A Comparison of Factors Influencing Knowledge Sharing through EKR among Sri Lankan and Singaporean Knowledge Workers

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Abstract
Knowledge sharing through Electronic Knowledge Repositories (EKR) is key to knowledge retention and reuse to ensure organisational success in a knowledge based economy. This paper attempts to make a comparison between two studies, conducted to identify the significant factors that influence knowledge sharing through EKR among Sri Lankan and Singaporean knowledge workers, in order to better understand how place and time of study, target survey group and technological progress influence knowledge sharing factors.

Knowledge sharing behaviour is examined by using a model which employs the social exchange theory (SET) to identify cost and benefit factors affecting EKR usage, and social capital theory (SCT) to account for the moderating influence of contextual factors. Ten knowledge contribution hypotheses and six knowledge seeking hypotheses formulated based on the theoretical framework were compared.

The comparison between the factors that influence knowledge sharing among Sri Lankan and Singaporean knowledge workers reveals that out of the ten knowledge contribution hypotheses studied, four hypotheses produced consistent results in both studies. Out of the six knowledge seeking hypotheses studied, four hypotheses produced consistent results in both studies. The comparison reveals that contextual factors such as place and time of study, target group influences knowledge sharing factors.

A comparison of factors influencing knowledge sharing thorough EKR among Sri Lankan and Singaporean knowledge workers sheds light on the influence of culture, industry and passage of time on knowledge sharing through EKR. This will help better understand how place and time of study, target survey group and technological progress influence knowledge sharing through EKR.

Keywords: Knowledge Management, Knowledge Sharing, Electronic Knowledge Repositories

1 Introduction
1.1 Background
Knowledge Management (KM) aims to gather, analyse, store and share knowledge and information within an organization. The primary purpose of KM is to improve efficiency by reducing the need to rediscover knowledge [14]. The strategic management of knowledge is a key factor that can help organisations to sustain its competitive advantage. It has been reported that Fortune 500 companies lose at least $31.5 billion a year by failing to share knowledge effectively [9]. More and more organisations are adopting Knowledge Management Systems (KMS) to leverage their knowledge resources effectively. KMS is the central repository of the data, information and knowledge that the organization needs to manage the lifecycle of its services. Its purpose is to store, analyse and present the organisation’s data, information and knowledge. The KMS in most cases will be a federated system based on a variety of data sources [14]. It has been estimated that the expenditure on KMS by companies in the United States was close to $85 billion in 2008 [7]. The United States Federal government investment on KMS was expected to reach $1.3 billion by 2010[13].

In addition to the organisational interest in KM, an increasing number of academic papers are also being published on KM. On September 8th 2004, amazon.com had 3,657 books with “knowledge management” as a part of the title [10]. A search for books on amazon.com with “knowledge management” as part of the title, yielded 64,061 results on 28th April 2015. This clearly shows a growing interest in the field of knowledge management, not only by practitioners, but also by academia. The growing interest and investment in KM can be explained by the current ongoing transition of the world economy, from one offering tangible goods to a knowledge based economy based on intangible goods and services [10]. Globalization, reduced time-to-market, increasing knowledge intensiveness of products and services, and the need to leverage organisational expertise in tight labor markets make KM key to organisational success [6]. To remain competitive in the knowledge based economy, organisations must focus on the efficient creation, transfer and reuse of knowledge. Therefore, organisations worldwide are making KM an important strategy in their attempt to maintain a competitive advantage.

Information technologies, such as KMS are considered to be a key enabler of KM [4]. A typical KMS is the Electronic Knowledge Repository (EKR). EKR are electronic stores of content acquired about all subjects for which the organisation has decided to maintain knowledge [18]. EKR can comprise multiple knowledge bases as well as the mechanisms for acquisition, control, and publication of organisational knowledge. Typical EKR include document management systems, content
management systems, company intranet, wiki, organisational shared folders etc. The process of knowledge sharing through EKR involves knowledge workers contributing knowledge to populate EKR with content and knowledge workers seeking knowledge from EKR for reuse. Knowledge sharing through EKR can be successful only if knowledge contributors are willing to part with their knowledge and knowledge seekers are willing to reuse the codified knowledge [8]. The distinction between knowledge contributors and seekers is conceptual because the same individual can be a contributor and a seeker depending on the context.

Research has shown that many knowledge management system implementations, such as EKR have been unsuccessful [22], with a failure rate of 50% or higher [3]. There are several reasons why KMS initiatives fail. A study of 423 organisations reported that about 36% of KM initiatives failed due to lack of attention to adoption even when technological infrastructure was in place [17]. Organisations often ignore organisational structure, process capabilities, culture and/or organisational context factors when implementing KM systems or considering the overall health of their information and knowledge sharing environments [5], [11].

Studies have been conducted on the cost and benefit factors that influence knowledge sharing through EKR using the Social Exchange Theory (SET) and Social Capital Theory (SCT). A study was conducted in [15] using SET and SCT theories on knowledge sharing using EKR by Singaporean knowledge workers. Research was conducted in [1], [2] on the factors that influence knowledge sharing through EKR using SET and SCT theories among Sri Lankan IT professionals.

1.2 Research Problem
The factors that influence knowledge sharing through EKR have been studied in previous research [1], [2], [15]. However, the influence of the place and time of study, target survey group and technological progress on knowledge sharing factors through EKR is not well researched.

This study aims to make a comparison between the factors that influence knowledge sharing through the use of EKR among Sri Lankan and Singaporean knowledge workers. This comparison will help better understand the influence of place and time of study and technological progress on knowledge sharing.

1.3 Research Contribution
A comparison of factors that influence knowledge sharing through EKR among Sri Lankan and Singaporean knowledge workers will help better understand the influence of factors such as place and time of study, target survey group and technological progress on knowledge sharing through EKR.

1.4 Objectives
The objective of this study is to make a comparison between the factors influencing knowledge sharing through EKR among Sri Lankan and Singaporean knowledge workers in order to better understand the influence of place and time of study, target survey group and technological progress on knowledge sharing through EKR.

1.5 Scope
This study will be limited to the study of the factors that influence knowledge sharing through EKR by Sri Lankan and Singaporean knowledge workers.

2 Research Design
2.1 Theoretical Framework
The research framework used in the studies [1], [2], [15] is based on the social exchange theory (SET) and the social capital theory (SCT).

SET posits that individuals evaluate alternative courses of action, with the intention of obtaining the greatest benefit, at the lowest cost from any transaction [12]. In [19], the principle for predicting behaviour is expressed as:

\[ \text{Behaviour (Profits)} = \text{Rewards of behaviour – Costs of behaviour} \]

Social capital is defined as, “the sum of the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit” [20]. This study conceptualizes three components of the relational dimension of social capital, namely trust, pro-sharing norms, and identification as moderators that will influence the conditions under which the individual cost and benefit factors would impact EKR usage for knowledge contribution.

The constructs from SET and SCT that may affect usage of EKR to contribute knowledge are included in the research model for knowledge contribution. All the independent variables are derived from SET and KM literature and grouped together as individual factors. The dependent variable is the usage of EKR for knowledge contribution. The relationships between certain independent variables and the dependent variable are hypothesized to be moderated by specific SCT factors. The research models used to explain the usage of EKR for knowledge contribution and knowledge seeking are shown in Figure 1 and Figure 2 below.
2.2 Knowledge Contribution Hypotheses

The hypotheses used in the studies [1], [15] about the factors that influence knowledge contribution through EKR based on the theoretical framework (Figure 1) are given below.

2.2.1 Loss of Knowledge Power

H1: The negative relationship between loss of knowledge power and usage of EKR for knowledge contribution will be weaker under conditions of high pro-sharing norms.

2.2.2 Contribution Effort

H2: The negative relationship between contribution effort and usage of EKR for knowledge contribution will be weaker under conditions of high generalized trust.

H3: The negative relationship between contribution effort and usage of EKR for knowledge contribution will be weaker under conditions of high pro-sharing norms.

H4: The negative relationship between contribution effort and usage of EKR for knowledge contribution will be weaker under conditions of high identification.

2.2.3 Contributor Economic Reward

H5: The positive relationship between contributor economic rewards and usage of EKR for knowledge contribution will be weaker under conditions of high pro-sharing norms.

H6: The positive relationship between contributor economic reward and usage of EKR for knowledge contribution will be stronger under conditions of high identification.

2.2.4 Image

H7: The relationship between image and usage of EKR for knowledge contribution will be weaker under conditions of high pro-sharing norms.

2.2.5 Reciprocity Benefit

H8: The positive relationship between reciprocity benefit and usage of EKR for knowledge contribution will be weaker under conditions of high pro-sharing norms.

2.2.6 Knowledge Self Efficacy

H9: Knowledge self-efficacy is related to usage of EKR for knowledge contribution.

2.2.7 Enjoyment in Helping Others

H10: Enjoyment in helping others is related to usage of EKR for knowledge contribution.

Source: Kankanhalli (2002)

Figure 1: Framework for the Usage of EKR for Knowledge Contribution

|| Social Capital Factors |
|------------------------|
| Generalized Trust      |
| Pro-Sharing Norms      |
| Identification         |

<table>
<thead>
<tr>
<th>Individual Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Costs</td>
</tr>
<tr>
<td>• Loss of Knowledge Power</td>
</tr>
<tr>
<td>• Contribution Effort</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Contributor Economic Reward</td>
</tr>
<tr>
<td>• Image</td>
</tr>
<tr>
<td>• Reciprocity Benefit</td>
</tr>
<tr>
<td>• Knowledge Self Efficacy</td>
</tr>
<tr>
<td>• Enjoyment in Helping Others</td>
</tr>
</tbody>
</table>

H5: The positive relationship between contributor economic rewards and usage of EKR for knowledge contribution will be weaker under conditions of high pro-sharing norms.

H6: The positive relationship between contributor economic reward and usage of EKR for knowledge contribution will be stronger under conditions of high identification.

H7: The relationship between image and usage of EKR for knowledge contribution will be weaker under conditions of high pro-sharing norms.

H8: The positive relationship between reciprocity benefit and usage of EKR for knowledge contribution will be weaker under conditions of high pro-sharing norms.

H9: Knowledge self-efficacy is related to usage of EKR for knowledge contribution.

H10: Enjoyment in helping others is related to usage of EKR for knowledge contribution.
2.3 Knowledge Seeking Hypotheses

The hypotheses used in the studies [2], [15] about the factors that influence knowledge seeking through EKR based on the theoretical framework (Figure 2) are given below.

2.3.1 Seeker Effort

H1: The negative relationship between seeker effort and usage of EKR for knowledge seeking will be weaker under conditions of high generalized trust.

2.3.2 Future Obligation

H2: The negative relationship between future obligation and usage of EKR for knowledge seeking will be weaker under conditions of high pro-sharing norms.

H3: The negative relationship between future obligation and usage of EKR for knowledge seeking will be weaker under conditions of high identification.

2.3.3 Seeker Economic Rewards

H4: The positive relationship between seeker economic rewards and usage of EKR for knowledge seeking will be weaker under conditions of high pro-sharing norms.

2.3.4 Knowledge Growth

H5: The positive relationship between knowledge growth and usage of EKR for knowledge seeking will be weaker under conditions of high pro-sharing norms.

2.3.5 Perceived Utility of Results

H6: Perceived utility of results is positively related to usage of EKR for knowledge seeking.

3. Methodology

The studies conducted in [1], [2] purposively targeted IT professionals in Sri Lankan IT companies and used an online survey to collect data from the respondents. The study conducted in [15] targeted knowledge workers belonging to different industries based in Singapore, such as IT, Defence, Education, Research & Development, Real Estate & Construction etc. The survey in [15] was conducted by distributing hard copies of the questionnaire, which the respondents filled and returned.

3.1 Questionnaire Design

In both studies, the questionnaire used the seven point Likert scale, to collect data from the respondents. The questionnaire items in the form of statements to assess the knowledge contribution/seeking variables and the moderating social capital variables were derived from [15].

3.2 Response Rate

In the studies conducted in [1], [2] a total of 600 purposively selected IT professionals who represent the overall population as accurately as possible were sent email invitations to participate in the survey. After a lapse of four weeks, a total of 207 valid responses were received from 40 different Sri Lankan IT companies. The response rate for this survey was 35% (207 valid responses received out of a total of 600 email invitations sent). The survey included knowledge contribution and knowledge seeking factors.

In the study conducted in [15], two separate surveys were conducted: one to assess the knowledge contribution factors and the other to assess the knowledge seeking factors. A total of 400 contributor survey forms were sent out to 10 organizations and 150 responses were obtained, providing an overall response rate of 37.5% for the knowledge contribution survey. A total of 400 seeker survey forms were sent out to 8 organizations and 160 responses were obtained resulting in an overall response rate of 40%.

4 Analysis and Findings

4.1 Discussion & Implications

By referring to Table 1 below, it becomes clear that out of the total of ten hypotheses formulated to study knowledge contribution behaviour through EKR, only four hypotheses produced consistent results in both studies and only one hypothesis was supported by both studies, namely,
Contributor Economic Reward moderated by Identification (CREWxIDEN).

Three hypotheses were not supported by both studies, i.e. Contribution Effort moderated by Pro-sharing Norms (CEFFxPSNM), Contribution Effort moderated by Identification (CEFFxIDEN) and Contributor Economic Reward moderated by Pro-sharing Norms (CREWxPSNM).

The other six hypotheses (LOKPxPSNM, CEFFxGTRU, IMAGxPSNM, RECbxPSNM, KSEF, and EHLP) produced different results in each of the studies conducted.

### Table 1: Comparison of Knowledge Contribution Research Results

<table>
<thead>
<tr>
<th>Factor</th>
<th>Variable</th>
<th>Hypothesis</th>
<th>Supported in [15]</th>
<th>Supported in [1]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loss of Knowledge Power</td>
<td>LOKPxPSNM</td>
<td>No</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Contribution Effort</td>
<td>CEFFxGTRU</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Contribution Effort</td>
<td>CEFFxPSNM</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Contribution Effort</td>
<td>CEFFxIDEN</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Contributor Economic Reward</td>
<td>CREWxPSNM</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Image</td>
<td>IMAGxPSNM</td>
<td>No</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Reciprocity Benefit</td>
<td>RECbxPSNM</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Knowledge Self Efficacy</td>
<td>KSEFF</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Enjoyment in helping others</td>
<td>EHLP</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>

Loss of Knowledge Power moderated by pro-sharing norms (LOKPxPSNM) was not a significant factor in [15], but is a significant factor in [1]. This means that Loss of Knowledge Power is a factor that depends on the mindset of the knowledge worker and is not consistent among all knowledge workers, but would depend on the competitiveness of the industry and organisation and the prevalence or absence of a pro-sharing organisational culture among other factors.

Contribution Effort (CEFF) is not a significant factor in [1]. The study in [15] also reveals that Contribution Effort moderated by Pro-sharing norms (CEFFxPSNM) and Identification (CEFFxIDEN) are not significant factors, however it also shows that Contribution Effort moderated by Generalised Trust (CEFFxGTRU) is a significant factor. Based on [1], Contribution Effort had no correlation with knowledge contribution at all. This can be explained by the increasing popularity and user-savviness in using EKR for knowledge contribution in recent years compared to the situation in the early years of 2000.

Contributor Economic Rewards moderated by pro-sharing norms (CREWxPSNM) was not significant in both studies. However Contributor Economic Rewards moderated by identification (CREWxIDEN) was significant in both studies. This reveals that monetary incentives is an important motivating factor for knowledge contributors and is moderated by identification, i.e. if identification with the organisation is high, it reinforces the positive effect of the monetary incentive [1], [15].

Image, moderated by pro-sharing norms (IMAGxPSNM) was not a significant factor in [15], but is a significant factor in [1]. This means that Image is a factor that depends on the mindset of the knowledge contributor and not all knowledge workers consider this factor to be important.

Reciprocity Benefit (RECBxPSNM), Knowledge Self Efficacy (KSEF) and Enjoyment in helping others (EHLP) were significant factors in [15], but were not significant in [1]. This means that these factors depend on the mind-set of the knowledge contributor and not all knowledge workers consider these factors to be important.

### Table 2: Comparison of Knowledge Seeking Research Results

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Cost</td>
<td>Future Obligation</td>
<td>FOBLxPSNM</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>(FOBLxPSNM)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Perceived Utility</td>
<td>PUOR</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>of Results (PUOR)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benefit</td>
<td>Knowledge Growth</td>
<td>SKGWxPSNM</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>(SKGW)</td>
<td></td>
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From the above table (Table 2), it becomes clear that out of the total of six hypotheses formulated to study knowledge seeking behaviour through EKR, four hypotheses produced consistent results (SEFFxGTRU, FOBLxPSNM, SREWxPSNM, SKGWxPSNM) in both studies and the remaining two hypotheses produce different results (FOBLxIDEN, PUOR).

It is important to note that in [15], three out of six hypotheses were supported, namely, Future Obligation moderated by Identification (FOBLxIDEN), Knowledge Growth moderated by Pro-sharing Norms (SKGWxPSNM) and Perceived Utility of Results (PUOR).

In the study conducted in [2], only Knowledge Growth moderated by Pro-sharing norms (SKGWxPSNM) is supported. This may be due to the widespread use of the EKR for knowledge seeking, which has made only Knowledge Growth a significant factor for knowledge seekers, while Future Obligation (FOBL) and Perceived Utility of Results (PUOR) are no longer significant.

Future Obligation (FOBL) is not a significant factor in this study conducted in 2014, possibly because knowledge seekers are now more used to contributing knowledge and do so willingly and therefore do not consider future
obligation a hindrance to knowledge seeking as compared to previous years.

Perceived Utility of Results (PUOR) is not a significant factor in the study conducted in [2], possibly due to the increase in usage of the Internet/Intranet for knowledge seeking in 2014 as compared to previous years. During this period many people have learnt to trust and rely on the information provided on these systems, and take for granted that the information is accurate, up-to-date and valuable and therefore the Perceived Utility of Results (PUOR) is no longer a significant factor.

It is interesting to note that the significant factors have reduced from in this study in comparison to [15]. There were five significant knowledge contribution factors in [15], while there are only three significant factors in [2]. There were three significant knowledge seeking factors in [15], while there is only one significant factor in [1]. It seems that with the widespread use of EKR for knowledge sharing, the number of significant factors has reduced. This is possibly because knowledge workers are now more comfortable about knowledge sharing through EKR and therefore are concerned only about a few factors.

It becomes clear that the survey research results can differ due to contextual factors, such as place and time of study, target survey group etc. The survey conducted in [1], [2] targeted Sri Lankan IT professionals and in the study conducted in [15] targeted professionals from various industries based in Singapore. Thus, the difference in the research results in both studies can be attributed to the fact that the studies were conducted over a decade apart and based in two different countries (Sri Lanka and Singapore) and reflect the difference in mind-set, culture and socio-economic conditions of the two target groups and the effect of the technological advancements that have taken place during the span of over a decade.

4.2 Implications for Practice

By comparing the knowledge contribution factors it becomes evident that in both studies Contributor Economic Rewards moderated by identification (CREWxIDEN) was significant. This means that monetary incentives is an important motivating factor for knowledge contributors and is moderated by identification, i.e. if identification with the organisation is high, it reinforces the positive effect of the monetary incentive [1], [15]. Since economic rewards is a significant factor in both studies, this reinforces the need to reward knowledge contributors through incentives such as increments, bonuses, promotions etc.

By comparing the knowledge seeking factors it becomes evident that in both studies Knowledge Growth moderated by Pro-sharing Norms (SKGWxPSNM) was significant. This means that knowledge growth outweighs the other knowledge seeking factors and is the primary reason why knowledge seekers seek knowledge through EKR. The management must therefore ensure that the EKR is populated with up-to-date, accurate and relevant information, which will lead to knowledge growth in the knowledge seekers.

4.3 Implications for Theory

This study has further advanced the theoretical development in the area of knowledge sharing through EKR by demonstrating that the cost and benefit factors derived from SET and SCT theories can predict EKR usage by knowledge contributors and knowledge seekers. The comparison done in this study clearly demonstrates the fact that the significant knowledge contribution and knowledge seeking factors may differ based on the context, such as place and time of study, target survey group etc.

4.4 Limitations

This study was limited to the cost and benefit factors derived from SET and SCT theories and therefore other factors that influence knowledge contribution and knowledge seeking were not included.

4.5 Future Studies

By comparing the research results in [1], [2], [15], it becomes clear that the survey research results can differ due to contextual factors, such as place and time of study, target survey group etc. Thus, it is recommended to periodically replicate the survey to assess the current situation in terms of what factors are significant and what factors are no longer significant. It is also important to replicate the survey periodically to understand emerging trends on factors influencing knowledge sharing through EKR. The surveys should be done targeting a wide range of target groups representing different industries, nationalities etc.

5. Conclusion

In conclusion, this study reveals many interesting facts about knowledge sharing though EKR among Sri Lankan and Singaporean knowledge workers. The comparison between the factors that influence knowledge sharing among Sri Lankan and Singaporean knowledge workers reveals that out of the ten knowledge contribution hypotheses studied, four hypotheses produced consistent results in both studies. Out of the six knowledge seeking hypotheses studied, four hypotheses produced consistent results in both studies. The comparison reveals that contextual factors such as place and time of study, target group influences knowledge sharing factors. The implications of these findings have been discussed and recommendations made on how to improve knowledge sharing through EKR.

Knowledge sharing through EKR is key to successful knowledge retention and reuse. Therefore, special consideration should be given to the significant factors that influence knowledge sharing, when deciding upon the organisation’s KM strategy.

References


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