

DEVELOPMENT OF AN INFORMATION AND KNOWLEDGE MANAGEMENT QUALIFICATION

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ABSTRACT

Organisations in the 21st century face the challenge of either adopting rapidly emerging information- and knowledge-management systems or becoming uncompetitive and irrelevant.

The performance of any organisation is strongly dependent on the correct use of information technology. Executives have to know and value the possibilities and potential of this technology in order to make their organisations as efficient as possible. This article argues that new executive skills are required to meet the challenge, and describes how a new, internationally accredited qualification at master's level was developed to address the need.

The qualification is aimed at university and college graduates who are now in business and who have some solid work experience. Participants learn to apply key features of information technology in the business environment through work-based projects.

INTRODUCTION

Correct application of information- and knowledge-management systems results in massive improvement in organisational performance: reductions in order-processing time of 90 per cent, reduction in error rates of 95 per cent and productivity improvements of 50 per cent are consistently reported (1).

Clearly, we live in an age in which management of information and knowledge determines the survival and success of an organisation.

Yet, at the same time, research organisations, such as Gartner, Forrester and Butler, report alarming levels of failure of information-management projects. A recent clear example, which has had widespread impact, is the Electronic National Traffic Information System (e-Natis), a troubled R450 million¹ information-technology (IT) investment. e-Natis clearly falls into that group of projects that have not met their financial, performance or delivery targets. The impact of failed projects on national productivity and competitiveness has yet to be assessed.

Recent surveys highlight the problem: Eighty-four per cent of chief information officers (CIOs) surveyed (2) believed that technology was significantly and profoundly transforming their industries, yet only 16 per cent believed that their company was taking full advantage of its potential. Chief executive officers (CEOs) (3) who extensively integrated business and technology reported 5 per cent faster revenue growth than their competitors, as well as greater customer satisfaction, speed and flexibility than their less integrated peers. Most companies face a gap in their integration of business and technology, impeding customer satisfaction, speed of delivery, and flexibility.

Why does this situation arise, and, more importantly, what can be done to address it?

CHALLENGES OF CHANGING BUSINESS

¹ about 36 million Euro

One of the authors conducted research through universities (4) on the adoption by organisations in South Africa of standard IT-implementation methodologies that support the system-development life cycle. This research revealed that although these methodologies were relatively well known and understood, their deployment in practice was seriously compromised. The problem is not technical; it reflects management failure to grasp fully the ramifications of rapidly developing information-management technologies and the consequent reluctance of management to direct appropriate change in an organisation.

The required technology and methodologies are available, but the solution is more about changing the thinking and the paradigms within an organisation. It is still commonly held that all process problems will be solved simply by pushing software and implementation methodologies into the organisation. In reality, however, the solution touches the human aspect, because at its heart is the interaction between people and systems. The solution must include changing the way in which people do business and how they complete their activities (5).

There are two fundamental viewpoints:

The first assumes that IT is a support function and that success lies in devising ways to ensure that IT applications are implemented effectively. This is the technology-push approach described above. Existing processes are largely automated, and what gains are achieved stem chiefly from cost reductions and improved record keeping. Although these gains can be significant, they seldom confer a competitive and strategic advantage.

The second viewpoint recognises that IT is no longer merely an enabler to support the business. Information and knowledge now drive the business, and systems to manage information are a strategic imperative. Emerging information-management technologies fundamentally change the way in which business is conducted, and the entire business must be redesigned if these developments are to deliver their full advantage. In fact, information technologies and associated issues of governance and risk change the way in which a business functions, and the dramatic improvements in performance described above can be achieved only through fundamental revision of the business and its information systems.

In essence, a total review of the business is required.

THE NEW BUSINESS

Although standard business functions, such as marketing, sales, product development, manufacturing and finance, continue to be conducted, the way in which they are conducted in an integrated, information-driven organisation changes radically.

Management priorities shift strongly toward aligning information-management system strategies and business goals, toward the creation and improvement of information-system-enabled business processes, and toward ensuring business continuity (6).

Condensed and timely information to support difficult decisions on value, risk and control quickly and successfully is required. Business processes must be managed on an ongoing basis to realise business goals, and improvement of the business processes replaces cost cutting as the chief mechanism for improving profitability.

The organisation operates in real time, in a borderless world.

There are a number of questions that a top-performing organisation (7) must be able to answer:

- What would be the business impact of doubling investment in information systems innovation and development?
- How can business processes be improved so that the optimal level of efficiency is achieved?
- Which information system services are provided, that the business needs?
- Which information system services are redundant, and how can this be demonstrated?
- What is the impact of problems in the way in which information is managed on our performance?
- Which additional services would be advantageous to the organisation?
- How can resources and budgets be kept under control?

Issues of governance (8) and risk are further factors that have to be considered. Governance focuses on strategic alignment: the alignment of information and enterprise strategies. Unfortunately, experience shows that although information and business strategies can be aligned, chaos may still reign. Also, management methodologies such as the Information Technology Infrastructure Library can be implemented, without resulting in any clear business perspective.

IT governance is the responsibility of an organisation's executives and board of directors, and it consists of the leadership, organisational structures and processes that ensure that the enterprise's IT investments sustain and

extend the organisation's strategies and objectives (9). Risk management; an in-depth understanding of compliance requirements and embedding of risk-management responsibilities in an organisation are essential, together with adherence to regulatory requirements for controls in areas such as privacy and financial reporting (such as Sarbanes-Oxley, King II and Basel II). Constraints are placed on the way in which data and information are handled and stored because of quality, fiduciary and security requirements, and because of the fact that processes; risks and intellectual property become locked into the information-management system.

These responsibilities may be delegated, but the board cannot abdicate them. How does an organisation enter this brave new world?

Given this radically changed and evolving environment, the organisation must be transformed, and the way in which information-management systems function must be transformed. Executives (3) tasked with decisions about information systems believe they can begin to address this challenge by:

- Becoming involved earlier in the strategic decision-making process.
- Forging stronger relationships with CEOs and other business leaders.
- Leading high-profile transformation projects.
- Being measured more on innovation and growth rather than the more traditional performance and cost measures.

The points listed above imply a need for not only a deep understanding of business operations and their information requirements, but also the ability to direct projects that transform the way in which an organisation operates.

Educational programmes are required to assist the executive make the transition to this new environment.

NEW MASTER'S PROGRAMME

One of the authors conducted further research (10) based on a joint SAQA–Isett Seta project to develop a framework for structuring and analysing qualifications. The framework identified a broad range of business functions and a spectrum of knowledge packets, which included technical, behavioural and attitudinal elements. The extent or depth of this knowledge, ranging from basic awareness to the capacity to implement independently, was also incorporated.

This framework serves two purposes:

- By mapping existing qualifications onto the framework, their focus and their relevance to business needs can readily and visibly be identified.
- New qualifications can be structured and assembled to meet emerging business needs.

Mapping of existing management-education programmes onto the framework reveals that these programmes, generally at the Master's level, do not address the needs and requirements of the integrated organisation described above. A key failing of these programmes is their lack of focus on factors that would produce a graduate of immediate and direct value to an organisation.

A more practical learning experience, coupled with a theoretical underpinning of emerging information- and knowledge-management directions is required to equip the graduate to understand how the technologies of today and of the future may most effectively be deployed to benefit the competitiveness and performance of an organisation. The graduate must be able to direct the changes necessary in an organisation for it to derive maximum benefit from emerging technologies while, at the same time, maintaining legislated and recommended standards of governance.

It was also recognised that the programme should be conducted primarily in the workplace, because this provides a more relevant educational environment, while also providing direct and immediate benefits to the organisation itself.

Based on this research, the cooperation of local and international universities, regulatory bodies and industry was obtained to build a qualification relevant to the identified needs of the successful 21st century organisation. Collaboration with Hochschule Wismar, University of Technology, Business and Design, Germany, resulted in a new qualification, the Master of Business Systems, fully developed under European Union and Washington Accord regulations, endorsed by UNESCO and supported by Isett Seta.

The Master of Business System is a 90 ECTS² programme. Table 1 gives an overview of the programme contents and schedule.

² ECTS: European Credit Transfer System, credit points awarded for learning efforts within study programmes.

The programme begins with basic subjects giving an overview of the various applications of information technology in business, and subjects addressing project work and management as a fundamental skill. Participants in the programme will often work at the interface between management and technical (engineers and IT) experts. Understanding each other is an important prerequisite for successful collaboration, and is therefore the basis for realistic management decisions relating to the company's IT strategy. Participants then base further working and learning on these first semester experiences.

Table 1 Schedule of the Master of Business Systems

Subjects	Term	1.	2.	3.	4.
Information Technology in Business		5/15			
Business Process Design		5/15			
Project Management		5/15			
Integrative Industrial Thought		5/15			
Knowledge Management			5/15		
Database Systems and Data Management			5/15		
Computer Models for Business Decisions			5/15		
Business Systems Project 1			5/15		
Software Systems Design and Development				5/15	
Enterprise Resource Planning Systems				5/15	
Business Systems Project 2				5/15	
Elective subject 1				5/15	
Elective Subject 2				5/15	
Master Thesis					25/75
ECTS/NQF³¹:		20/60	20/60	25/75	25/75

Business Informatics focuses on Business Processes; how they are analysed, re-designed and re-engineered to form the backbone of the new enterprise. Therefore three modules of the programme are dedicated to the management of Business Processes: Business Process Design, Software Systems design and Development, and Enterprise resource Planning Systems.

Since the management and harnessing of knowledge is the key goal of information management in the 21st century, strong emphasis is placed on the generation and handling of knowledge using information technology. Knowledge Management and Computer Models for Business Decisions are the relevant modules. Whether it is information or knowledge, structured data or texts, pictures or videos, every item has to be stored and retrieved: powerful databases build the essential foundation for every IT-solution.

Practical applications at the participant's workplace that accompany the academic/theory modules is a leitmotif throughout the programme. Workbased learning offers the opportunity of applying previously gained knowledge and opens the possibility of incorporating the ideas, concepts and principles of the CDIO (Conceive – Design – Implement – Operate) (11) initiative. Business Informatics is rapidly assuming the mantle of engineering science: problems must be recognised, identified and defined (conceived), and appropriate information management solutions must then be designed and implemented. Maintenance and adaptation to an ever changing business environment are then critical for the successful operation of the information management system.

Graduates of the Master of Business Systems are not expected to be programmers or systems developers. They will fill the role of Chief Information Officer or may work as a chief in an information technology project where they will guide and supervise the identification, development and/or selection and subsequent integration of a solution into the organisation's overall business structure.

³ European credit points ECTS: European Credit Transfer System. An ECTS equals to 3 NQF

All the practical work will be performed under strict academic supervision. Subjects will be selected in co-operation between the university professors, the participants and their companies. At the end of the programme the Master thesis has to be defended by a talk and a discussion with the reviewers.

The Master of Business Systems focuses on business systems, on information systems, and on how they interact to contribute to the improved performance of the organisation. It is a part-time course, running over two years and based primarily on projects done in the workplace, combined with intensive theoretical modules presented by professors of international standing.

A key aim of the programme is to empower an organisation to convert information into insight: insight essential to compete effectively in international markets.

Although first ideas of a MBS programme came up from South Africa the MBS is not only a South African Programme at all. Hochschule Wismar offers the MBS as a part time programme in Germany/Europe as well. Advertising has started and we expect to launch the programme in spring 2009.

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