The Role of Informal Networks in Knowledge Sharing

Tony Jewels
School of Information Systems
Queensland University of Technology
Brisbane, Queensland 4270, Australia
Telephone +61 7 38649049, Fax +61 7 38641969
t.jewels@qut.edu.au

Alan Underwood
Faculty of Information Technology
Queensland University of Technology
Brisbane, Queensland 4270, Australia
Telephone +61 7 38642781, Fax +61 7 38641507
a.underwood@qut.edu.au

Carmen de Pablos Heredero
Rey Juan Carlos University
Paseo de los Artilleros s/n, 28032 Madrid
Telephone: 34-91-5344257, Fax: 34-91-7750170
cpablos@fcjs.urjc.es

Abstract
The application of a knowledge management strategy does not take place in a vacuum. Successfully meeting objectives of a knowledge management strategy may depend not only on the efficacy of the strategy itself or of the team that is responsible for its implementation, but also on the environment into which it is being introduced. Research carried out with an application service provider (ASP) indicates that existing informal communication networks will continue to operate independently of any formal strategy introduced. The significance of informal knowledge sharing activity may be in its incompatibility, or possible conflict, with any formal structures that are introduced. The success of any formally instigated knowledge management strategy might therefore depend on an understanding of the existence and nature of already active informal knowledge sharing structures. It is important for management to recognise the existence of such informal networks and to understand how they might affect the success of any formally introduced knowledge management strategy. In this paper the existence and reasons for informal networks, and their subsequent effects on formal knowledge sharing policy is examined.

Keywords
Knowledge Sharing, Informal Communication Channels, Communities of Interest

1. Introduction

In 1998 an application service provider (ASP) with the assistance of a major international consultancy company acting as its implementation partner, had coordinated the simultaneous implementation of SAP R/3 across five government agencies. Three years later, this ASP, like several other organisations following the spate of Enterprise Systems

(ES) implementations prior to the turn of the century, was facing its first major upgrade. The ASP General Manager (GM) appreciated the need to recall the lessons and practices from these initial projects as the extent and cost of these major upgrades were likely to match or exceed that of the initial implementation. The GM had long recognised the importance of knowledge capture, access, sharing and re-use, both for the current upgrade process and for future upgrades, and university researchers had already been engaged with the ASP in a number of research projects in the area of knowledge management within an ES environment (Timbrell & Gable 2001, Chang, Gable, Smythe & Timbrell 2000, Chan & Rosemann 2000).

Knowledge of the forthcoming upgrade and the awareness of a newly published paper, Theory of Knowledge Reuse: Types of Knowledge Reuse Situations and Factors in Reuse Success (Markus 2001) provided an opportunity to test the validity of the paper's typology of knowledge reuse and to concurrently provide research data that might assist the ASP in providing conditions under which successful knowledge reuse was likely to occur.

The original study conducted by Timbrell and Jewels (2002), tested Markus's theory by matching the expected and actual responses to a set of predetermined questions linked to that theory. The use of this predominantly deductive approach, (the inference of particular instances by reference to a general law or principle, (Reader's Digest 2001)), was combined with an inductive approach (the inference of a general law from particular instances, (Reader's Digest 2001)), by embedding in the interview process, open-ended questions aimed at identifying particular knowledge sharing activities of the individual interviewee. Using this approach it is possible to test both an existing theory and still identify characteristics that may have no direct relationship to the theory being studied.

The original study concluded by generally supporting the Theory of Knowledge Reuse, whilst also indicating the pervasiveness of informal knowledge sharing networks within the organisation. An initial review of the published literature on informal networks provided prima facie evidence that the type of informal knowledge sharing activities that had been identified in the research, is likely to influence the ultimate effectiveness of any formal knowledge management strategy.

Responses from the original study were then carefully re-examined, specifically from an informal network knowledge sharing perspective, and subsequently compared to the current literature. This paper examines informal network knowledge sharing behaviour identified in the research and compares and contrasts that behaviour with the existing literature.

2. Objectives

This work forms part of an exploratory stage of an investigation into knowledge sharing practices within IT organisations. The purpose of this exploratory study is to investigate the nature of informal knowledge sharing practices within the organisation, a rationale for its existence and its possible affect on the operation of the organisation's formal knowledge management policy. In seeking to better understand the dynamics of informal knowledge sharing practices, our objective is to inform academe and practitioners on ways of improving the effectiveness of knowledge management strategy.

3. Research Process

Using a questionnaire derived from Markus model, semi-structured interviews were conducted over a period of six days with all twenty-eight employees within the ASP. The interviews were taped for later transcriptions and relevant notes taken to highlight key

issues. Interviews, held in an office provided specifically for the purpose by management were planned for 30 minutes duration, commencing at 0830 and finishing at 1700 each working day until completion.

The interview technique used was a combination of the standardized, otherwise known as structured interview (Fontana and Frey 1998, p.47) and guided interviews. The research team prepared a semi-standardized set of questions that would take about three quarters of the interview time and the remainder of the scheduled time was used to revisit issues that had arisen during the more structured questioning, by referring to the question topic guide. The interviewer's technique was based on the styles described by Fontana and Frey (1998, pp.52-53) as "balanced rapport" and "interested listening", meaning that a casual yet impersonal attitude that neither evaluated nor judged the interviewees responses was maintained.

An assurance that responses would be kept confidential may have contributed to the candid nature of responses. To ensure that it was not possible for individuals or definable groups to be identified by the published data, identification numbers were allocated to each interviewee, which were used for report analysis rather than names. Names with matching identification numbers were kept in a separate database table and were kept strictly confidential, available only to the researchers.

The actual questions used in the interviews were primarily designed to identify how closely each interviewee aligned to Markus' theory of knowledge re-use, and were segmented to achieve various objectives linked to her taxonomy. In attempting to identify how closely interviewee's responses compared with Markus' taxonomy of knowledge re-use there was a need to match characteristics of the employee with their knowledge re-use practices and the interviews therefore required to,

- Capture the demographics of employees, their experiences and work backgrounds
- Identify both the knowledge repositories used and the different types of knowledge re-use situations,

that included questions designed to identify

- Their purposes of knowledge reuse
- What users need to know, know and don't know
- Challenges re-users experience (and strategies used) when defining a search question
- Location of experts or knowledge expertise
- How experts or expertise was selected
- How the knowledge was applied
- Their recommendations for promoting successful reuse

Some examples of the actual types of questions asked were,

- Where do you acquire new knowledge that others have generated?
- How do you get advice about how to handle a particularly challenging or unusual situation that is new to your team?
- Do you store context information (i.e. metadata) with all repositories to facilitate reuse?
- Would you normally (within a team) keep good records about what you did as a by-product of the work?
- Do you have suitable criteria for judging the quality of experts/expertise?

In testing the validity of Markus model using the questionnaire developed for this purpose, it was thought appropriate to investigate other variables relating to our wider study objectives.

4. Literature Review

A considerable amount of literature is now available relating to principles of knowledge management, yet there appears still, to be relatively little relating to the application of those principles. The literature selected relates specifically to the subject of the effects of informal networks on formal knowledge management strategies and covers three key areas, stakeholders, knowledge requirements and the nature of informal networks.

4.1 Stakeholders

For the purposes of examining knowledge dynamics within an organisation it is important to understand the roles and interactions played by each of the types referred to by Frame (1999), in contributing to competence; the individual, the team and the organisation.

The Individual

The traditional and popular view is that it is the individuals within organisations, and not the organisations themselves that learn, (Weick 1978 , Simon 1976). Although new knowledge is developed by individuals, organisations do play a critical role in articulating and amplifying that knowledge, (Nonaka 1994).

The role that individual-level processes play in organisational learning is examined by Andrews and Delahaye (2000), in terms of how knowledge inputs and outputs are mediated by individuals. Knowledge inputs are discussed in terms of the individuals' social confidence and their perception of the credibility of the knowledge source. Knowledge outputs are discussed in terms of what knowledge would be shared with whom, determined by the perceived trustworthiness of the recipient. The term "psychosocial filter" is used to describe the cluster of factors that influence knowledge sharing processes, and is described as working at the 'micro-level'.

The Team

The literature is increasingly discussing the use of "teams" and "communities" according to Ferrán-Urdaneta (1999), who discuss the differences between these two types of group. From an organisational learning perspective Andrews and Delahaye (2000) also add the group level to that of the individual and the organisation. We may, for the purpose of this study, define a team (or community) simply as more than one individual collaborating together. It might however be more contentious to suggest that for knowledge sharing purposes a team need not necessarily be part of the same organisation.

The Organisation

Achieving any quality product or service requires that knowledge workers share data, information and experiences, and in order to optimize knowledge sharing, as well as having a supportive culture an organisation must possess a suitable infrastructure. (Gross 2001).

Successful knowledge sharing practices according to Dixon (2000), requires a complete solution that not merely provides access to information technology and repositories. Because of the high cost of establishing effective knowledge sharing strategies the organisation must pay careful attention to

- The design of incentives for contributing to and using repositories
- The roles of intermediaries in developing and maintaining repositories in order to facilitate the process.

Formal organisation charts have little relevance to the true sources of power in the high-value enterprise, according to Reich (1991), "Power depends not on formal authority or rank, (as it did in the high-volume enterprise), but on the capacity to add value to enterprise webs".

4.2 Knowledge Required

According to Chan (1999) and Chan & Rosemann (2000), ES implementations require a wide range of knowledge including, project knowledge, technical knowledge, product knowledge, business knowledge and company-specific knowledge.

In explaining the knowledge required in a project Frame (1999), suggests a three stage approach by asking,

- What skills should we possess in order to do the job?
- Do we have them?
- How can we acquire them?

Where an organisation believes that it does not have the requisite expertise, it will seek knowledge-based resources from third-party providers such as consulting firms (knowledge vendors), which act in the capacity of implementation partner, (Timbrell and Gable 2001).

4.3 Informal Networks

Failing to take account of the powerful internal forces within organisations, according to Cook (1999), is a fundamental weakness in many knowledge management implementation processes. Insights can be gained into what Levinson (1999) describes as "mutual utility" and by Capron and Kuiper (1998) as a "shared spirit of community"

Informal networks are important devices for promoting communication within and between organisations which are viewed by Conway (2002) as structures that supplement, complement and add value to the formal organisation. In sometimes bypassing the formal organisation's system of communication Rachman and Mescon (1985) suggest that such structures strongly influence the distribution of power and while the formal organisation spells out who should have power, it is the informal organisation that sometimes reveals who actually has it.

Whereas formal organisational structures are able to handle easily anticipated problems, when unexpected problems arise, Krackhardt and Hanson (1993) suggest that an informal organisation kicks in. The phenomenon is also discussed by Bhatt (2002), who states that employees often form their own informal communities of expertise from where they can get necessary pieces of knowledge. Often, in the type of work that 'symbolic analysts' perform, frequent and informal conversations are used, as neither problem nor solutions can be defined in advance, (Reich 1991). Informal organisations are described by Krackhardt and Hanson (1993) as being highly adaptive, moving diagonally and elliptically, skipping entire functions to get work done, and by Stacey (1996) as the mechanism that people employ to deal with the highly complex, the ambiguous, the unpredictable, the inconsistent, the conflicting, the frustrating, and the alienating.

It should be emphasised that the informal structures that are being referred to in this paper do not directly relate to the informal transfers of tacit knowledge described by Nonaka (1994) occurring between employees, (although this type of informal transfer might still occur within an informal structure). Informal networks are relationships developed between individuals independently of any formal structure (although an

informal structure might occur within a formal structure), and are not the chance meetings at the water cooler or cafeteria that Davenport and Prusak (1998) discuss, but carefully conceived personal "networks of knowing", built up over time and used as complementary knowledge sharing alternatives to an organisation's formal strategy. In describing 'the network of social interactions that are not specified by the formal organisation, but that develop on a personal level among workers in a company', Wells and Spinks (1994) use the term "grapevine". The ubiquitous grapevine, they describe as humanly permanent, extremely fast, highly accurate, providing qualified answers and usually bad news, although obviously also an existing communication network, is also, like the chance meetings at the water cooler not directly related to the informal structures discussed here, but belonging to what might be more accurately described as an unofficial structure.

There are according to BizMove.com (2002, p.2) three basic channels of organisational communication,

> "*Formal* – Communication within the formal organisational structure that transmits goals, policies, procedures and directions.
>
> *Informal* – The communication outside the formal organisational structure that fills the organisational gaps, maintains the linkages, and handles the one-time situations.
>
> *Unofficial* – The interpersonal communication within, (or among), the social structure of the organisation that serves as a vehicle for casual interpersonal exchanges, and transmittal of unofficial communications."

In using the term 'quasi-formal' structure, an additional level between the formal and informal structures that is sanctioned by the organisation is identified by Schoonhoven and Jelinek (1990).

Although these communication channels operate seamlessly in most organisations and each is likely to affect the impact of the others it is the interaction between the informal and formal channels that is to be examined in this paper

Factors Influencing the Prominence of Informal Networks

The prominence of informal organisations, according to Stacey (1996) is caused by two factors,

- The subordination of individuality related to the alienating and de-motivating nature of bureaucracies
- The inability of bureaucracies to handle environmental ambiguity and uncertainty.

In exploring attitudes towards organisational versus individual ownership of information, Jarvenpaa and Staples (2001) discuss the propensity to share information/knowledge in terms of organisational culture. Culture, according to McDermott and O'Dell (2001) is often seen as a key inhibitor of effective knowledge sharing.

Organisational Culture

A wide body of evidence exists to indicate that organisational or corporate culture is critical to the success of most, if not all ES implementations. There are four hypothesized categories of organisational obstacles in information systems development, according to Jin (1993) namely,

- Bureaucratic complexity,
- Personality conflict,
- Technical complexity and
- Acute resource scarcity.

The effect that organisational culture has on knowledge management strategies is being increasingly recognised as a major barrier to leveraging intellectual assets according to

De Long and Fahey (2000), who consider four ways in which culture influences the behaviour central to knowledge creation, sharing and use,

- Culture, and particularly subcultures, shape assumptions about what knowledge is and which knowledge is worth managing.
- Culture defines the relationships between individual and organisational knowledge, determining who is expected to control specific knowledge, as well as who must share it and who can hoard it.
- Culture creates the context for social interaction that determines how knowledge will be used in particular situations.
- Culture shapes the processes by which new knowledge, with its accompanying uncertainties, is created, legitimated and distributed in organisations

Certain types of identifiable culture have the potential to affect an ERP environment, (Stewart, Milford, Jewels, Hunter and Hunter 2000). Although these culture states can affect different types of organisations in different ways and each can be more prevalent in certain types of organisation, they may best be identified by comparing how closely the organisation meets the following principles,

- Genuine user empowerment that produces internal as well as external commitment.
- Acceptance of "risk-taking" as a necessary factor in planning, which does not punish failure, and the move away from non-competitive or even anti-competitive cultures to true market competitive cultures.

Bliss (1999) reminds us that a desired organisation culture and an actual organisation culture are often worlds apart, and it is important to understand how each are playing out in the workplace. He states that it is imperative to know the company culture and assess new employee's belief systems against the organisational culture.

Employee Empowerment and Risk Orientation

Decision-making processes in organisations, are according to Allison (1971), performed by individuals from three different perspectives,

- The rational actor model, where individuals weigh up alternatives and select the one that makes most sense to them.
- The operational procedures model, where the decision making process is driven principally by the organisations standard operating procedures (SOP's).
- The political model where perceived self-interest dominates the decision making process.

The objective of empowerment is to assure individual member success within the framework of the organisation's mission, vision, and strategy, (Galbraith, Lawler and Associates 1993). If this is to be accomplished, the organisational environment must support the following three practices:

- Freedom to act
- Commitment by individual members of their responsibility for the consequences of their own behaviour.
- Collaboration by simultaneous involvement of individual members in the process of their own and others success.

Empowerment however remains very much like the emperor's new clothes: it is praised loudly in public, but privately we ask ourselves why we cannot see it. True empowerment results in internal as well as external commitment by employees yet despite all the rhetoric and the change programs, empowerment Argyris (1998) believes, is still mostly an illusion.

Managerial behaviour is often directed toward preventing employees from making mistakes (Pope 1996). Organisations use administrative systems (rules and roles) to reduce the probability of human error, and to reduce the variability of human behaviour. Such systems now typically remove an individual's ability to make decisions in a work situation. This philosophical orientation has the outcome of preventing failure and provides a psychological safety net to individuals in the organisation. Specifically, organisations act to restrict the necessity for individual decisions by:

- pre-defining multiple independent tasks;
- pre-determining organisational decision points; and
- pre-assigning scarce or valuable resources.

To successfully manage complex projects, Breen (1995) suggests that an initiative must be taken in educating, actually encouraging and empowering project teams to cut across organisational barriers, allowing organisations to overcome natural barriers to successful project management.

5. Findings

The small sample size of 28, further reduced by the unusability of 2 of the interviews obviously limits the validity of the findings. On the other hand, open access to a whole department, from general manager through to the most junior staff member, provided an opportunity to snapshot the activities of individuals, teams and the organisation in which they worked, more holistically than may have been possible with a larger but non-universal sample.

5.1 Knowledge Required

Based partly on its experiences with the original implementation partner, for its forthcoming upgrade, the ASP had decided to "go it alone", choosing to employ just a few key individual contractors to work with its internal staff. The GM believed that his organisation was already experienced enough in all the identified knowledge areas to execute the upgrade without the assistance of an implementation partner. The key contractors consisted mainly of individuals who had worked for the organisation at the time of the original implementation but had since left to pursue alternative employment.

5.2 Informal Networks

It was apparent from the responses in the interviews that knowledge sharing was occurring in at least two identifiable modes. Management had introduced a range of formal knowledge sharing initiatives that could be considered as a top-down approach. It was however clearly evident that employees' were using an alternative method of knowledge sharing to the one created by management. Individuals had formed their own personal networks and had developed their own "communities of interest" in what could be considered as an informal bottom-up approach.

What was particularly interesting in our findings was that although management executives themselves had indicated that they were using their own informal knowledge sharing structures, they still did not fully appreciate that similar practices operated extensively at other levels within their organisation. Although recognising the existence of the "grapevine" type social network, management had little idea of the extent and frequency of use of the same type of informal networks that they themselves were using and had had no direct role in either creating or nurturing them.

The following examples were typical of the responses:

"Who I use (as experts) and the people on the formal experts list are different"

"I network with people that I have worked with in the past"

"I use my personal network of contacts if I can't readily find appropriate documentation"

"I have an extensive personal collection of books that I use"

Factors Influencing the Prominence of Informal Networks

Although evidence of all four categories of organisational obstacle referred to by Jin (1993) was identified in the research, it appeared that when confronted with these obstacles employees would merely find an alternative way to reach their objectives. There was a general feeling that these organisational obstacles, although considered annoying, could be bypassed, whenever necessary. One of the common methods employees used to circumvent organisational obstacles was to marshal their own informal structures.

However the barriers that De Long and Fahey (2000) refer to are not as easily bypassed. These are the ones that appear able to be controlled only by organisational initiatives. The barriers referred to by Stewart et al. (2000) are either similarly organisationally controlled or are deeply personalised in the individual.

System security appeared to be an issue that was affecting knowledge sharing activities. One contractor admitted,

"I don't know of any contractors that have had direct access to the knowledge database"

while one relatively new full time employee commented that,

"I wasn't even told about the existence of the knowledge data base"

There was a policy that employees should only be given access to the specific areas that they were working in, and subsequently lessons learnt from one part of the system were seldom able to be formally shared with those that did not have access to that part. Remarks such as,

"No-one would be interested in what I am doing"

"I only bother formally documenting for myself because I am the only person who would need to use this type of information"

indicated a general under-utilisation of formal knowledge sharing practices.

Formal Knowledge Management Strategies

The importance of formal team building and creating a sense of shared purpose as described by Senge (1992) was clearly evident to management as they had embarked on a range of formal initiatives to harness its potential.

By his introduction of such initiatives as a free text knowledge database and the championing of specific knowledge transfer sessions the GM appeared typical of the sort of individual that Skyrme (1999) and Health Canada (2000) refer to when they suggest that the appointment of a senior executive responsible for knowledge initiatives appeared to be a prerequisite to a successful KM strategy.

Yet the formal knowledge transfer sessions were not well regarded with comments such as,

"Skill transfer sessions were not popular, they were seen as a waste of time and irrelevant"

Although it was evident that management understood the rationale for these sessions it was uncertain whether there was an understanding by employees of their raison d'être. Even though some individuals clearly supported the concept of formally sharing knowledge the knowledge transfer sessions were not considered to be the most appropriate process. Furthermore, although management had allocated time to attend the

knowledge transfer sessions they had not formally allocated equivalent times for employees to update the free text database.

The term 'key people' who, as one interviewee suggested,

" ..... make themselves visible in all projects" ,

was frequently used. It was implied that these so-called key people were in fact in such great demand, and their workloads at critical times so heavy that they could clearly not find the time to properly document what they were doing or share the lessons learnt with others.

It was also made evident that these people were not being retained by the organisation with comments such as,

"Although management assumed that the implementation partner had transferred knowledge, most people who had actually benefited from this knowledge transfer have moved on" (left the organisation)

"Most of the 'real' experts have moved on"

"We have allowed our own experts and expertise to slip through our hands, like sand through our fingers, because their importance was not valued"

What was made unambiguously clear in the interviews was that the knowledge sharing that was intended to take place with the original implementation partner (IP) did not occur properly. Comments such as,

"(The IP) knew very little regarding SAP and the Government's business rules".

"(The IP) kept public servants at 'arm's length' or possibly didn't have the required knowledge themselves".

indicated a lack of trust and confidence in the IP. It was however never ascertained what contractual arrangements the IP may have entered into with the ASP regarding knowledge sharing activities.

6. Conclusions

There was a clear indication that informal knowledge sharing was taking place throughout the organisation and also that it was the preferred strategy. No pattern was evident to suggest that the knowledge sharing structures were anything but randomly user formed although many, but not all, of the individuals who were most actively involved in informal knowledge sharing groups were those people who had been with the organisation, (or ones similar to it), the longest.

It was evident that many individuals within these informal structures maintained their links, after job changes, or even after leaving the organisation in which the original structure was formed. This would suggest that the organisation itself may have little impact on how informal knowledge sharing structures are formed or operate.

There was evidence to suggest that wherever there was a perceived failure to provide a process for adequate individual or organisational learning, many individuals automatically engaged in alternative strategies to ensure that they would be able to do their work. One of the main strategies used was that of engaging their informal networks. The use of existing "user controlled" knowledge sharing networks appeared to be affecting the proper utilisation of management's formally introduced knowledge management strategies.

Existing organisational knowledge sharing practices controlled by users and not by management may need to be taken into consideration prior to the introduction of any formal knowledge management strategy. It would seem appropriate therefore for implementers of formal knowledge management strategies to investigate the rationale for and prominence of, existing informal knowledge sharing practices within an organisation prior to introducing alternative knowledge sharing processes. It would appear that to gain

acceptance by users, any additional knowledge sharing strategy might need to be at least as relevant and effective as the one already being used.

Further research relating to knowledge sharing is currently being undertaken within a larger IT organisation in the private sector. A comparison of differences between the effects of informal knowledge sharing on formal knowledge strategies in public and private sector organisations may provide additional evidence on how to increase the likelihood of success of any formally introduced knowledge management strategy.

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