



# Business process management: a missing link in business education

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## Abstract

**Purpose** – The purpose of this paper is to analyse the inadequacies of current business education in the context of “process”. It presents an analysis of the background to business processes in historical perspective and posits the significance of business management for today’s business education. It argues the importance of business processes and business process management (BPM) in the context of the current and emerging information technologies (IT) and business education and highlights its ability to offer a missing link between business, IT and strategy.

**Design/methodology/approach** – The approach involves analysis and review of the literature and analysis of secondary data.

**Findings** – Even though business processes have been the subject of formal study from multiple perspectives for a long time, since the start of industrial age, processes still are not well understood, left unmanaged and poorly executed. With business schools teaching primarily function specific and narrow and IT schools focused on narrow technical skills, learning and understanding “process view” and “integration” is left to the individual student or academic, this study observes. It posits the significance of BPM 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 BPM education.

**Research limitations/implications** – Recognising the importance of BPM by business schools and embedding the BPM concepts and tools in a unified integrated curriculum across the business school with an inter-disciplinary focus is challenging for business schools. Further studies, investigating how practitioners perceive this gap and on the effectiveness of different strategies of teaching BPM, are important.

**Practical implications** – These findings will help practitioners in understanding the gap between university education and practice and to develop appropriate training and development strategies.

**Originality/value** – The paper provides an analysis of the concept of “process” from an historical perspective and posits BPM as a missing link in business education that delivers “integration” and “process orientation” to business students.

**Keywords** Process management, Business schools, Curricula

**Paper type** Research paper



## 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 information technologies (IT)-enabled services age. In spite of this focus, processes still are too often left unmanaged.

Organizations struggle to develop process management capabilities and are finding it hard to become sufficiently process centric.

The challenge to business schools is not different. They are typically structured according to functions or disciplines such as marketing, operations, accounting and human resources and carry our teaching and research. 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 of 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, changing workforce, information overload and 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 also becoming an imperative.

This paper first analyses the inadequacies of business education in general and in the context of processes in particular. It will then present the background to business processes in a historical perspective and posits the significance of business process management (BPM) for today's business education in general and in Australian business schools in particular. It argues the importance of business processes and BPM in the context of the current and emerging IT 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 twentieth 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 twentieth 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; McCormack and Johnson, 2001; Welke, 2005).

Although some of the leading organizations have begun to adopt process centric organizational structures, most business schools still use this specialized function-based model. Even though business schools are good at developing specialist technical professionals in accounting, operations, human resources, finance or information systems, they are criticized for their inability to produce well-rounded business graduates and, in particular, those who understand business process orientation and cross-functional integration (Tippins, 2004; Kavanagh and Drennan, 2008; BCG, 2001). This perception is reflected in the importance given by accreditation bodies like the Association to Advance Collegiate Schools of Business (AACSB) in their evaluation

*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 and McKibbin, 1988; Karpin, 1995; Michaelsen, 1999; Cecez-Kecmanovic *et al.*, 2002; BCG, 2001; Ethie, 2003; 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, CPA Australia, Australian Computer Society (ACS), 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; JAB, 2008). The Federal government and other government bodies are also encouraging the development of a higher education strategy to embed such employability skills in universities (ABDC, 2008). A summary of the inadequacies of the current business education system is presented in Table I.

While practitioners and business organizations are making their organizations process centric (Davenport *et al.*, 2004), teaching and research in business schools is still typically discipline focused and narrow (AACSB, 2008). Though this model helped business schools to develop good specialists, their ability to produce well-rounded business graduates 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 IT enabled environment are now recognized as important skills required in business, except a few, many business schools do not seem to have any curriculum and teaching initiatives in place (Bandara *et al.*, 2010). Accreditation organizations such as AACSB, European Quality Improvement System (EQUIS – an accreditation arm of European Foundation for Management Development), and professional organizations such as Chartered Professional Accountants Australia (CPA Australia), ACS, Australian Human Resources Institute (AHRI), etc. have identified cross-functional integration and multi-disciplinary perspectives as the necessary skills for graduates and started giving them importance in program evaluation and accreditation processes.

Business schools, though have not been directly addressing the issue of “process orientation,” they are responding to their critics through regular curriculum reviews and by introducing courses 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

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 and 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 IT/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

**Table I.**  
Features and challenges in business education

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 reported continued existence of "functional silo-based" approach to teaching and pointed out the lack of emphasis on multidisciplinary integration and experiential learning (Navarro, 2008). 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 emerging IT-enabled processes, products and services. The assurance of learning standards developed by AACSB (2007) have noted and incorporated the need for integration of business knowledge across various functional disciplines.

#### *Strategies of business schools*

Business schools, in the past, have approached this problem by using several pedagogical strategies such as 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, were not empirically measured and not known widely (Ben-Zvi, 2007). While these approaches are found to be useful in developing team working skills and a general understanding of how businesses

operate (AACSB International, 2003), they do not provide much insight into how information systems and technologies can be used to support business processes and how they can be managed.

Some schools employed integrated information systems such as enterprise systems to bridge the link between traditional functions such as marketing, operations, accounting and human resources (Duplaga and Astani, 2003; Hershey, 2002). These initiatives typically came from the information systems disciplines located in business and IT schools. These systems are expected to provide cross-functional perspectives to students and improve their process orientation to students (Seethamraju, 2007). Embedding concepts of processes and integration into the curricula is expected to assist business schools in strengthening the links between education and labour market (Curtis and McKenzie, 2001; Seethamraju, 2004). 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 the 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 pedagogical issues, perceived overemphasis on research output, and the general resistance to break the discipline based silos, are making the reform process complex and difficult (Navarro, 2008; Walker and Black, 2000; Mintzberg, 2004). All these 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 requires significant amount of collaborative work; and faculty members are therefore reluctant to engage in revision. 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 the much needed curriculum reform in business schools (Navarro, 2008).

The next section of this paper discusses the evolving paradigm of BPM and its significance.

### **BPM – 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 BPM 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, TQM, lean and Six Sigma systems and process models all have processes as their underlying theme. As pointed out by Moller *et al.* (2009), BPM is a practice oriented

concept with no academic foundation and there no academically agreed upon conceptual framework. BPM is an evolving paradigm and blends paradigms and methodologies from organization theory, computer science, mathematics, philosophy and linguistics (Reijers *et al.*, 2010). It is neither a new management theory nor another form of automation, and manages the lifecycle of improvement and optimization (Smith and Fingar, 2003). Some of the process perspectives still discussed in the academic and practitioners' literature are presented Table I. As shown in this table, those initiatives have evolved with time and are relabeled differently, with some incorporating information and communication technologies and others combining other management philosophies with the process management paradigm. The underlying common theme in all those perspectives is "process."

#### *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 an 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, 2004). Too much emphasis on business functions and on their performance at the expense of the end-to-end process performance is affecting organization's ability to sense and respond to rapidly change market conditions and needs (Davenport, 2005; Spanyi, 2006). In addition, lack process management capability and ownership, misalignment between business strategy and IT and poor execution of processes are jeopardizing organization's ability.

#### *Research on IT-enabled BPM*

Research on business processes and their management in the current IT-enabled environment is limited, though it is increasingly researched now. The practitioners' work in this field is *ad hoc* and proprietary and not generally available in the literature. The information systems field has turned its attention recently to BPM and started incorporating these concepts in IS model curricula, research and practice (Chircu *et al.*, 2009; vom Brocke and Rosemann, 2010). In general, there are several disconnects in an end-to-end business process in an organization, and these process components are tightly linked with several 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, procedures, policies 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. 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 therefore it is difficult to justify such huge investments on business process automation. In addition, attempts by organizations to automate some of their processes and workflows have typically resulted in those processes hard-coded into technology platforms and thereby locking away the activities and tasks within a process (Newell *et al.*, 2007).

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 BPM that incorporates people, processes, systems and strategy have led to 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 BPM. 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 are characterized by processes with high demands for flexibility, creativity, fuzzy requirements and specific demands for tolerance by its highly skilled knowledge workers (Welke, 2005) and are never studied before from process perspective (Cantara, 2009). 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 (Chesborough and Spohrer, 2006). 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 (Seidel *et al.*, 2006). Uncovering the processes behind the services delivered by these industries, and understanding the potential role current and emerging information and communication technologies could play in managing these domain-specific processes is essential to spread the productivity and efficiency gains to these sectors.

Even in established and well studied industry sectors such as automotive, telecommunication, banking and retail, deficiencies in end-to-end business processes are pervasive (IBM Research, 2004). 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 and Sambamurthy, 2006). 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 integrate research paradigms in technology, management and social sciences, and to embed engineering concepts, methodologies and quality control processes in understanding service functions and their business processes (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. Emerging technologies such as clouds and smart assets, and business trends such as business process outsourcing, "reverse innovation", "frugal production" and networked organizations may require business processes to be capable of dynamically changing in line with the changing business needs, competitive landscapes and demographics (Bughin *et al.*, 2010).

The holistic nature of BPM 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 is a challenge.

#### *BPM 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 should not preferably 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, 2006). Even though, building business process capability is listed as the number one priority for the fifth straight year (Gartner Research, 2006), the current graduates hired for the entry level positions of business/systems/process analysts do not have necessary process related educational background (Recker and Rosemann, 2009). Unfortunately, in spite of the



increased recognition of the value of BPM and the importance of appropriately skilled personnel and BPM education (Grover *et al.*, 1998; Murphy and Staples, 1998; Larsen and Myers, 1997), there are very few educational offerings on BPM (Bandara *et al.*, 2010). As pointed out in Bandara *et al.* (2007), not many MBA schools in the USA have incorporated “process” and “process management” related courses in their curriculum, even though experts stress the need to teach and research this area (Table II).

A brief review of the curriculum in Australian business schools revealed the insufficient inattention paid to BPM. By searching through the web sites of business schools, direct communication with the course coordinators at various business schools and by reviewing the outline of courses with the title business processes and/or BPM, this review is carried out. Out of the ten business schools searched in the web, three business schools have subjects with title “business process”. A summary of these three approaches is presented in Table III.

As shown in Table III, process management is taught from three different perspectives – management, information systems and accounting. All of them teach process management as an elective subject in a business degree program. Depending upon the discipline that is offering this subject, the content, scope and the extent of using information-technology tools varies. Taught from a single discipline point of view and by the academic experts in that discipline, teaching of process management in these business schools generally has no cross-disciplinary focus. The complexity and amount of the content to be covered, diversity of students taking these subjects as electives, practice-oriented features of the topics, make it hard for any single discipline to do justice. Therefore, it appears different disciplines have designed the curriculum with different focus reflecting their own discipline based strengths. As shown in the table, management discipline teaches process management from a quality management perspective with focus on change management, process reengineering, horizontal integration concepts and quality management tools such as strategy maps, process control, Six Sigma and benchmarking. Accounting disciplines/schools also teach “processes” using the courses titled “accounting processes” or accounting transactions’, and these courses incorporate accounting cycles, processes, transactions and reports. With focus on accounting cycles and transactions, this approach considers accounting as the key to all business processes and transactions and teaches from that perspective. It uses ERP and/or accounting software such as MyOB as tools to teach process related concepts.

Information systems disciplines located within the business school also offer process related subjects with titles “enterprise resource planning systems,” “process integration,” and/or “process management.” The content covered in includes process modeling, simulation and enactment, process monitoring, business rules, process reference standards. In addition subjects with titles “enterprise resource planning systems” that incorporate some ERP software solutions for teaching process integration and management concepts are offered. Other subjects titled process modeling/management typically incorporate business process modeling software solutions such as SAP, TIBCO, WebSphere or ARIS and workflow solutions. Subjects that incorporate ERP software, though are on “processes” and “process integration”, the overbearing influence and complexity of the ERP software, makes it quite challenging (Seethamraju, 2007). Students tend to get involved in the software and transactions and fail to understand and appreciate the underlying process orientation and process focus

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 and learning organization
1960s	Process simulation Data processing systems 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 and 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 BPR 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

**Table II.**  
Different perspectives of  
“process” over time

(Seethamraju, 2007). As these courses are taught by the information systems disciplines, the focus is generally more technical and the required cross-disciplinary focus is inadequate and sometimes missing. Though these approaches give a good process management understanding, they do not demonstrate cross-functional perspective required for developing process orientation and process-centered thinking.

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 in isolation and are not true cross-disciplinary initiatives. In fact, it is not possible to incorporate all the process management related concepts, tools, methodologies and technologies required for managing modern technology-enabled business processes in the dominant services sector into one single subject.

**Table III.**  
Three different  
approaches of teaching  
BPM in business schools

Approach	Content covered	Features
Management	Quality management perspective – Six Sigma, lean, bench marking, strategy mapping, process reengineering, change management, horizontal organization, process governance	Ignores influence of technology and service interface, highly conceptual and change management focus; no cross-disciplinary focus; limited related research
Information systems focus	Information system perspective through ERP systems, process modeling, analysis, process reference models, simulation, integration, process enactment, business rules, standards and service interfaces	Predominantly focused on modeling and technology tools; lacks generic process improvement and change management issues; most popular approach of teaching BPM among business schools; no cross-disciplinary focus; research-informed
Accounting	Accounting cycles and processes perspective – expenditure, conversion, revenue, administrative, cost management processes; accounting transactions and reports	Focus on accounting and accounting transactions; no process modeling and improvement perspectives; limited use of technologies such as ERP software; no IT interface, no cross-disciplinary focus

Using different terminology and tools such as enterprise systems, systems dynamics, continuous business optimization, knowledge management, business process modeling, and business process enactment and monitoring, uncoordinated attempts are made to teach these concepts and skills by the individual disciplines using different subject titles. A well-integrated curriculum designed to cover all aspects of process management and delivered by a multi-disciplinary team is very rare.

A few universities, however, have introduced process-related curriculum as a part of business and IT/information systems programs (Recker and Rosemann, 2009; Bandara *et al.*, 2010). While one university IT school has introduced a Masters program in BPM, other university information systems disciplines have introduced individual elective units titled “business process management” as explained above. Many of these courses on BPM are offered as electives with limited enrolments from the generic business graduates specializing in accounting or marketing or logistics. Unfortunately, main stream business degree programs do not still consider BPM an important part in their curriculum and the uptake of these courses by students as electives is also very low. Rather than as a unified integrated curriculum across the business school, BPM is generally taught by isolated departments/disciplines across the business and IT faculties generally reflecting the inter-disciplinary nature of the field. In general, there is no evidence of cross-disciplinary process management courses or similar initiatives in Australian business schools.

The 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 rare. If there are some, they are predominantly geared towards practitioners focusing on “how-to” aspects. Some of the reference books used by the academics for teaching BPM include Davenport’s (1993) “process innovation,” Smith and Fingar (2003) on BPM and Garimella *et al.* (2008) “BPM for dummies” and others. Similarly there are other books that have integrated discussion of business processes and their management with ERP systems software (Magal and Word, 2012; Monk and Wagner, 2009). The ever increasing

number of BPM-related business books, articles and case studies are written mostly for industry professionals, rather than for students. More often than not, these resources do not cover the required concepts in enough depth and breadth to be directly used in teaching. Designing teaching and learning activities that will help students place BPM in a wider business context that assumes cross-functional integration is therefore a challenge for academics. 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 there are a few books on award-winning case studies in workflow and BPM (Fischer, 2009) and 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 managing 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 IT is sketchy and limited, incorporating these sophisticated 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. BPM is therefore now considered as the “missing middle” between business strategy and IT that will help converting strategies into business processes for consistent and efficient execution according to the overall management direction.

BPM of the future will draw knowledge and expertise not only from traditional business and IT but also from diverse fields such as psychology, neuroscience, service science, anthropology, sociology and behavioral economics. Thus, BPM 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, the difficulty of breaking 100 year old functional silos, and challenges in incorporating process-centric thinking and cross-functional integration into curriculum design and delivery, changes may be slow. Changes required to reposition the business courses require significant shift in academic thinking, improvements in traditional teaching and research models and importantly a strong external push from accreditation agencies and business.

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