MIS Shaped by Business Process Models

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Many of today's dominant global businesses have achieved their successes by being better integrated, better coordinated, better focused than their competitors. Many of their leaders attribute these characteristics to a process orientation; top management explicitly designed an organizational structure reliant upon integrated processes to coordinate the efforts of the organization. That coordination and that process structure are built upon and reliant upon software process models.

Business colleges can ill afford to ignore this growing phenomenon. The integrated business structures and practices should be reflected in an integrated, process focused curriculum. This paper will attempt to justify the business process focus and will then propose a model curriculum based on that process focus.

THE PROCESS FOCUS

During the last decade, management emphasis was directed to adding value (Boulton, Libert, Samek, 2000). Bolstering that emphasis was the relatively recent definition of a business model which included a value proposition, the market segment, the value chain structure, revenue generation, and the position in the value network. This business model, in other words, included a larger process view of business. It forced managers to consider the importance of their relationships with partners, to think about how best to coordinate the whole supply chain process to maximize adding value.

The e-business phenomenon also created an emphasis on business process and on process models. The ideal e-business ventured on being completely automated, e.g., Ditech.com, PriceQuote.com. Web-linked businesses are commonplace; they are now categorized as Business to Business, business to consumer, portals, auction sites, etc. Business authors clearly noted and commented about automated business processes in which : "the systems…don't just track the process, they contain and perform it" (Treacy & Wiersma, 1995). The re-engineering craze brought further notoriety to the process approach—although, in the end, re-engineering quickly faded from the management scene.

The supply chain management process has achieved such prominence that, by itself, it is largely the justification for a process focus. Thanks to publicity from organizations such as AMR research, the benefits of that approach can to be noticed and widely adopted. AMR research annually publishes a list of the "Top 25" businesses using supply chain management software; the criterion for making the list is market performance for that year. For 2005, the top five were Dell, Proctor and Gamble, IBM, Nokia, and Toyota. The list is impressive. Here are some of the reasons why businesses feel it imperative to adopt supply chain management, a process approach to their business:

- The top 10 percent of SCM performers in any industry use half the working capital per unit of sales than their median competitors (Source: University of Maryland Supply Chain Management Center)
- The fraction of U.S. GDP tied up in inventory and SCM costs has dropped by 40 percent (The Economist). The amount tied up in distribution and transportation has halved, from 19% to 9% of GDP.
- "Supply chain excellence" companies use 15% less inventory, have 35% shorter cash-to-cash cycle times and 60% higher margins than the average large firm (AMR Research).

What is distinctive about some of the best businesses in the world is how well coordinated they are. Dell, for example, has excellent synchronization of it supply chain, resulting in the fastest possible inventory turns. Wal-Mart, too, has a tightly integrated supply chain/demand chain that extends from customers back to a multitude of suppliers. Southwest airlines, competing in a horribly unprofitable industry, makes money by its standardization of operations and its highly choreographed processes. All three use information technology to coordinate their operations, culture, and knowledge base; all three are designed to focus every employee on the big coordinative strategy delivery. Finally, Peter Keen emphasizes that all three "have an explicit enterprise coordination design, owned by top management" (Keen, 2004).

AMR is quick to point out, these are more than supply chain models, they are "Demand Driven Supply Networks" (DDSN).(Caruso, Cecere, & O'Marah, 2006) The business process is embedded in the process model software; the model is a network which links the complete flow, from suppliers to customers. "The demand signal, " i.e, customers' demand for new features or products, is monitored with dashboards, scorecards, alerts and reports which are shared with all partners. With these process models companies can influence and shape demand, not just respond to it. Product innovations are based on a deep understanding of the customers; feedback from customers—AMR terms the software a "supply network" to indicate the partners' collaborative efforts to seize market opportunity (Caruso, Cecere, & O'Marah, 2006).

PROCESS MODELS

According to Peter Keen. "A business process is an organizational routine with clearly identified tasks and responsibilities that is: recurrent, replicable, consequential, leveragable, and well coordinated" (Keen, 2004). A process model is a representation of that entire process with its suppliers, producers, distributors, partners, and customers clearly displayed, and with outcomes and costs measured at each step in the workflow. Process models which feature dashboards measuring performance, graphic displays of performance trends are a great help to the process teams and to supporting managers.

The better models include visual displays of parts or all of the model; the lesser models rely on metrics only.

There is a growing body of practitioners, software vendors, and researchers who have created a business cognate area called Business Process Management (BPM). Here is the definition posted at Wikipedia.com:

Business Process Management *(or* **BPM***) refers to activities performed by businesses to improve their processes. While such improvements are hardly new, software tools called business process management systems have made such activities faster and cheaper. BPM systems monitor the execution of the business processes so that managers can analyze and change processes in response to data, rather than just a hunch. BPM differs from business process reengineering, a technique popular in the 1990s, in that it deals not just with one-off changes to the organization, but long-term consequences.*

Note the emphasis that BPM places upon the BPM software which enables the process-focused business. To fill out this coverage of process modeling, here is a description of a leading BPM vendor's software suite. Note that Savvion's software does much more than build process models; it integrates other software, integrates the process workflows, monitors them, controls the process, and provides a platform for improving the process.

A comprehensive Business Process Management platform provides an organization with the ability to collectively define their business processes, deploy those processes as applications accessible via the Web that are integrated with their existing software systems, and then provide managers with the visibility to monitor, analyze, control and improve the execution of those processes in real time. (Savvion's Web Site)

Process Models have become very sophisticated. Software vendors, such as IBM and Savvion, sell process model software that does much more than mirror the process. The best supply chain software models not only monitors the flow of activities, the software "executes" or runs the process, meaning by that the process model orders the supplies (and pays the vendors), schedules production, arranges distribution or shipping, and verifies delivery at the retail outlets. That ability to run the process has been extended to the capability to simulate improvements to the process model—and this is how process innovations can occur. Since both time and cost are measured at each step of the process, trading off resources for time savings can be simulated and decided upon.

Toyota is the most publicized example of a process-based business. Toyota's profits are greater than Ford, GM, and Chryslers' combined income over the previous five years (Liker, 2004). While Toyota's "Lean Manufacturing" is its best known process, it is one of many process models. Toyota is spending an estimated $1 billion to implement a massive information technology system that will model every aspect of the cars' designs, production sequences, just-in-time parts availability, and the distribution to the dealers. This shared process model platform is the foundation for the collaboration and coordination to which Toyota's managers attribute its success. Volkswagen's CIO tells us:" The vehicles and factories are all digital—all based on digital models." (Hoch & Laartz, 2006).

The automotive industry is fully committed to process modeling, indeed manufacturing as a whole has long understood itself as a process. Now most managers understand the message of supply chain management, i.e., that linking suppliers, partners, producers, and customers is the accepted way. But there are many tasks that can be turned into organizational routines and, as they are streamlined and standardized, they become processes. Here are examples: travel and expense reporting and processing, employee benefits management, procurement, any handling of forms or contracts. Defining and modeling these routines, then creating software applications can make them much less bureaucratic, much simpler and faster.

PROPOSING CURRICULA BASED ON A BUSINESS PROCESS APPROACH

Again, the major premise here is that the curriculum should reflect current business practice. And it has been shown that a business process approach is a distinctive competency of many, many excellent businesses. Colleges need to prepare their students for this evolving business context. What follows is a suggested MIS curriculum which could pilot the concept. The training in Web Services, Rules Engines, and Process Design are easily generalizable into many different careers. Should this MIS curriculum become accepted, it could lead to the fully integrated business college curriculum described below. The business accrediting agency, AACSB, has long urged colleges to integrate their functional departments and curricula into a coherent whole. Here is one way.

SAMPLE MIS MAJOR: ARCHITECTING AND DESIGNING A PROCESS-MODEL DRIVEN BUSINESS

1. Overview of business processes, process models, and vendors' suites
2. ERP: Web Services to deploy data from ERPs to new apps
3. Definitions and Design in a process model: XML, SOA, WSDL, Schema building, Ontology
4. Web Services (WSFL) to integrate workflows & design Process Models
5. Designing Processes & building Process Models using donated software
6. Creating Business Rules in a donated "Rules Engine"—Business Decision-making in context.
7. Adding Monitoring tools: metrics, dashboards, alerts
8. Seminar: Strategic directions in MIS enabled businesses

SUGGESTED BUSINESS COLLEGE CORE CURRICULUM

1. Conceptual Bases: Re-engineering, Business Process Management, Demand Driven Supply Networks, Management Innovation(Hamel & Keen), using studies of Toyota, Dell, e-businesses
   a. Strategic Management
   b. Operations Management
   c. Entrepreneurship
   d. Management of Innovations
2. Managing the transition from functional jobs to process teams
   a. Management
   b. Human Resource Management
3. Learning from the models: Building Metrics, dashboards, alerts.
   a. marketing research from the demand signal on price, shaping demand
   b. Accounting studies of trade-offs of cost vs resources, added value
4. The Process Model as a workbench for analyses and simulations
   a. Decision Sciences
   b. Marketing,
   c. Accounting
5. The Rules Engine shapes the process and gives the business its edge
   a. Management and business rules
   b. Decision Sciences
   c. Accounting

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