

# Utilising an Intranet for Knowledge-sharing: Survey of a Selected Organisation in South Africa

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**Abstract**— In organisations in South Africa there is increasing use of information technology (IT) for internal communication, dissemination, collaboration and knowledge-sharing. In organisations, IT plays an important role to give effect to the sharing of knowledge. An Intranet has an enabling role to support knowledge-sharing in an organisation. The question arises: To what extent does an organisation's existing Intranet enable knowledge-sharing? This question is explored by selection of a large organisation (eThekweni Municipality, City of Durban, South Africa) as the field of application. Derived from a mixed-methods research approach, the results of a survey of eThekweni Municipality's Intranet are presented. In order to enable increased knowledge-sharing within the organisation, some suggestions for improvement to the Intranet are made.

**Keywords**— Intranet, Knowledge, Knowledge-sharing, Knowledge Management

## I. INTRODUCTION

In organisations in South Africa there is increasing use of information technology (IT) for internal communication, dissemination, collaboration and knowledge-sharing. Knowledge-sharing is an activity through which knowledge is exchanged in an organisation. Given that advances in IT have made it easier to acquire, store and disseminate knowledge than ever before, many organisations are employing IT to facilitate sharing and integration of knowledge [18]. One IT tool to enable knowledge-sharing in an organisation, is an Intranet. Technology tools for knowledge-sharing include Intranets [1]. The exchange of information among organisational employees is a vital component of the Knowledge Management process [8]. IT is available to support and enable such exchanges across distance and time barriers. Knowledge regarding user browsing behaviour on an Intranet may shed light on general Intranet spaces and assist organisations in making more informed decisions of Intranet resources [15].

Knowledge-sharing activities are generally supported by knowledge management (KM) systems. At any point in time and in any part of a given organisation, individuals and groups may be engaged in several different aspects and processes of KM [1]. These processes include creating, preserving, using and sharing knowledge [37]. Organisations often face difficulties in encouraging their employees to use a system to share their ideas [8]. However, an Intranet has an enabling role to support knowledge-sharing within an organisation. As Robertson [26] notes there is the potential to make Intranets a

valuable tool to support KM initiatives. Intranet is an application of technology within an organisation for the purpose of information dissemination, communication, integration and collaboration [33]. There is thus a need to manage an Intranet in an efficient and transparent way making it easy for users to access and make use of information [28].

eThekweni Municipality in the City of Durban, South Africa is “committed to using Information Technology to make a real difference ... municipal decisions have to be based on sound research and information management in order to ensure [service] delivery” [13]. KM initiatives in organisations are increasingly becoming important as organisations are making significant IT investments in deploying KM systems [15]. Van der Walt *et al.* [36] suggest the importance of evaluating an organisation's Intranet to ascertain its contribution to potential knowledge-sharing in an organisation. There is thus a need to evaluate existing processes (e.g. benefits, usability and content areas of an Intranet) to ensure that they enable an organisation's knowledge-sharing processes towards its KM strategy. Such evaluation is the objective of this study.

This paper is organised as follows: an overview of knowledge, knowledge-sharing, KM and the Intranet literature is presented. The research methodology (including the research setting) are then described. Thereafter the results, analysis and discussion are presented. Finally a conclusion is given.

## II. LITERATURE REVIEW

In this section a review of knowledge, knowledge-sharing, knowledge management and the Intranet literature are given.

### A. Knowledge

The question of defining knowledge has occupied the minds of philosophers since the classical Greek era and has led to many epistemological debates [1]. Given the differing views of knowledge (e.g. a state of mind, an object, a process, a condition of having access to information or a capability), Carlsson *et al.* [9] suggest that this leads to different perceptions of KM. A common element in the discussion and definition of the knowledge debate is that knowledge takes two forms: *tacit* and *explicit* knowledge. One of the most notable classifications is Nonaka's [23] framework of tacit-explicit knowledge. IT can be employed to convert tacit knowledge into an explicit form [24]. An Intranet can integrate the knowledge, know-how and experience together which are hidden in the minds of all employees in an organisation [40].

IT can be used to capture knowledge, categorise, search, subscribe relevant content or information and present it in more meaningful formats across multiple contexts of use [39]. The Intranet has also been developed to support organisational knowledge-sharing communications. Furthermore the development of IT during the past decade has not only facilitated the ease of sharing of information and knowledge but also contributed to the leap of creation of information and knowledge [27].

### B. Knowledge-sharing

Knowledge-sharing is a key component of KM systems [1]. However, knowledge-sharing is not well-defined in the literature partially because this research area has not been very active [6]. Dixon [12] indicates that both tacit and explicit knowledge require different processes for knowledge-sharing. Lee [22] suggests that knowledge-sharing refers to activities of transferring or disseminating knowledge from one person, group, or organization to another. Bartol and Srivastava [5] define knowledge-sharing as individuals sharing organisational relevant information, ideas, suggestions and expertise with one another. From these definitions, it is evident that knowledge in an organisation can be explicit or tacit.

Bartol and Srivastava [5] identify four major mechanisms for individuals to share their knowledge in an organisation: (1) contribution of knowledge to organisational databases; (2) sharing knowledge in formal interactions within or across teams or work units; (3) sharing knowledge in informal interactions within individuals; and (4) sharing knowledge within communities of practice. It is contended that in all cases IT (and specifically the Intranet) can enable such knowledge-sharing mechanisms in an organisation.

The IT infrastructure encompasses the technology tools supporting the knowledge-sharing effort [6]. Smith [31] draws a clear relationship between IT and knowledge-sharing. IT, such as an Intranet, makes possible the 'connections' that enable knowledge-sharing. The Intranet can therefore be viewed as an enabler of knowledge-sharing in an organisation.

### C. Knowledge Management

Current theories and practices indicate that knowledge (and the management thereof) may prove useful if the scope and utility of knowledge is aligned with an organisation's KM strategy.

Precisely what is KM? Kwalek [20] suggests that the literature on KM is disjointed and disconnected. Pfeffer and Sutton [25] indicate that KM tends to treat knowledge as a tangible thing, as a stock or quantity, and therefore separates knowledge as some *thing* from the use of that thing. It is contended that KM and specifically knowledge enable better decision-making that in time lead to successful outcomes for the organisation. KM is thus concerned with the exploitation and development of knowledge for furthering an organisation's objective.

From a review of the literature and for the purposes of this article, the following definition of KM will be adopted: KM

entails all those processes associated with the identification, sharing and creation of knowledge [17]. This requires the enabling role of IT to facilitate the sharing of knowledge in an organisation. The basic role of IT in KM can be briefly summarised in functional terms into the areas of (1) facilitating communication; (2) enabling collaboration; and (3) collecting, storing, analysing, disseminating and updating information [7]. Alavi and Leidner [1] observe that the majority of KM initiatives involve at least in part, if not to a significant degree, information technology. For the purpose of this article, IT refers to the Intranet.

### D. Intranet

An Intranet (or internal Web) is a network designed to serve the internal informational needs of an organisation (e.g. a municipality) using Internet concepts and tools [35] [4]. An Intranet offers a powerful tool for communication and collaboration, presenting data and information and the means that creates and shares knowledge, in one easily accessible place [29]. The Intranet term first appeared in *Digital News & Review* (19<sup>th</sup> April, 1995) in an article by Stephen Lawton [20]. While KM must focus on supporting the sharing of knowledge between employees in an organisation, this cannot be done undertaken in isolation. The Intranet can be seen as providing a foundation for KM initiatives [26].

Tiwana and Ramesh [34] suggest that the Intranet should be seen as integral to an organisation's KM system and should therefore be designed and tailored to enhance an organisation's knowledge-sharing activities. This rationale raises the question whether an organisation's existing Intranet facilitates knowledge-sharing and KM processes. The exploration of this question creates an opportunity for research within a field of application that seems particularly appealing: a metropolitan municipality – eThekweni Municipality in the City of Durban, South Africa. The appropriate context and appeal arose from the fact that the author, as an IT Project Manager, is situated within the organisation's Information Services Department.

The adoption of the Intranet represents an change in the way organisations manage their information and knowledge [2]. Brelade and Harman [7] suggest Intranets can be used on a 'push' basis, where information is presented to employees, and on a 'pull' basis, where employees may seek out and retrieve information for themselves. For example, the 'pull' basis enables employees to link to relevant information at a time which suits them rather from being deluged by an overload of eMail transactions. These two mechanisms are described more fully as follows:

- 'Push' technology is used when it is important that certain material is presented to employees at their workstation. It ensures that no other function takes place until all the information is correctly accessed; and
- 'Pull' technology allows employees to decide when to pull down information from the Intranet that they wish to view. The views of the end users are more important than in most other studies [30].

To provide a seamless experience between viewing pages on the Web and viewing information on an Intranet, access is usually via a standard Internet browser. Standards-compliant Web browsers are available in the market-place which enable a cross-platform capability of accessing and viewing pages on an Intranet. Microsoft Internet Explorer is the commonly used Internet browser in eThekwini Municipality.

### III. RESEARCH METHODOLOGY

All research is different. Hence disparate approaches are taken and shown in dissimilar research. For example, in research undertaken by Wickramasinghe *et al.* [38] to examine the role of Intranet technology as an enabler of KM and a supporter of knowledge work (in two public sector hospitals), longitudinal exploratory research methods and the case study method of research were selected as the most suitable method of research for that study. Tashakkori and Teddlie [32] suggest that an important alternative is mixed methods research. Given the objective of the author's study, a mixed methods research approach was considered as the most suitable method for this research.

Every major organisational process should be regularly evaluated and the evaluation should be purposeful and completed [11]. One method of evaluation is a survey. Debowski [11] suggests that survey "evaluations take a number of forms ... and may be conducted via telephone, email our mailouts" and "... data should be gathered by electronic means ..." and this "... is an increasingly useful quantitative data collection strategy, as it is non-invasive and low cost". In this study, the evaluation selected by the author was eMail since it is non-invasive and the purpose and the benefits of an eMail survey justified the cost. For this research, a mixed-methods research approach as outlined by Cresswell [10] was adopted:

- Knowledge claim – pragmatism;
- Strategy of inquiry – transformative procedures; and
- Methods of data collection and analysis – secondary data and analysis were used. The data for eThekwini Municipality's Intranet online survey was collected by an independent research company, Ask Africa. The rationale for using secondary data was that (1) it was considered relevant to the study; and (2) there were savings of time and money by using available data rather than collecting original data.

#### A. Research setting

eThekwini Municipality comprises six clusters/service units (Office of the City Manager, Treasury, Governance, Sustainable Development and City Enterprises, Corporate and Human Resources and Health, Safety and Social Services) and employs approximately 18,000 employees. The Information Services Department is located in the Office of the City Manager.

eThekwini Municipality has some 6,000 networked desktop devices (personal computers, thin clients and laptops) and electronic communication (ie. eMail) takes place via Novell's GroupWise (Client version 7.03). A total of 7,573 GroupWise

accounts exist in eThekwini Municipality. There are 2,147 Internet accounts utilising either Microsoft Internet Explorer or Netscape Navigator Web browsers.

Arising from eThekwini Municipality's 2020 vision, a Long Term Development Framework was developed – see website [www.durban.gov.za](http://www.durban.gov.za). The Municipal Systems Act No. 132 of 2000 requires all municipalities to develop Integrated Development Plans (IDPs). Eight specific outcomes were formulated for the IDP to achieve eThekwini Municipality's vision. One of the specific outcomes is Plan Five (Empowering our Citizens) and its goal is to "... enhance skills, to provide easily accessible information and to ensure a city committed to an innovation approach to governance and service delivery ...". Within Plan Five, are two strategic focus areas (SFAs): SFA1 and SFA2. Program 7 of SFA2 is stated as follows:

"Improve knowledge management in the Municipality

The retention of institutional knowledge is a key factor in the development of an organisation and this long-term programme intends to increase the general awareness of the meaning and value of knowledge management within the municipality" [14].

During 2009, eThekwini Municipality initiated the formation of the first municipal-driven practitioner-based Institute of Learning. Its function forms part of eThekwini Municipality's KM strategy to position the City of Durban as a Centre of Learning – see website [www.mile.org.za](http://www.mile.org.za). From this website, one of the strategic objectives of the Municipal Institute of Learning (MILE) is stated as follows:

"To co-ordinate the internal knowledge management agenda within the eThekwini Municipality".

#### B. Research method

On 13 June 2006 eThekwini Municipality employees were invited – by eMail invitation from the Communications Department – to participate in an Intranet online survey. The aim of the survey was to identify areas where the Intranet may require improvement and to allow positive user experiences to be obtained. eThekwini Municipality employees who expressed an interest in participating in this survey received an online questionnaire, which was eMailed to them by Ask Africa's research partner, MicroIces. Data collation was handled by Ask Africa. The data used in this research was sourced from the eThekwini Municipality Intranet Research Report (July 2006), which was compiled by Ask Africa. The eThekwini Municipality Intranet Research Report states that a "qualitative and quantitative methodological approach was utilised to gather all relevant data from employees" [3]. The reported findings inform this study.

During 2006, the following were undertaken by Ask Africa:

- Intranet focus group and user testing session (on 1<sup>st</sup> June 2006); and
- Intranet online survey (during the period 26<sup>th</sup> June – 21<sup>st</sup> July 2006).

The author was invited by eThekwini Municipality's Communications Department to participate in the Intranet

focus group session and user testing session and the Intranet online survey. The author's role during this Intranet survey conducted by Ask Africa was as follows:

- Intranet focus group session (e.g. to identify consistencies and differences in behaviour, perceptions and attitudes, elicit potential sources of confusion from users' perspectives, etc) and user testing session (e.g. how well a user accomplished the goals set out using the Intranet, the duration to complete pre-set tasks, etc) – the author participated; and
- Intranet online survey – the author did **not** participate.

In the Intranet online survey, from the 150 eMails sent to eThekweni Municipality employees, 39 responses were received. This represents 26 per cent of the total number of employees who originally expressed interest in participating in the survey. Debowski [11] suggests that response "rates as low as 20% may still provide some sense of the issues".

#### IV. RESULTS, ANALYSIS AND DISCUSSION

Extracted from the eThekweni Municipality Intranet Research Report [3], the results are now analysed and discussed.

From the 39 responses received during the survey, the Intranet user experience classification is reflected in Table 1.

TABLE 1

Intranet user experience Classification

(Adapted from eThekweni Municipality Intranet Research Report compiled by Ask Africa [3])

Classification	Tally and Percentage (%) of Respondents (N=39)	
	Tally	Percentage
Beginner user	5	13%
Intermediate user	25	64%
Advanced user	9	23%

From Table 1, the majority of respondents (34) were non-beginner Intranet users. This is important since Intermediate and Advanced users comprised 87% of the survey sample and these users could therefore give meaningful perspectives on the benefit, usability and content of the Intranet.

The ranking in ascending order of Agree/Strongly Agree responses to benefits the Intranet holds is reflected in Table 2.

From Table 2, the greatest perceived benefit that the Intranet holds for employees using it is as a platform to share and access inter-departmental (ie. between clusters/service units) information. Bartol and Srivastava [5] identified the sharing of knowledge across work units as a major mechanism for employees to share their knowledge in an organisation. This knowledge-sharing may lead to increased employee productivity. The Intranet can also be seen as providing a foundation for KM initiatives in eThekweni Municipality. The second highest reported benefit was as an effective way to conduct organisational interaction (e.g. virtual maps, chats, eMail transactions). Robertson [26] suggests that interpersonal communication must be recognised as critical within organisations. Sayed *et al.* [29] note that knowledge-sharing can be greatly facilitated by the use of the Intranet in terms of

organisational communication (e.g. virtual meetings, chats, eMail transactions, conferencing, official memoranda, etc).

The third highest reported benefit was as the quickest focal point to disseminate and get organisational communication. The Intranet facilitates internal communication and knowledge-sharing [40]. Van der Walt *et al.* [36] emphasise the importance of evaluating an organisation's Intranet to ascertain its contribution to potential knowledge-sharing in an organisation.

The lowest reported benefit was using the Intranet for employees to perform daily work functions. This tends to suggest a 'selective' and limited range use of the Intranet for daily work functions. Géczy *et al.* [15] report that in their study, employees "had focused interests and explored diminutive range of Intranet resources".

TABLE 2

Ranking in ascending Order of Agree/Strongly Agree Responses to Benefits the Intranet Holds

(Adapted from eThekweni Municipality Intranet Research Report compiled by Ask Africa [3])

Statement	Percentage (%) of Respondents (N=19)		
	Agree/Strongly Agree	Neutral	Disagree
Useful platform to share and access inter-departmental information	87%	9%	4%
The Intranet is an effective way to conduct organisational interaction	81%	14%	5%
Quickest focal point to disseminate and get organisational communication	77%	14%	9%
Enhances departmental communication	72%	5%	24%
Helps the organisation improve its service to customers	65%	15%	20%
Helps with productivity	63%	14%	23%
Using the Intranet is necessary for employees to perform daily work functions	50%	5%	45%

The ranking in ascending order of Agree/Strongly Agree responses to the usability of the Intranet is reflected in Table 3.

From Table 3, it appears that navigation improvements are required. Furthermore, while respondents surveyed agreed that they are able to navigate the Intranet website quickly and easily, they felt that there was no clear direction provided. This suggests the navigation needs to be improved for Beginner users so that they have a better indication of where to go to find the information they are seeking [3]. The Intranet can then be viewed as an enabler of knowledge-sharing in eThekweni Municipality. There is a need for the Intranet to become a dynamic and living environment for knowledge-based activities [26]. A revised navigational structure will then have better rigour and structure and should have a positive impact on employees. Debowski [11] cautions that the reason that many Intranets are less useful than they might be – they lack rigour and structure.

TABLE 3

Ranking in ascending order of Agree/Strongly Agree responses to the usability of the Intranet

(Adapted from eThekweni Municipality Intranet Research Report compiled by Ask Africa [3])

Statement	Percentage (%) of Respondents (N=20)		
	Agree/Strongly Agree	Neutral	Disagree
The drop down menus are easy to use	70%	20%	10%
Overall I am happy with the functionality/usability of the site	67%	10%	24%
I am happy with the site labeling	62%	19%	19%
I am happy with the speed of the site	62%	14%	24%
I am able to navigate quickly and easily	50%	20%	30%
The site is self-explanatory – it indicates where I need to go to find the information I am looking for	43%	29%	29%

The ranking in ascending order of Agree/Strongly Agree responses to the content of the Intranet is reflected in Table 4.

TABLE 4

Ranking in ascending order of Agree/Strongly Agree responses to the content of the Intranet

(Adapted from eThekweni Municipality Intranet Research Report compiled by Ask Africa [3])

Statement	Percentage (%) of Respondents (N=18)		
	Agree/Strongly Agree	Neutral	Disagree
The information and content on the website is relevant	63%	11%	26%
The information on the website is reliable	61%	17%	22%
Overall I am happy with the quality of content on the website	57%	14%	29%
I am happy with the quality of the search process	57%	14%	33%
The content on the site is regularly updated	53%	11%	38%
There is a high likelihood of finding information I am looking for even though I do not know where to find it	52%	10%	38%

From Table 4, it appears that respondents surveyed felt that the information on the Intranet is relevant and reliable. However, improvements in the updating of information and the quality of information-seeking are required. This suggests that while the information on the Intranet website is generally seen to be reliable, the regular updating of content and finding information that an employee is looking for needs to be improved [3]. For an Intranet to be of 'real value' to employees, the contents should be relevant, reliable, accurate, informative and up-to-date. However, Rudman [28] cautions that for content ownership, where there is no clear owner, this can create issues for the organisation. In order to facilitate knowledge-sharing, employees need to be able to share organisational relevant information with one another. By

finding the information, this should result in the creation of knowledge and as a growing spiral as knowledge moves among fellow employees, groups of employees in the different organisational levels in eThekweni Municipality.

An important use of most Intranets is to find documents that 'point' to employees who have knowledge and expertise. Robertson [26] suggests that knowledge-sharing should facilitate staff people contacting each other since in many organisations this is the most-used aspect of an Intranet, as is accessed by the majority of staff upwards of several times per day. Intranet satisfaction is directly influenced by having the right content, features and design factors [19]. It is contended that by focusing on the creation of an effective Intranet, knowledge-sharing in an organisation can be enabled. There is thus a clear relationship between knowledge-sharing and IT. Given the development of IT (and specifically the Intranet), it is envisaged that the creation of information and knowledge in eThekweni Municipality will be catalysed.

From these survey results, there appears to be areas for improvement in the benefits, usability and content areas that the Intranet currently holds. By addressing the design and tailoring of these areas, this should lead to an improvement in enhancing eThekweni Municipality's knowledge-sharing activities. There should also be improved collaboration and communication benefit to eThekweni Municipality.

An Intranet may be classified as a KM application since it is capable of distributing knowledge. An Intranet is seen as a tool for the more efficient sharing and creation of knowledge within an organisation, using both 'push' and 'pull' technologies. However, in the case of eThekweni Municipality's Intranet, it appears that far greater use is made of the 'pull' technology (as opposed to 'push' technology). This current trend may need to be addressed via user training so that the 'pull' technology is also enabled. Al-Gharbi and Naqvi [2] report that user training has a positive relationship with the use of the Intranet. Driven by the broader needs and specific designs identified by a combination of KM and the user-centred benefits, usability and content, an 'improved' Intranet will play a significant role to enable knowledge-sharing in eThekweni Municipality.

Some limitations of the author's research are:

- while the role of the author in the survey was stated, research findings should not be produced in such a way as to simply support the prejudices or opinions of the researcher. Since IT is a 'personal bias' of the author as an IT practitioner, it is stated so that the reader can compensate for this by focusing on the subject being researched and not the IT practitioner;
- the triangulation technique could have been improved. For example, face-to-face interviews with other eThekweni Municipality employees using the Intranet could have been conducted by the author; and
- the data used and reported was obtained from a secondary source (Ask Africa). It may have been prudent to consult the primary researchers (Ask Africa) in order to investigate the circumstances of the original data generation and processing.

The reported results nevertheless tend to suggest that there is limited knowledge-sharing and/or KM in eThekwini Municipality. The trend will need to be addressed so that KM is a planned structured approach to manage the creation, sharing, harvesting and leveraging of knowledge as an organisational asset. This will serve to promote alignment of eThekwini Municipality's Intranet towards its KM strategy.

In summary, the two major lessons learned by the organisation are:

- the limited sharing of knowledge which was previously confined to departmental silos, has only been slightly altered to include knowledge-sharing between some clusters/service units; and
- there appears to be a lack of Intranet training and this is seen as an inhibiting factor for the Intranet to be used to its full potential for facilitating knowledge-sharing.

## V. CONCLUSION

The lack of awareness of knowledge-sharing capabilities of the Intranet and the absence of strategic intent has possibly resulted in a sub-optimal utilisation of the Intranet technology as a KM tool. However, it should be noted that KM is currently still a relatively new area within the municipality. One initiative which may serve to address this area is the recently formed MILE which was established subsequent to the Intranet online survey. MILE is seen as having a co-ordinating function of eThekwini Municipality's KM agenda.

Some suggested directions for future research are:

- a comparative analysis of KM initiatives (if any) contained in the IDPs of other metropolitan municipalities in South Africa; and
- research conducted within individual user group settings which could provide greater insight into and a more quantitative analysis of Intranet-facilitated knowledge work patterns and browsing behaviours.

Information exchange and communication between employees within an organisation has become a priority for many organisations eager to optimise their internal operations and maximise the use of their IT resources, such as the Intranet. An Intranet should therefore be designed to support organisational needs so that it has an enabling role and is aligned with the practice of KM. Given eThekwini Municipality's IDP, the value of data, information and knowledge to knowledge-sharing is crucial to eThekwini Municipality. IT, with the enabling role of the Intranet, should be seen as significantly important to catalyse knowledge-sharing initiatives in eThekwini Municipality. The Intranet should be seen as a valuable tool to enable eThekwini Municipality's KM strategy.

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