

actKM Online Journal of Knowledge Management

Volume 2, Issue 1

2005

ISSN: 1834-3554

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www.actkm.org

Proceedings from the actKM Sixth Annual Conference 2005

This journal and individual papers published at www.actkm.org

First published in Australia in 2005 by actKM Forum

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ISSN: 1834-3554 (Online)

Cover design by actKM Forum.

Copyediting by Maxine James.

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Action Research: connecting knowledge in the Australian Public Sector organisation

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Abstract

This paper comprises research completed for Doctor of Administration (DBA) program at the Southern Cross University, Australia. A study of the extant literature on KM in organisations identified the gaps in the body of knowledge that raised the following five research issues.

- *who uses what information?*
- *where is the information sourced from?*
- *what is added to the information?*
- *where does the information flow to after use?*
- *what issues do knowledge workers face in a public sector organisation?*

This research adopted action research (AR) as the methodology to investigate the flow of information in DPI Forestry, a commercial business group in Department of Primary Industries & Fisheries (DPI&F), Queensland. The journey starts with finding out how knowledge is used in the business processes in DPI Forestry..

Three respondent groups were identified in the survey – administrative, executive, professional, technical and field based workers. These workers showed their differences and similarities in what information is used, where to search for information and what happens to the information after use.

Based on the findings, the following four action plans were designed to manage and deliver information and knowledge to DPI Forestry employees:

- *business intelligence reports (BIRP)*
- *migration to single database environment project (MSDEP)*
- *intranet redevelopment of ForWeb (IRFW)*
- *electronic document and records management system (eDRMS).*

The outcomes of these projects were useful to further analyse the dynamics of networking among knowledge workers and how they interact to search and use knowledge at the workplace.

Keywords

Change management, Strategic management, Information management, Document management, Organisational management, Public sector management, Human computer interaction

Introduction

The late 20th century saw numerous efforts by organisations and communities to identify data, information and knowledge (DIK) as essential factors for continued success and sustainable management of organisations (Senge 1990; Drucker 1993; Nonaka 1994; Nonaka & Takeuchi 1995; Broadbent 1997; Rowley 2000; Berkman 2001). These studies pointed out the need for organisations to redefine their businesses by constantly adding value through knowledge into their businesses in order to survive in their competitive business environment.

Over the past decade, organisations have been recognising the benefits of knowledge management (KM) in improving and sustaining their business performance, thus promoting development of intellectual capital as the key element in business strategy in these

organisations. KM, driven by technology, enables organisations to be innovative, creative through their knowledge networks, and developing the ability to adapt to changes coming from both internal and external business environments (Allee 1997; Bushell 2001).

A number of case studies have also highlighted the critical need for organisations to process, create and communicate knowledge in order to be competitive (Rowley 2000). In knowledge-based organisations, their capability to process information is a key factor in dealing with the uncertainty and complexity in its environment, and leads to the survival of the organisation. Organisations are adopting better business models, empowered by information and knowledge, to deal with the dynamic challenges they face in their business environment.

Thus, the question arises, 'what is the relevance of KM in organisations?' KM is defined broadly as a discipline to promote the identification, management and sharing of the organisation's intellectual assets (Allee 1997; Choo 1998; Malhotra 1998). KM provides the means for organisations to leverage information and expertise to improve innovation, responsiveness, productivity and competitiveness. These assets, which contribute to the intellectual capital of an organisation, include databases, manuals, work reports, policies and procedures as well other undocumented knowledge that sits in the heads of their employees.

KM is critical to organisations for the following reasons:

- helps to address the issues related to developing, managing and maintaining the technical infrastructure required to hold and share knowledge
- highlights the critical issues relating to how organisations adapt, survive and compete, while improving their organisational processes using the synergy of data and information processing capacity of information technologies, as well as the creative capacity of human beings. (Fenn 1996; Hunter 1998; Malhotra 1998; (Anonymous 2000)
- more than just managing information. (Broadbent 1997) explains KM is also about enhancing the use of organisational knowledge by adopting best practices of information management and organisation. This theory is based on the premise that where information refers to tangible assets that are documented, published and written, knowledge refers to intangible assets including work experience, employees' skills, expertise, and wisdom brought in from previous employment or training
- is considered useful when it is created with the right information and processed further and delivered at the right time (Mckenna 1998)
- enhances business performance by maximising the use of information and knowledge as well as maintaining its learning capacity to remain innovative and competitive.

Overall, KM helps organisations to remain competitive, to maximise the use of their knowledge into products and services, and emphasises the importance of employees as intellectual assets and suppliers of knowledge.

Research problem

This study is based on the model forwarded by (Drucker 1999) who posed the question 'what is the task?' related to knowledge-worker productivity. Task definition, Drucker believed, would enable knowledge workers to concentrate and improve their productivity. This study expands that model with the following questions:

- Who does what at the workplace?
- What information is used by whom?

- Where is information sourced from?
- What is added to the information?
- Where does information flow to after use?

The research investigates the flow of information in DPI Forestry, Queensland. DPI Forestry is a commercial business group of the Department of Primary Industries & Fisheries (DPI&F). DPI Forestry is Queensland's primary forest grower, supplying more than 80% of domestically produced log timber used in Queensland's regional timber industry. According to the (Department of Primary Industries and Fisheries 2004), DPI Forestry with a workforce of 773 employees, generated \$102 million from product sales in 2003-2004.

Significance of the research problem

The research problem needs to be investigated due to the following reasons:

- DPI Forestry is undergoing changes due to being corporatised within the Queensland government framework.
- To align information with its business objectives.
- To investigate the various information silos and incorporate them into a knowledge base to assist in decision making and governance of information.
- To assist DPI Forestry to comply with legislation and guidelines related to freedom of information, recordkeeping principles and the Queensland government's Smart State initiatives.

Literature review

The literature reviewed concentrates not only on the area of the research problem but also on the links between the research problem and the wider body of knowledge. The model in Table 1 describes the main and immediate disciplines of this study. (Phillips & Pugh 1987) explain that these disciplines are commonly referred to as background or focus theories.

Table 1 - Main and immediate disciplines explored in this study

Parent Disciplines Main areas of literature	<ul style="list-style-type: none"> • organisational management • communications • group dynamics
Immediate disciplines Sub-areas of literature	<ul style="list-style-type: none"> • customer relationship management • e-commerce management • information management • human resource management • organisational learning

The following describes the findings of researchers in the implementation of KM initiatives in the public sector.

One of the key recommendations by (Caldwell 2001) was for the public sector to embrace electronic government (E-Government) initiatives in order to maximize its service delivery. The Australian Commonwealth Government is investigating the implementation of KM programs. E-government is about transforming business processes in the public sector to deliver benefits and outcomes to everyone. According to the (National Office for the Information Economy 2003), e-government emphasises the transformation of government service delivery to provide better customer focus and access, to increase availability of

information, and to improve business processes and efficiencies through appropriate use of new technologies.

A study by (Caldwell 2001) also revealed that the long-term vision of the public sector was to enable sharing of knowledge through direct online access to government services. Thus, universal access to information and services of the public sector was imperative in bringing information online, as well as to reduce the cost of information delivery and improve its business efficiency.

(Stephens 2000) highlighted that KM is increasingly being recognised by the Australian public sector as a strategic asset that needs to be managed and harvested. Components of knowledge management such as people, culture, structure and systems have been acknowledged, and resources have been spent in integrating them into the public sector's strategic management. Examples included agencies such as Centrelink, AirServices and the Australian Taxation Office (ATO), who have started to develop and fit KM initiatives into their organisational processes.

However, while the uptake of KM in the public sector has been slow, recently there are signs that it is increasing, with more departments and agencies beginning to review their data warehouse issues, service delivery and efficiency in managing information and harvesting of knowledge. The establishment of KM project teams at corporate management level has, to a certain extent, brought the message home to federal, state and local governments.

The reasons for the slow uptake could be due to several reasons.

- This could be due to a 'wait and see' approach, where these agencies take one step at a time to review and evaluate before deciding on the next course of action.
- A study by (Public Management Service (Puma) of OECD 2001) explained that the concept of KM is relatively new in public sector organisations. Most organisations closely monitor each other in managing their knowledge management projects. (Stephens 2000) concurred that this scenario was similar to the Australian public sector where KM is not easily understood, because it is intangible, and because its value has been under-estimated over the years.
- Despite recent trends, where both private and public sector organisations are taking interest in KM and starting to investigate their knowledge assets, the journey has experienced several setbacks. However, (Davenport 1998) stated these initiatives are not yet completed as information flows and knowledge management are dynamic and the landscape of information needs in the business environment is continually changing.
- With the rapid globalisation of information, and increased mobility of people and capital, most of the traditional public sector monopolies are caught in the midst of competing with foreign organisations in delivering similar services. For example, a paper by PUMA (Public Management Service (Puma) of Oecd 2001) informed that universities were in constant competition internationally to attract more students and the best lecturers, while the research institutes are constantly vying for more research grants and attracting the best researchers.
- Unlike the private sector, the public sector organisations are not motivated by product competitiveness or profit-based performance. (Public Management Service (Puma) of OECD 2001) elaborated that this explained why public sector organisations were reluctant to adopt KM initiatives. However, this is gradually changing with some of the functions of the public sector monopolies being commercialised. ABS has

launched several KM initiatives to assist its data collection and information dissemination role, and Centrelink uses its internal knowledge systems in sustaining and supporting its customer service, knowledge sharing and reducing its internal costs of information processing and delivery.

- Most of the KM projects and initiatives outlined by the public sector organisations are for a long-term period, while budget management is based around short-term periods. This poses an ongoing concern as it becomes difficult to justify the return of investment in KM programs. While it is heartening to note that KM is gradually being adopted in the Australian public sector, the journey has just started for KM programs to be fully implemented across all agencies.

Contributions of the research

The following table describes the gaps identified in the body of research and the contribution of this research.

Table2 - List of contribution of this research to the gaps identified in the body of research.

Gaps identified in the body of research	Contribution of this research
Lack of evidence to demonstrate direct savings resulted from KM programs.	This research is not designed to deliver direct savings to the organisation resulting from KM programs. Instead, the research proposes a longer term to justify the investment in KM programs. KM savings are generally not consigned to one area. Instead, they benefit many aspects and layers of the organisation. Therefore, these savings may take time to show.
Rapid changes in the business environment heightened the need for organisations to reduce the cost of doing business as well as to reinvent themselves.	This research adopted action research as a tool to investigate ways to improve information flows that will have direct savings to DPI Forestry in the long run. This research also promotes integration of information technology to increase the delivery and transfer of information via a secured web-based environment.
Lack of understanding of how to manage tacit knowledge.	This research proposes the way to encourage people to exchange and share their tacit knowledge with others is to allow them access to information and knowledge in a secured environment as well as to enhance their connection with experts.
Lack of research into identifying, modelling and explicitly representing organisational knowledge.	This research promotes the use of action research methodology and project management in order to identify and represent organisational knowledge so that such knowledge can be found, stored and used by others. This research also promotes the importance of records and document management to track, store and reproduce information and knowledge used in the organisation.
Gaps in research as to what constitutes knowledge work and who the knowledge workers are.	This research confirms (Drucker 1979) definitions of knowledge work, and that knowledge workers are relevant in DPI Forestry.

Gaps identified in the body of research	Contribution of this research
Lack of research into the management and understanding of how public sector organisations translate KM concepts into action plans.	This research investigated the information flows in a public sector organisation and then translated KM concepts into action plans.
Lack of empirical research on the conversion of explicit into tacit knowledge through information technology.	This research confirms that there is a lack of research in this area. This may have resulted in the failure of implementing KM programs because tacit knowledge is difficult to manage.
Gaps in understanding between what knowledge exists within the organisation and what knowledge is required.	This research discovers that there are gaps in knowing what knowledge exists within the organisation and gaps in knowing what to do about it.

Source: Developed from this research

Contribution of the research to the research issue and status of research in the extant literature

The following table describes the contribution of this research to the research issue and the status of the research issue in the extant literature.

Table 3 - List of the contribution of this research to the research issue and the status of research issue in the extant literature

Research issue	Status of research issue in the extant literature	Contribution of this research
What information is used in the business process?	Discussed in the literature to confirm that information and knowledge is critical for the organisation to survive and compete.	Confirmation
How is the information used?	Discussed in the literature.	An addition
Where is the information sourced?	The identification of where the information is located is rarely discussed in the literature.	An addition
What is added to the information?	Rarely discussed in the literature on what is added to the information.	An addition
Where does the information flow?	Partially discussed in the literature.	An advance
How to initiate KM strategies in public sector organisations?	Partially discussed in the literature on strategic and information management.	An advance
How does knowledge mapping assist in identifying KM activities?	Discussed in the literature.	An addition
How to incorporate action research to implement KM projects in public sector organisations?	Rarely discussed in the literature.	An advance

Research issue	Status of research issue in the extant literature	Contribution of this research
What are the benefits of action research in KM implementation?	Partially discussed in the literature.	An advance

.Source: Developed from this research.

Stages in research

The research started with literature review followed by design of a survey questionnaire to collect data. Data was analysed using SPSS software to produce frequency tabulation. The analysis formed the basis of the development of action plans to resolve the problems identified.

The research was completed in late 2004 and the study was finalised in June 2005.

The action plans formulated from the research were implemented in 2003/2004 in DPI Forestry and are described below.

Table 4 – Description and benefit of action plans

Action plan	Brief description	Benefits and outcomes
Business intelligence reports (BIRP)	Deliver business reports with secure access for decision-making and problem resolution using ForWeb.	<ul style="list-style-type: none"> • Utilise current web based technology to deliver information within the secured environment of DPI Forestry web (ForWeb) • Saves time and effort in searching for information • A project team keeps the information current with regular updates and reviews • Information is delivered to everyone in DPI Forestry • Staff can create their weblinks to publish information of their work and projects
Migration to single database environment project (MSDEP)	Migrate systems developed in MS Access and MS Excel into a single database product .	<ul style="list-style-type: none"> • Saves time and effort in development and maintenance of application systems residing in a single database environment. • Reduce information silos within the organisation. • Expedite the delivery of information via DPI Forestry Intranet. • Reduce costs and overheads in systems .development and maintenance. • Facilitate searching of information. • Reduce the duplication of information.

Action plan	Brief description	Benefits and outcomes
Intranet redevelopment of ForWeb (IRFW)	Delivering corporate information, particularly its manuals and work procedures via DPI Forestry web (ForWeb)	<ul style="list-style-type: none"> • 'What-you-see-is-what-you-get' approach thus allowing documents to be published seamlessly to the web. • Its authoring tool allowed automated publishing of information to the web. • Users did not need technical skills to search for information thus making it available and easy to use. • Facilitate transfer of knowledge with others through its community weblinks that show skills and expertise of DPI Forestry staff. • Powerful features to ensure that web pages were accurate and current as requested by the findings in the survey. • Improve version control of information published as well as keeping track of the changes made.
Electronic document and records management system (eDRMS).	design and implement a records management system to suit DPI Forestry business	<ul style="list-style-type: none"> • Capture of business documents in various formats. • Retrieval of documents for decision-making, analysis for future projects. and to address Freedom of Information (FOI) queries. • Proper management of paper and electronic files according to retention and disposal schedules. • Enhance compliance with DPI Forestry business as well as to comply with Commonwealth and State record keeping statutory legislation.

How action research is used in the research

This research has adopted action research (AR) as the methodology to explore and understand what and how information and knowledge are used, and how they are captured and used to add value in DPI Forestry.

Action research was adopted as the methodology for this research for the following reasons:

- AR allows the researcher to explore how individuals accept and apply information and knowledge in their work, how this information flows to others, as well as identifying the issues of managing knowledge within the organisation.
- AR also facilitates finding out if there are differences or similarities between administration, professional and field-based groups' perceptions and expectations of using, sharing and distributing knowledge.
- The researcher is actively involved in observing and effecting action plans in DPI Forestry. AR provided the opportunity to collect data, implement action plans, reflect on the implementation and provide feedback on the lessons learnt from the research.
- The reflective component of AR assisted in the planning, aligning of management processes, and using technology to reinforce KM principles into the strategy and execution of action plans.

Acknowledgements

The researcher acknowledges the following individuals for their role in completing the research:

- Mr Robin Bertoni, Manager of Information Management Branch for his support and encouragement in testing the ideas used in the implementation of the action plans.
- Staff at DPI Forestry for giving up their time and assistance in completing the survey and general input to the research.
- Family and friends who have given me words of advice and patience in continuing the research to its completion including mum and dad, Jo and Jackie Chow.
- My supervisor, Associate Professor Shankar Shankaran, for his patience, assistance and words of wisdom that had guided me through my journey in learning of action research.
- Fellow DBA researchers who have shared their journeys with me and supported me during my studies.
- Staff at Southern Cross University, especially Ms Sue White, DBA coordinator for their care and support.

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