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Ravi Seethamraju

*The University of Sydney*, [Ravi.Seethamraju@sydney.edu.au](mailto:Ravi.Seethamraju@sydney.edu.au)

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# Business Process Management – A Missing Link in Business Education

**Ravi Seethamraju**

The University of Sydney, Australia

Ravi.Seethamraju@sydney.edu.au

## ABSTRACT

Business processes have been the subject of formal study from multiple perspectives for a long time since the start of industrial age. In spite of such sustained focus, processes still are not well understood, left unmanaged and poorly executed. Business schools' teaching is primarily function specific and narrow, while the IT schools focused on narrow technical skills and leaves the 'process view' and 'integration' either to the individual student or the academic. This paper analyzes the inadequacies of current business and IS/IT education and reviews the historical perspective of business processes. It posits the significance of business process management and highlights its ability to provide the missing link to business education. It reports on the strategies employed by business schools and discusses the challenges in the BPM education and research.

## Keywords

BPM, Business processes, Education

## INTRODUCTION

Business processes are now considered critical corporate assets. They constitute a significant portion of organizational costs and managing them offers significant opportunities for improving market share, managerial decision making and performance. In fact, effective business processes are considered the key differentiators in this global competitive environment. Business processes have been the subject of formal study from multiple perspectives over a lengthy period from the start of the industrial age to the current IT-enabled services age. In spite of this focus, processes still are too often left unmanaged and organizations struggle to become sufficiently process-centric and to develop process management capabilities. In business schools, with teaching primarily function or discipline specific, teaching of cross-functional processes and the integration of functional areas is left either to the individual student or to the academic. Employers and professional associations complain graduates' inadequate process management capabilities and insufficient process-focus and observe that they are not sufficiently prepared to work in a customer and process centric, IT-enabled, integrated world of work. Increased competition, regulatory demands, customer power, a changing workforce, information overload and the relentless technology push have all made rediscovering, understanding and transforming business processes an imperative need for organizations and rejuvenated the interest in business processes. For that reason, education in business schools that takes a cross-disciplinary approach to teaching and learning business processes is becoming imperative. This paper first analyses the inadequacies of business education in general and in the context of process in particular. It will then present the background to business processes in a historical perspective and posits the significance of business process management for today's business education. It argues the importance of business processes and business process management in the context of the current and emerging information technologies and business education and highlights its ability to offer a missing link between business, IT and strategy.

## BUSINESS EDUCATION

The pedagogical model of business education was developed at the beginning of the 20<sup>th</sup> century and was based on a functional structure that typically included marketing, logistics, accounting and human resources. These functionally specialized schools/disciplines were designed to meet the needs of large, highly bureaucratized organizations that were also organized around functional areas. Several 20<sup>th</sup> century management initiatives, including Just-in-time (JIT), Total Quality Management (TQM) and Business Process Reengineering (BPR) have process and process management as their underlying theme. As a result of implementing such initiatives, many organizations have shifted their focus towards business processes that are cross-functional and customer focused, and shifted the management development emphasis away from functional specialization and towards the integration of different functional departments (Malekzadeh 1998).

Although some of the leading organizations have begun to adopt process centric organizational structures, most business schools still use this specialized function-based model. Because of their strength in developing specialist technical professionals in accounting, operations, human resources, finance or information systems, business schools are criticized for their inability to produce well-rounded business graduates and, in particular, those who understand business process orientation and cross-functional integration. This perception is reflected in the importance given by accreditation bodies like the AACSB in their evaluation of business schools to the level of cross-functional integration and process orientation facilitated by the curriculum (AACSB 2002).

### Inadequacies of business education

With an objective of aligning curriculum and teaching models to the changing business environment, business education has been subjected to several rounds of reviews all over the world in the past 30 years. Many of these reviews have highlighted the importance and lack of cross-functional integration and business process orientation in the business curricula (Porter & McKibbin 1988, Karpin 1995, Michaelsen 1999, Cecez-Kecmanovic et al 2002, BCG 2001, Ethie 2003 and Trites 2004) in addition to others such as soft skills and ethics. Many employer representatives and professional associations such as Business Council of Australia, Australian Chamber of Commerce, Australian Computer Society, Australian Management Institute etc, have advocated incorporating 'employability' skills that include understanding of business processes in order to bridge the widening the gap between education and work (Curtis and McKenzie 2001). The Federal government and other government bodies are also encouraging the development of a higher education strategy to embed such employability skills in universities (Lightfoot 1999). A summary of the inadequacies of the current business education system is presented in Table 1, below.

Factors	Summary of features and challenges in current business education
Discipline-based business schools	Functionally oriented and develops good discipline-based specialists Difficulty in changing functionally oriented teaching focus Attempts at process focus are inadequate and not effective
Employers' concerns	Narrowly trained graduates with a 'functional silo' view of the way Lack of cross-functional process perspective and integrated view of business No alignment of business curriculum with changing business needs
Inadequate teaching & learning strategies	Courses on strategy, simulation game, capstone unit/project, case study or team-teaching approach Curriculum structure, course syllabus and teaching and learning strategies inconsistent with the modern idea of integrated processes Integration left to individual student and/or individual faculty members Inadequate focus on 'how' of function and customer in discipline-based units
Usage of information technologies/systems	Information and information systems contextualized in the discipline-based units Undue focus on imparting IT skills rather than using IT/IS as teaching aides and pedagogical effectiveness Underlying importance and utility of information and process links in developing integrated view between various business functions generally ignored General apathy of business students towards IS/IT based units/topics
<b>Table 1 Features and challenges in Business education</b>	

While practitioners and business organizations are making their organizations process-centric, teaching and research in business schools is still typically discipline focused and narrow. Though this model helped business schools to develop good specialists, their ability to produce well-rounded business graduates and in particular with relevant understanding and skills in process management is limited. With industry bodies and professional associations demanding process understanding and process-centric thinking as key graduate requirements in this information age, business schools are increasingly revisiting their curriculum. Even though understanding, measurement, management and execution of business processes in the information technology enabled environment are now recognized as important skills required in business, many business

schools do not seem to have any curriculum and teaching initiatives in place (Bandara et al 2009). Accreditation organizations such as AACSB (Association to Advance Collegiate Schools of Business), EQUIS (European Quality Improvement System - an accreditation arm of European Foundation for Management Development), and professional organizations such as CPA Australia (Chartered Professional Accountants Australia), ACS (Australian Computer Society), AHRI (Australian Human Resources Institute) etc. have identified cross-functional integration and multi-disciplinary perspectives as the necessary skills for graduates and given importance in program evaluation and accreditation processes.

Though these do not specifically address the issue of process management, business schools have been responding to their critics through regular curriculum reviews and by introducing subjects on ethics, entrepreneurship and leadership. Other top schools have taken a more radical approach. Yale, for example, replaced the teaching of traditional functional courses such as marketing, strategy, accounting, operations etc, with courses that address different themes – customers, employees, competitors, innovation, the investor, and business and society.

The MIS curriculum reviews by the Association of Information Systems and Association of the Computing Machinery (AIS/ACM) have also suggested the inclusion of process modeling and process knowledge as key skills into the curriculum in the year 2000 and also again in 2006 (Gorgone et al 2006). A recent web-based survey of the MBA core curricula of top-ranked US business schools has also reported the continued existence of a traditional ‘functional silo-based’ approach to teaching and pointed out the lack of emphasis on multidisciplinary integration and experiential learning (Navarro 2008). In addition, earlier study by Ducoffe et al (2006) and Pharr (2000) highlighted the interrelationships between various functional silos and integration of functional knowledge and the need to prepare business students to operate in a cross-functional fashion. AACSB (2002) has pointed out the failure of current business curriculum in developing sound understanding of the emerging IT-enabled processes, products and services.

#### **Strategies of business schools:**

Business schools, in the past, have approached this problem by using several pedagogical strategies such as the capstone subject project, integrated case studies, team teaching, and simulation games. The capstone project, for example, requires students to play roles from different functional areas and work as a team to develop and implement a business plan. Another strategy is to use a cross-functional team to interact with a business simulation game that reproduces the dynamic nature of the business environment and provides simulated responses to the students’ decisions in the game. The effectiveness of these strategies, however, was not empirically measured and not known widely. While these approaches are found to be useful in developing team working skills and a general understanding of how businesses operate (AACSB 2003), they do not provide much insight into how information systems and technologies can be used to support the core business processes.

Some schools employed information systems such as enterprise systems to bridge the link between traditional functions such as marketing, operations, accounting and human resources (Duplaga & Astani 2003, Hershey et al 2002), though these initiatives typically came from the information systems disciplines in the business and IT schools. These systems are expected to provide cross-functional perspectives to students and improve their process orientation to students in business schools (Seethamraju 2007). Embedding concepts of processes and integration into the curricula are expected to assist the business schools in strengthening the links between education and labour market (Curtis & McKenzie 2001). With strong encouragement from software vendors such as SAP, Oracle and Microsoft, business schools have incorporated enterprise systems into their curricula and some benefits are realized. Evidence suggests these initiatives helped in the understanding of business processes (Seethamraju 2007, Hawking et al 2004). Similarly ERP simulation game is another initiative successfully employed by the business schools to impart necessary business process understanding in a dynamic and stimulated learning environment (Seethamraju 2008, Leger 2006).

Though introduction of cross-functional integration and process-centric thinking into the curriculum are recognized as essential to prepare business graduates for the future, reforming the business curriculum is not easy. The challenges of allocating and prioritizing shrinking resources among various disciplines, perennial contest to protect discipline turf, reluctance to change the carefully built strategic focus on certain competencies and discipline strengths, inadequate commitment by faculty to the pedagogy issues, perceived overemphasis on research output, and the general resistance to break the discipline based silos are will make the reform process complex and difficult (Navarro 2008, Walker and Black 2000, Mintzberg 2004). All the new activities created by the introduction of new curricula, although are applauded by the administration, still do not count as much as a research publication; and faculty members are therefore reluctant to engage in revision (Malekzadeh, 1998: 600). Therefore, a much more activist role by AACSB, by way of transforming its own recommendations into wide-spread and concrete curriculum changes through its accreditation process may have a catalytic effect and result in much needed curriculum reform in business schools (Navarro 2008).

The next section of this paper discusses the evolving paradigm of business process management and its significance.

## BUSINESS PROCESS MANAGEMENT – AN EVOLVING PARADIGM

### Perspectives of business processes

Business processes have been a subject of formal study from multiple perspectives since the start of industrial age and is an evolving paradigm. Starting from scientific management to the current business process management many perspectives of processes exist in the literature. Several initiatives and approaches such as systems thinking, operations research, data processing, socio-technical systems, systems modeling, process reengineering, total quality management, lean and six sigma systems and business process reengineering, all have processes as their underlying theme. As shown in the table below (table 2), these are some of the process perspectives still discussed in the academic and practitioners' literature. As shown in the table, those initiatives evolved with time and got relabeled differently, with some incorporating information and communication technologies and others combining other management philosophies with the process management paradigm.

Period	Perspective	Focus	Now
1900s	Scientific Management	Reorganization of work processes and their content to simplify the work	JIT, Kanban, TQM
1940s	Operations research Systems thinking	Optimization of resources and facilities Holistic view of interactions of functions and processes and their environment, including feedback and control	Optimization tools in software solutions Systems dynamics & learning organization
1960s	Process simulation Data processing Information systems Systems modelling	Simulating processes and activities Digitization of routine transactions Computerized support of non-routine activities and processes Models and tools to represent information systems and processes	Simulation ERP systems Knowledge mgt Various (UML, BPM, SODA etc.) methods & languages
1980s	Quality Management Process reengineering E-Commerce	Process control and improvements through tools, systems, standards and excellence frameworks Process performance improvement through aggressive redesign and new design of processes Digitization of activities and transactions across the supply chain End-to-end seamless customer interactions across channels	Six sigma/Lean Business process reengineering and redesign Process mapping and modeling
2000s	Enterprise systems Supply chain management BPO Service oriented computing	Enterprise modeling and integrated transactional processes Inter-enterprise processes customer and supplier-side Execution of business processes by external providers Web services, SOA and IT-enabled services as processes Orchestration, configuration and business activity monitoring Process intelligence through Event monitoring	Enterprise systems Business Process Management Service process management Process intelligence Process agility Business Activity Monitoring
<b>Table 2 Different perspectives of 'process' over time</b>			

## Business processes in organizations

The focus on customers and business processes (one external and one internal aspect of business), has never been higher. With the increasing recognition of business processes as critical corporate assets, developing ‘process orientation’ and ‘process view’ to its employees has become imperative for modern business organizations (Kohlbacher 2008). Many of the world’s leading business organizations such as CISCO, Texas, Dell and Amazon have embraced ‘process-centered thinking’ or ‘process view’ and changed their organizational structures, strategies, and models and trained their employees (Davenport 2005). To put in Michael Hammer’s words, “process is the Clark Kent of business ideas: seemingly mild and unassuming but actually amazingly powerful. Process is the way in which the abstract goal of putting customers first gets turned on its practical consequences. Without process, companies decay into a spiral of chaos and internal conflict.” (Hammer 2003).

The sophistication of this integrated dynamic world of work requires the ability to critically evaluate situations from cross-functional perspectives with a focus on process and customers, rather than on hierarchy and functions. In spite of such heightened importance and attention, and being subjected to formal study since 1900s, business processes in many organizations are still unmanaged and executed inconsistently and poorly (Hammer 2003). Too much emphasis on business functions and on their performance at the expense of the end-to-end process performance, lack of process ownership and management capability, misalignment between business strategy and information technology, poor execution of processes and technology lead process management projects are jeopardizing organization’s ability to sense and respond to ever more rapidly changing market conditions and needs (Spanyi 2006, Davenport 2005).

## Research on IT-enabled BPM

Research on business processes and their management in the current IT-enabled environment is limited and the practitioners’ work is ‘ad hoc’ and proprietary and not available in the literature. In general, there are several disconnects in an end-to-end business process in an organization, and are tightly linked with automation applications, enterprise-wide information systems such as ERP systems and information resources such as data bases and data capturing systems. In addition, they are embedded with the organizational structure, roles and individual idiosyncrasies in their execution. Closer examination of several major business processes across the enterprise reveals a significant level of duplication of the tasks and automating, maintaining and supporting these tasks require huge investments of resources. If these individual tasks are automated and embedded in individual applications, the investments required for their maintenance and support will be significant and make it difficult to justify the investments on business process automation. In addition, attempts by organizations to automate some of their processes and workflows using various technologies and software solutions typically result in those processes hard-coded into technology platforms and locks away the activities and tasks within a process.

Further the challenge to understand, model and manage the knowledge-intensive complex processes such as managerial decision making processes is significant and is yet to be explored (Davenport 2009). The holistic approach to business process management that incorporates people, processes, systems and strategy have led to the increased recognition of process knowledge individual possess. Any process management initiative these days must focus on the knowledge management strategies and processes rather than just placing emphasis on mapping, modeling and analyzing processes. As it is difficult to separate the knowledge from the process in any management initiative and then reapply them at later stage, it is necessary to allow co-creation of knowledge while improving the processes that provides a simultaneous understanding and incorporation of constraints, decision points, pain points, business rules and potential of technologies (Seethamraju and Marjanovic 2009). While processes lie at the heart of everything that organizations do to improve efficiencies, growth and agility, individual and collective process knowledge are now recognized as the keys for achieving effective business process management. This becomes especially important in industry sectors such as entertainment and health, where creativity, flexibility and empathy – some of the emotional aspects, are equally important with business aspects such as cost efficiency and regulatory compliance (Seidel et al 2007).

These new business domains that are characterized by processes with high demands for flexibility, creativity, fuzzy requirements and specific demands for tolerance by the domain’s highly skilled knowledge workers are never studied before from process perspective. The highly agile nature of the processes, the need for individual and collective tacit knowledge of the process in its management and execution, and the role of risk in the performance of creative processes, create new challenges and are not explored in the literature. With services sector being the largest growing sector worldwide, research and education on processes in those specific non-traditional services sector (such as entertainment, health, recruitment, consulting, legal etc.) is limited and far behind the developments in manufacturing, banking and financial services sectors. Uncovering the processes behind the services delivered by these industries and the potential information and communication

technologies have in understanding and managing these domain-specific processes is essential to spread the productivity and efficiency gains to these sectors in this competitive world.

Even in established and well studied industry sectors such as automotive, telecommunication, banking and retail industries, deficiencies in end-to-end business processes are pervasive. There is a pervasive need for incorporating developments in information and communication technologies into the management of business processes in those industry sectors. Fragmentation of processes and systems across various stakeholders in the network; incomplete view of customer because of fragmented systems for fulfillment, billing, customer care, and self-service; diminishing customer loyalty with deficient products and services; under-utilized information and information systems and silo structures; poor quality of customer records, increasing privacy concerns and associated compliance requirements, and difficulties in transitioning from mass production to configure-to-order supply chains are some of the challenges faced by these industry sectors in managing end-to-end processes (Rai & Sambamurthy 2006). With delivering a service as the underlying objective of any business process, understanding the need, suitability, design parameters, deployment mechanisms, governance structures and evaluation processes of digitally enabled services are critical to minimize some of the deficiencies in the end-to-end processes in various industry sectors. Recent report by the National Academy of Engineering urged academics to focus on service business needs by embedding engineering concepts, methodologies and quality control processes into service functions and their business processes and by integrating research paradigms in technology, management and social sciences (Zhao et al 2008). Thus, there are several areas of research unexplored and the literature is predominantly practitioner's view with limited availability of information about processes, management, techniques, tools and management.

The holistic nature of business process management that will encompass and influence several organizational aspects such as structure, information systems, people, risk, compliance, value chains, sustainability, decision making, and knowledge along with business strategies will challenge the academics as well as practitioners. The relentless IT-enablement of services and business processes that are behind these services are blurring the role between the producer and consumer, and contributing to co-creation of value and service innovation. The automation of business processes in designing and delivering services, and the human-centric, knowledge-intensive nature of such service processes, represents the 'emergent' processes of the future that continuously change their state, structure as they grow and evolve in a dynamic business context. Understanding them, orchestrating them and delivering them on-demand are going to be a challenge.

### **Business process management teaching in Business schools**

Business graduates must be able to apply the knowledge of concepts, principles and methods learnt during their university education to the work environment and not be restricted by the discipline-centric narrow view of the business. Process orientation and associated integrative skills not only help graduates to function effectively in a modern work environment later on, but also encourage deep learning from a pedagogical perspective in the classroom (Leger 2008).

Even though, building business process capability is listed as the number one priority for the fifth straight year (Gartner Research 2009) and the current graduates hired for the entry level positions of business/systems/process analysts do not reportedly have necessary educational background (Recker & Rosemann 2009). Unfortunately, in spite of the increased recognition of the value of business process management and the importance of appropriately skilled personnel and business process management education for successful proliferation (Grover et al 1998, Murphy & Staples 1998, Larsen & Myers 1997), there are very few educational offerings on business process management. As pointed out in Bandara et al (2007), "you don't hear 'process' in any MBA school in USA" even though experts stress the need to teach and research this area.

A brief review of the curriculum in Australian business schools revealed the insufficient inattention paid to business process management. Some of the business schools, however, have introduced courses with the word 'process' in their titles and are typically taught from quality management perspective. These courses are typically taught by operations management/management/information systems disciplines in the business schools and include topics such as process concepts, process control, lean, six sigma, bench marking, strategy mapping, process reengineering, horizontal organization and change management. A few other business schools introduced courses such as 'enterprise resource planning' systems that incorporate some ERP software or the other and are mostly taught by information systems and/or operations management disciplines. The focus of these courses, though is on 'processes' and 'process integration', the overbearing influence and complexity of ERP software, sometimes, make this challenging, and concentrate on imparting the software skills (Seethamraju 2007). Even though all these courses are taught, partially at least, from a process perspective, they have been traditionally designed and delivered by one of the disciplines in the business schools and are not true cross-disciplinary initiatives. Importantly, these courses do not incorporate some of the essential concepts, methodologies and tools required for

managing modern technology-enabled business processes in the dominant services sector, i.e., process modeling, process simulation, process improvement, process governance, process-service interface, process architecture, process intelligence, process frameworks, standards and reference models. Using the new terminology and tools such as enterprise systems, systems dynamics, continuous business optimization, knowledge management, business process modeling and simulation sketchy and uncoordinated attempts are made to teach these skills by the individual disciplines/departments.

A few universities are currently in the process of designing a process-related curriculum as a part of business and IT/information systems programs (Recker & Rosemann 2009). In general, introduction of process modeling and management related courses, though are still rare, have come predominantly from the Information technology schools and/or MIS departments in business schools. Main stream business degrees do not still consider this an important part in their curriculum. While some information technology schools in the engineering faculty have introduced courses titled 'business process modeling/architecture', and an information systems discipline in a business school a course on business process modeling, in general, there is no evidence of cross-disciplinary process management courses or such initiatives in Australian business schools.

The Business Process Management (BPM) area offers a number of teaching challenges. It is an emerging, dynamic area of business, currently led by industry practitioners rather than academia. Consequently, "traditional" university teaching and learning resources, such as textbooks, are almost non-existent. If there are some, they are predominantly geared towards practitioners focusing on 'how-to' aspects. The ever increasing number of BPM-related business books, articles and case studies are written for industry professionals, rather than for students. More often than not, these resources don't cover the required concepts in enough depth to be directly used in teaching. Designing teaching and learning activities that will help students place business process management in a wider business context that assumes cross-functional integration is a challenge. With domain specific knowledge of business processes hidden in consultancy reports and organization specific process mappings, it is difficult to obtain any sensible case studies that will provide meaningful context to students. Other than 'order processing' there are not many business processes available in the text books or published literature to discuss as examples and explain the concepts to students. Though it is improving, there is still a long way to go to have robust and relevant case studies for class room teaching.

In the past process professionals have relied on manual tools such as time studies, process maps, value stream maps, data collection sheets/templates and other statistical techniques to identify problems in processes and improve their quality, speed and cost efficiencies. Today, process professionals are using software tools such as Visio, Minitab to design/map processes and sophisticated tool sets such as TIBCO, IBM WebSphere modeler, ARIS, Provision and WebMethods for managing the entire business process life cycle. This makes modeling, analyzing, improving and management business processes very much technology-focused. Starting from modeling these processes using different modeling notations, methods and rules, these tool sets help professionals in simulating and dynamically analyzing their performance and in positioning them for execution by linking with other automated applications and tools. In a business school environment where the understanding of the information technologies is sketchy and limited, incorporating these sophisticated business process management (BPM) systems and tools into teaching and learning becomes challenging. Even though these tools are application tools and does not require any in-depth technical skills to use them for modeling, analysis and improvement, the general apathy of business students in taking these courses may make it difficult to deliver the learning outcomes.

## CONCLUSIONS

The value of understanding, discovering and transforming business processes is further enhanced by considering them in combination with the current and emerging information and communication technologies such as enterprise systems, process modeling and management, service oriented architecture, web services, cloud computing and general IT-enablement of services. Business process management is therefore now considered as the 'missing middle' between business strategy and information technology that will help converting strategies into business processes for consistent and efficient execution according to the overall management direction.

Business process management of the future will draw knowledge and expertise not only from traditional business and information technologies but also from diverse fields such as psychology, neuroscience, service science, anthropology, sociology and behavioral economics. Thus, business process management is ever more important in the current age. By understanding, documenting, modeling and analyzing business processes, organizations can achieve improvements in visibility and transparency and reduction in costs and resources requirements, which will result in enhanced business performance and compliance. Business schools may have to break their functional silos and initiate realignment and



reallocation of resources, and consider delivering cross-disciplinary courses with renewed focus on pedagogy. Given the slow response rate of business schools in translating business requirements into academic curriculum and pedagogy, and the difficulty of breaking 100 year old functional silos, it may be too naïve to assume that revising the curriculum that incorporates process-centric thinking and cross-functional integration becomes a priority for business schools. Changes required to reposition the business courses require significant shift in academic thinking, traditional teaching and research models and importantly a strong external push from accreditation agencies and business.

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