for e-learning processes.

Figure 11. Educational high-level process model (van der Merwe, et al, 2004, Figure 4, p.125)

What has the concept of value chain analysis offered to today's dialog?

Observations made throughout this paper have been articulated below as six recommendations for a University's consideration. The opportunity is to strengthen an institution's strategy for delivery of online education by using value chain analysis. Figure 12 reminds us of a traditional expectation and involvements in the supply chain, starting with the "raw material" which in this case is the supply from which students are recruited. Tatikonda's illustration seems overly simple but does make a point. The final outcome is customers/learners integrated with the community. This old paradigm is defined by Tatikonda who said "over a period of four to five years, the students are fashioned into the end product: college graduates" (2007, p. 29). As a framework, this story describes learners earning typical 4-year degrees or certifications but needs adaptation to focus on a learner centered scenario.
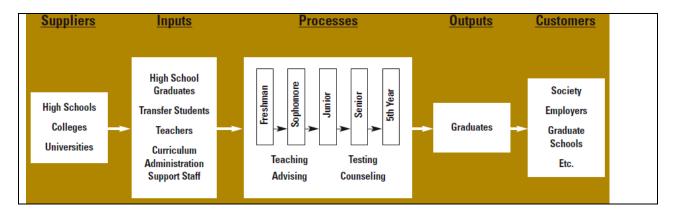

Figure 12. Education Process (Tatikonda, 2007, Figure 2, p.29)

Summary of Value Chain Analysis Concept

Established companies that are most successful are those that use Internet technology according to strategies derived from a smart analysis of internal and external value chains and those that make "traditional activities better and those that find and implement new combinations of virtual and physical activities that were not previously possible" (Porter, 2001, p. 77). Without technology, all proposed solutions are remedial. Whereas Porter's original ideas are historical they are not obsolete. Technological leaderships still depends on source of change, differentiation, relative technological skills and the rate of diffusion (Porter, 1985, pp. 70-71). This is still true in 2011 with the major difference being communication tools and services available to implement a strategic decision, such as delivering online interactive education programs. Porter pointed out that "First-Mover disadvantages stem two broad sources, the costs of pioneering and the risk that conditions will change" (1985, p. 73) can be avoided by collaborative communities of partners sharing the investment. In addition, licensing available as way to gain access to shared technology to avoid any pitfalls that concerned Porter (1985, pp. 75-75). By considering the opportunity to adopt service-as-a-service to leverage predictable expenses for sophisticated solutions that are maintained by a service provider, higher education institutions are now forming consortiums and alliances.

The value chain framework is still relevant today. This conference paper has interpreted the concept of value chain analysis as applied in the industry, as being an opportunity still relevant today for informed decision making in the shift to learner centered paradigm within education service delivery.

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