AN INNOVATIVE POSTGRADUATE PROGRAM ON ENTERPRISE RESOURCE PLANNING MASTER OF BUSINESS (ERP) - INCORPORATING SAP R/3 SYSTEM AND RELATED PRODUCTS AT UNIVERSITY OF WESTERN SYDNEY, AUSTRALIA

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ABSTRACT

This paper outlines the details of an innovative postgraduate program, Master of Business (ERP), incorporating SAP R/3 System and related products that was introduced at the University of Western Sydney, NSW, Australia, in 1999. The program aims to develop integrative enterprise skills in a holistic business process management perspective, and provide ability to reengineer processes and implement an ERP system, in particular SAP R/3 system. The program has undergone continuous review to incorporate advanced dimensional products of SAP in order to improve its structure and the contents. As a result, this program has become one of the very popular ERP related postgraduate courses in Australia. This program explains the ERP concepts and contexts with the use of several SAP R/3 system application modules. It introduces students to modules such as Materials Management (MM), Quality Management (QM), Production Planning (PP), Sales and Distribution (SD), Financial (FI) and Controlling (CO), and Human Resources (HR). Students are also given an opportunity to work on other areas of SAP R/3 system such as Basis Technology, ABAP Workbench, Business Workflow as well as the advanced dimensional products such as Supply Chain Management (SCM), Business Information Warehouse (BW), Strategic Enterprise Management (SEM), Customer Relations Management (CRM), and Supplier Relations Management (SRM).

INTRODUCTION

Postgraduate program on Enterprise Resource Planning, using SAP R/3 system, at the University of Western Sydney was introduced in 1999, in order to cater for the large perceived demand then existed in the industry for ERP personnel, particularly for those possess both the knowledge of ERP concepts and the skills for implementing popular software applications such as SAP R/3. Since then the program had maintained healthy enrolment levels and has become one of the very popular ERP related postgraduate courses in Australia. In 2003, the program was reviewed with a view to improving its structure and the content. As a result, new units were introduced incorporating advanced dimensional products of SAP, such as BW and SEM. More recently, Solution Manager of SAP was introduced in one of the units in the program. SCM solution of SAP (formerly APO) is being introduced in the ERP curriculum currently, enhancing both teaching and research in the area of Supply Chain Management. This program aims at both IT and Operations managers who seek to extend their skill base in order to implement and operate an ERP system, in particular SAP R/3, in their organisations. This program focuses on business process approach emphasising cross-functional processes, planning, control, and execution techniques within common business process cycles, management systems and information systems in an integrated environment rather than a standalone functional approach. The program involves training on several SAP R/3 system application modules and introduces students to modules such as Materials Management (MM), Quality Management (QM), Production Planning (PP), Sales and Distribution (SD), Financial (FI) and Controlling (CO), and Human Resources (HR). Students are also given an opportunity to work on other areas of SAP R/3 system such as Basis Technology, ABAP Workbench, and Business Workflow. Based on the application-based foundation, students could build up their skills profile in specialised areas by selecting units in ERP technology and new dimension SAP products.

Program Aims
Taking into consideration the increasing role of information and information technologies in managing business operations, the business process focus in industry, and enterprise-wide computing, the curriculum for this postgraduate program is designed to impact theoretical knowledge of business processes and their interface, to the students. The program aims to develop integrative skills, holistic business process management perspective and ability to reengineer processes and implement an ERP system, in particular SAP R/3 system. Importantly, this course equips students with skills of SAP R/3 and related systems and the ability to assist in the reengineering of business operations for improvement.

The program recognises and addresses the key areas of knowledge acquisition and skills development in the discipline, such as:

- Positioning of ERP systems within the overall business framework.
- Underlying concepts and theoretical bases of ERP systems.
- Associated IT/computing/network skills.
- Associated databases/information management skills.
- Implementation issues including change management.
- Competence and confidence building in dealing with software modules.

The above knowledge and skills base have been endorsed by a large cross-section of employers as a prerequisite for successful performance in ERP and related positions. Postgraduates have immensely benefited through completion of this program in gaining entry to new jobs as well as in widening opportunities and fast-tracking their careers.

**Program Rationale & Background**

Recognising the demand in the market place for a business process-oriented and information technology based business management education, the course is designed to impart theoretical knowledge of business processes and their integration within an ERP environment, to the students. It aims to develop integrative skills, holistic business process management perspective and the ability to re-engineer processes and implement ERP software. Importantly, the course equips students with SAP R/3 system software skills and ability to help organisations implement their business processes within an ERP environment, using functional modules of SAP R/3, such as materials management, production planning, human resources, finance planning and control, and sales and distribution.

Increasing moves towards a process-oriented approach, cross-functional integration, and the expanding role of information and information technologies in business organisations have contributed to the emergence of enterprise wide computing, and enterprise resource planning solutions. SAP is the market leader in business software solutions and its ERP solution, SAP R/3, is an integrated business information system designed to help organisations run all of their business processes.

This course is based on the most popular ERP software, SAP R/3 system. It is delivered jointly by staff at OTQ group of the School of Management and the SAP consultants from SAP training partners: ProgressPacific. It is supported by SAP Australia and SAP Education, in curriculum design, delivery, project work and software. It is supported by the Application Hosting Centre (AHC) at Queensland University of Technology, providing remote access to SAP R/3 and other systems.

**Teaching and Learning Strategies**

Taking into account the process focused approach and the need for application and software skills, the teaching and learning strategies include intensive hands-on work on the software as well as theoretical discussions. In addition, students are expected to spend a considerable amount of time practicing with the SAP R/3 system software and working on case studies, research papers, field projects and tutorial exercises. Guest lectures by professionals, practicing managers, and consultants in the area of Enterprise Resource Planning and SAP R/3 are also incorporated into the program.

**Special Features**

*Hands-on work with the latest version of SAP R/3 software:*

The course is being taught by demonstrating ERP concepts and business processes, on SAP R/3 system software in a computer laboratory setting, with real-time access to the latest version of SAP R/3 system. Participants have unlimited access to the software for practice and for working on assignments and/or projects.
Business process focused approach:

The curriculum design, as well as teaching and learning strategies, incorporates a business process-focused approach, emphasising both processes and management systems in business rather than a more traditional functional approach to education.

SAP R/3 software modules:

The course involves training on several SAP R/3 system application modules and introduces students to modules such as MM, PP, SD, FI, CO, HR, QM and basis technology. It also involves training on tools within and outside SAP R/3, such as ABAP for development and programming, Business Workflow for business process automation, CATT for transaction automation and Solution Manager for implementation of SAP R/3 and other products. Further, SAP’s advanced dimensional products such as BW and SEM are incorporated into one of the units in the course. In addition to face-to-case lectures in laboratory setting, students are expected to put in considerable amount of their personal time in practicing the software to attain expertise.

Supported by SAP Australia/New Zealand and SAP Education

This course is supported by SAP Australia/New Zealand and SAP Education by offering their software, training for staff at UWS, and advice in course design and delivery.

Program structure

Graduate Certificate: Students must complete 40 credit points. This is made up of four units of 10 credit points each. Three units must be drawn from the list of core units and the remaining unit must be chosen from ERP related electives. The unit, Enterprise Resource Planning Concepts and Contexts, is compulsory if the student has no previous experience in an ERP environment.

Graduate Diploma: Students must complete 60 credit points. This is made up of five units of 10 credit points each drawn from the list of core units. The remaining unit is a 10-credit point elective. The unit, Enterprise Resource Planning Concepts and Contexts, is compulsory if the student has no previous experience in an ERP environment.

Master: Students must complete 80 credit points. This is made up of six core units of 10 credit points each. The remaining 20 credit points are made up of electives. Students who have sufficient work experience in an ERP environment may be permitted to substitute a unit from ERP related electives for the core unit Enterprise Resource Planning Concepts and Contexts.

Course unit structure

Each unit is worth 10 credit points unless indicated otherwise. Each unit involves minimum of 39 hours of face-to-face teaching. Most of the units are taught with hands-on work on the latest version of SAP R/3 and/or related systems. The program structure is being reviewed and proposed to have the following structure:

Core Units:
Enterprise Resource Planning Concepts and Contexts
This unit provides a theoretical understanding of the issues involved in the planning, design and implementation of enterprise resource planning solutions. Main areas of the subject include an introduction to enterprise systems, business process overview, a new environment for enterprise systems, building enterprise systems and development/deployment of enterprise-wide solutions using SAP R/3. An introduction to enterprise systems includes information systems, organizations, and integration and the challenge of integration. A new environment for enterprise systems includes the relentless distribution of information technology, toward a process view of organization, data at the core of the enterprise and the architecture of an enterprise system. Building enterprise systems would cover planning for enterprise systems, the design of enterprise systems, realizing and operating enterprise systems

ERP Solution Management
The main purpose of this unit is to provide an overview of enterprise reengineering concepts and its applications with SAP R/3 system. It outlines the implementation aspects of the ERP solutions (Solution Manager) in a cost-effective way. It particularly provides skills to students on the concept and methodology of implementing integrated enterprise-wide solutions. It will prepare the students to become familiar with the SAP Solution Manager for Implementation and
describe how the standard implementation methodology AcceleratedSAP (ASAP) is structured and used within the SAP Solution Manager environment. This unit also will prepare the students to understand the composition and functions of the SAP Solution Manager and use the tools provided to successfully and efficiently implement your SAP solution. The unit covers in detail the implementation methodology including project planning, business blueprint, realization, final preparation, and go live. This is a project based unit that simulates an implementation project for a global organization. Students in this unit are given a common business scenario and are assigned jobs within the company. The students are thoroughly exposed to the implementation of a project including the SAP modules such as MM, SD, Fi&CO, PP, and HR, using the implementation tool - Solution Manager.

Production Management Processes and Systems
This unit provides theoretical understanding of the production management processes and concepts in planning, execution and control of manufacturing systems. It outlines the complete manufacturing planning and execution process. Further, this unit introduces several productions planning strategies used in make-to-stock and make-to-order planning environment as well as production planning concepts for process industries. This unit is taught based on illustrations using SAP R/3’s PP module.

Materials and Quality Management Processes and Systems
This unit provides knowledge and training for the entire materials management component and its solutions for purchasing, inventory management, and invoice verification using SAP R/3. The unit covers processes for procuring stock material and consumable material, Quantity-based material management and material valuation, the individual inventory management operations, and the transactions that are to be completed using Logistics Invoice Verification in SAP R/3. It also covers the quality management issues relating to procurement. It provides a thorough understanding of the business process flows and information management issues in managing materials and quality management processes. It provides hands-on software skills in Materials Management (MM) and Quality Management (QM) modules of SAP R/3 system software.

Customer Order Management Processes and Systems
The main purpose of this unit is to provide an overview of the customer order and service management processes and systems in the context of enterprise resource planning. It describes the complete gamut of outbound logistics from presale activities through to posting payments and customer service management. It provides basic understanding of the essential business processes in outbound logistics using hands-on experience in the process chain and service management on SAP R/3 system.

Enterprise Resource Planning Project
This unit provides an opportunity for students to participate in the implementation of enterprise resource planning solutions with the help of SAP R/3 system. This is an industry-based work involves initiation, analysis, design, realisation, go live and support of SAP R/3 system and reengineering solutions for a particular industry.

Financial Planning and Control Processes and Systems
The main purpose of this subject is to provide students a thorough understanding of the process flows in financial management and the information management issues in the financial and controlling modules of the SAP R/3 system. It provides hands-on skills to students to assist with the understanding of the business processes related to these two modules.

Human Resource Management Processes and Systems
The main purpose of this unit is to provide students with a thorough understanding of the process flows in Human Resource Management and the information management issues in managing human resource management processes and systems. It provides hands-on skills to students for managing business processes related to human resources in the best possible way through the Human Resources module (HR) of the SAP R/3 system.

ERP related electives:
Managing Integrated Business Technology
The main purpose of this unit is to provide a fundamental understanding of all the R/3 system basis components and technology. It covers issues in an ERP based system administration and configuration for specific organizational requirements and interface with other applications. It provides basic skills for system configuration and administration to the participants.

Value Based Management Systems
The main purpose of this unit is to provide an overview of the value-based management approach and enterprise-wide performance measurement processes and systems in the context of enterprise resource planning. It describes the concept of value-based management, balanced scorecard approach to enterprise performance measurement, and its integration with ERP solutions. It outlines the use of SAP BW analysis tools to call, define, and analyze reports. It provides an overview of SAP’s SEM (Strategic Management System) and introduces main aspects of SEM such as business planning and simulation, business consolidation, corporate performance monitoring, business information collection and stakeholder relationship management.

Data Modelling and Management in ERP systems

This unit provides an overview on the evolution of data architectures, data storage, data modelling such as Normalisation, Entity-relationship (ER) modelling, Entity-relationship diagram (ERD), and ERD questions. The unit also provides details on Data modeller and browser in SAP R/3 including Database server and DBMS, Data dictionary, Data modeller, Data models, and information system in SAP R/3.

Business Process Integration and Modelling in ERP systems

This unit provides an overview of Business Process Reengineering including the understanding of business processes, mapping business processes using IDEF0 standards, redesigning existing processes and principles of BPR. It outlines the various business process cycles as explained in SAP R/3 system such as Customer order management process, Production planning and control process, Procurement process, Human resources process, and Financial planning and control process. The unit also explains the Best Business Practices in ERP and Business Process Modelling.

CONCLUSION

This paper outlines the details of an innovative postgraduate program, Master of Business (ERP), incorporating SAP R/3 System and related products, that aims to develop integrative enterprise skills in a holistic business process management perspective, and provides ability to reengineer processes and implement an ERP system, in particular SAP R/3 system. This program explains the ERP concepts and contexts with the use of several SAP R/3 system application modules such as Materials Management (MM), Quality Management (QM), Production Planning (PP), Sales and Distribution (SD), Financial (FI) and Controlling (CO), and Human Resources (HR). The program also exposes students to work on other areas of SAP R/3 system such as Basis Technology, ABAP Workbench, Business Workflow as well as the advanced dimensional products such as Supply Chain Management (SCM), Business Information Warehouse (BW), Strategic Enterprise Management (SEM), Customer Relations Management (CRM), and Supplier Relations Management (SRM).