Knowledge sharing and job performance: the intervening role of technological competency in knowledge-based industries

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***Abstract* -** This study examines the intervening influence of technological competency on the relationship between the employee's knowledge sharing and job performance in knowledge-based industries in Sri Lanka. Knowledge sharing, technological competency and job performance were measured in a sample of 141 managers who are employed in the profession of Database Administration & Development, Systems & Network Administration, Web Development & Programming and Software Engineering. The results of the hierarchical regression indicated that tacit and explicit knowledge sharing positively correlated with job performance while tacit and explicit knowledge sharing correlated together. Furthermore, technological competency has shown a partial mediation effect and thereby weakening the strength of association between tacit knowledge sharing and job performance. A perfect mediation effect by technological competency is reported on the relationship between explicit knowledge sharing and job performance.

***Keywords* -** Job performance, knowledge- based industry, knowledge sharing, Sri Lanka, technological competency

I. BACKGROUND OF THE STUDY

The success of tools and techniques in handling employee's performance in human resource management confirms organizational performance which is vital to surviving in this highly competitive environment [1]. Job performance of individual employee as the co-determinant of overall organizational efficient performance plays an important role. Generally, tasks and duties performed by an employee are recognized as job performance. Scholars in this field have identified various individual and organizational factors as determinants of job performance. Knowledge is the most precious intellectual resource in the organisation and is at the top of the list of the probable determinant of job performance [2]. However, previous studies have not provided enough explanation about intervening aspects on the relationship that exists between knowledge resources; specifically knowledge sharing and job performance. This study contributes to literature by providing a clarification about the mediatory influence of technological capabilities on the relationship between knowledge sharing and job performance. The relationship of employee's knowledge sharing and job performance can be viewed through different theoretical lenses.

The social exchange theory [3] signals that employees in an organisation deserve to offer their contribution as a response to what they get from the organisation. As a result, gaining knowledge by employees would end up in effective individual performance. Offering knowledge in a business environment that enables access a wider audience is simply identified as knowledge sharing [4]. The social exchange theory interprets that the exchange of relationships among colleagues and organisations would strengthen ties between the job and the community. As a result, effective job performance takes place due to strong ties between the organisation and its employees. Social cognitive theory also brings a different angle to the behaviour of employees. According to this theory, individual behaviour is totally a function of self-motivation and self-cognition [4]. Further, reference [5] confirms that individual behaviour depends mostly on social environment and self-efficacy. When employees of a firm exhibit a high level of self-motivation and cognition about their use of knowledge, they make effort to achieve individual objectives through sharing, learning and utilising knowledge [6].

These theoretical underpinnings and limited studies about the intervening aspects of knowledge sharing and job performance of knowledge-based industries (KBIs) in Sri Lanka encourage researchers to investigate this phenomenon in detail. Accordingly, the main objective of this study is to analyse the probable determinants of the job performance of employees in KBIs in Sri Lanka. Three research questions related to KBIs in Si Lanka are addressed by this research. Does tacit knowledge sharing relate to explicit knowledge sharing, do tacit and explicit knowledge sharing intentions strengthen job performance of employees and does technological capabilities intervene in the relationship between knowledge sharing and job performance?

Beside the background of the study, the remainder of the paper is organized into four sections namely literature review & hypotheses, the methodology of

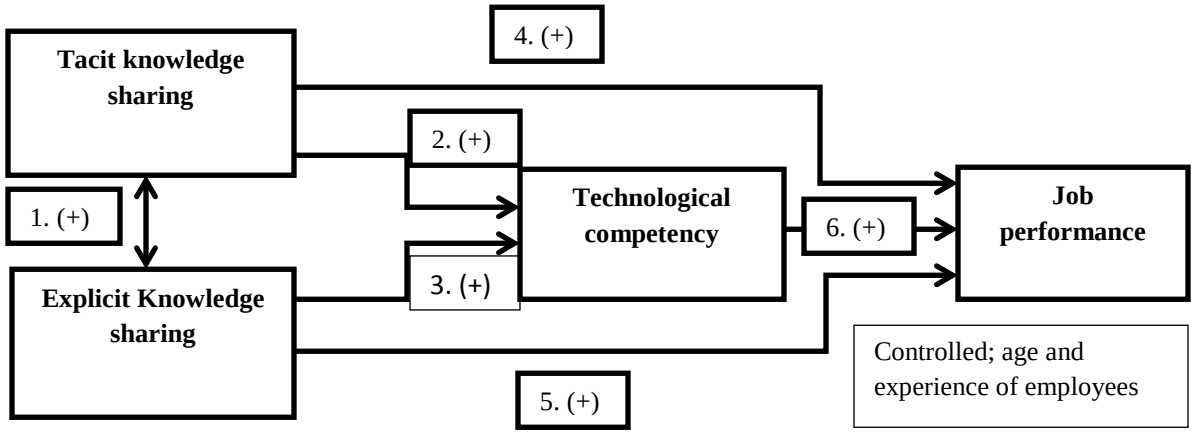
the study, data analysis & discussion and the conclusion of the study.

II. LITERATURE REVIEW AND HYPOTHESES

Knowledge sharing means offering knowledge embedded in individual minds to other members within their proximity [7]. Knowledge sharing, in general is accepted as a positive motive for individual and organisational performance. Members who gain experiences from others through knowledge sharing offer tactics to avoid inefficiencies in products and processes and to make effective outcomes in business [8]. Reference [9] found that knowledge sharing among members of a team was an effective indicator of team performance. Further, tight collaboration and coordination among members in an organisation through activities like knowledge sharing have directly resulted in better individual job performance [10]. However, literature clearly distinguishes about two types of knowledge i.e. tacit and explicit. The knowledge which cannot be easily codified and shared is identified as tacit. Such knowledge is embedded in the minds of people and developed as per individual capacities. Most previous researchers have named them as skills of employees. Explicit knowledge is available in books, manual, guidelines and can be formally channelled to others. At the end, job performance of employees would be a result of both tacit and explicit knowledge sharing practices of employees in organisations [11]. Age and experience of employees have also been identified as influencing factors of job performance [9]. But, many studies have controlled these two variables in their studies.

Technological competency of employees is another concept which is discussed in many knowledge management studies in relation to knowledge sharing. Technological competency is defined as a set of specific skills to handle technological artefacts, processes and systems [12]. Technological knowledge as the tacit or the explicit mode is typical in organizations to achieve performance objectives. Development of technological competencies of employees through sharing and accumulation of knowledge would assist a firm to obtain competitive advantages [13]. Integrating diverse of knowledge that is important for innovations and value creation encourage achieving performance objectives of the firm [14]. However, at the end, the literature shows that knowledge sharing as tacit and explicit is related to technological competencies. This technological competency of employees is also related to job performance. Accordingly, the following conceptual framework (Figure 01) is based on the literature review.

Figure 1, Conceptual Framework of the Study



Source: Researcher Developed Based on Literature

The following hypotheses are based on the conceptual framework and the literature in this study.

1. Tacit knowledge sharing is positively related to explicit knowledge sharing of employees working in KBIs
2. Tacit knowledge sharing is positively related to the technological competencies of employees working in KBIs
3. Explicit knowledge sharing is positively related to the technological competencies of employees working in KBIs
4. Tacit knowledge sharing is positively related to job performance of employees working in KBIs

5. Explicit Knowledge sharing is positively related to job performance of employees working in KBIs
6. Technological competencies of employees mediate the relationship between tacit and explicit knowledge sharing and job performance of employees working in KBIs.

III. METHODOLOGY OF THE STUDY

This study focuses to analyse job performance over knowledge sharing and technological competency of employees who are working in KBIs in Sri Lanka. KBIs are selected as the study area due to few reasons. Information Technology (IT) industry is identified as KBIs for this study. This industry has shown a fast growing trend having a workforce consisting more than 100,000 members who are engaged in various jobs either directly or indirectly [15] (SLICTA, 2015). In addition, the IT industry all over the world is totally based on knowledge resources. Human capital in addition to technological development is critical to industrial development. Accordingly, KBIs were treated as the population of this study.

Quantitative methods were instrumented for this study. A sample survey is designed to select a testable sample which fits the model of analysing variables. Variables of tacit and explicit knowledge sharing, technological competency and job performance served in the model as independent, intervening (mediate) and dependent variables. Age and experience of employees were controlled in the model. SPSS version 21 assisted to analyse data of this study. Using convenient sampling techniques, around 185 employees who are serving in managerial positions in the departments of Database Administration & Development, Systems & Network Administration, Web Development & Programming and Software Engineering were selected for this sample. All of them were represented 13 KBIs located in the capital city (Colombo) in Sri Lanka. The survey consumed entirely two months in 2016. Ultimately, 44 filled questionnaires were rejected due to insufficient information and the remaining 141 were used for analysis. Descriptive statistics and hierarchical regression model were used to analyse relationships among variables. Job performance regressed over predictor and control variables as the first step of the hierarchical model. In the second step, the interaction item and technological competency were added to test the explanatory power.

The questionnaire that was the instrument of data collection contained 20 items in addition to demographic and individual characteristics. Age and experience of employees were measured in years. All Likert-scaled (seven points Likert-type) items for other variables were adapted from previous research. Job performance was measured using a six-item, a seven-point Likert-type scale ranging from 1 – strongly disagree to 7 – strongly agree [16]. Questions such as 'I really understand specific needs of customers', 'I am able to put ourselves in the customers' place, 'I am able to "tune in" to each specific customer' were used. Technological competencies were represented by 9 items [17] of seven points Likert-scale ranging from 1 – strongly disagree to 7 – strongly agree. The questions were like 'I get skill in conducting applied R&D', 'I get the ability to transform R&D results to products', 'I get skills to develop new products' were used. Tacit knowledge sharing and explicit knowledge sharing measurements (Five items in Likert-scale ranging from 1 – strongly disagree to 7 – strongly agree) were adapted from [18]. Questions such as 'I intend to share my experience or knowledge on how from work with my organizational members more frequently in the future', 'I will always provide my knowledge on where or know-whom at the request of my organizational members', '1 will share my work reports and official documents with members of my organization more frequently in the future' were used. Finally, the mean of all items of each variable was used as a scale of each variable.

IV. DATA ANALYSIS AND DISCUSSION

Before analysing data, a screening of variables was performed. Reliability statistics indicate Cronbach's Alpha as 0.918 for 20 items. Intercorrelations (Table 02), tolerance and Variance Inflation Factors (VIFs) surfaced evidence of the inability to having multicollinearity among variables [19] (Romme et al. 2013).

Table 02 shows descriptive statistics and intercorrelations of variables in the study. According to this table, correlations between variables are positive and statistically significant other than explicit knowledge sharing with age and the experience of employees. A positive correlation ($r = 0.395$, $p < 0.01$) between tacit and explicit knowledge sharing is shown in the table. Accordingly, hypothesis 01 was supported. Hypothesis 02 and 03 are also supported by the results of correlation analysis. A positive correlation is reported for both tacit knowledge sharing ($r = 0. .788$, $p < 0.01$) and explicit knowledge sharing ($r = 0.462$, $p < 0.01$) with technological competencies of the employees.

Table 02, Descriptive Statistics and Intercorrelations of Variables in the Study

Variable	Mean	SD	1	2	3	4	5
1. Age of employees (yrs)	29.32	7.95					
2. Experience of employees (yrs)	7.05	5.91	.941**				
3. Employee's technological competencies	5.62	.837	.445**	.402**			
4. Tacit knowledge sharing intention	6.09	.616	.377**	.300**	.788**		
5. Explicit knowledge sharing intention	5.01	.953	.089	.029	.462**	.395**	
6. Employee's performance	5.88	.87	.641**	.526**	.703**	.703**	.363**

**. Correlation is significant at the 0.01 level (2-tailed).
Source: Data Analysis Based on Survey Results, 2016

Table 02 shows the results of two models of hierarchical regression. The result indicates that the first step of the model is statistically significant (r = 0.691, p<0.01). Overall 69 per cent variation of job performance is explained by this model. The experience of employees is shown as a negative relationship ($ß$ = -0.058, p <0.05) to job performance and age of employees are positively related to job performance ($ß$ = 0.090, p <0.05). However, hypothesis 04 and 05 is supported by the result of the model 01. Results prove that tacit knowledge sharing ($ß$ = 0.652, p <0.05) and explicit knowledge sharing ($ß$ = 0.108, p <0.05) are positively related to job performance.

The mediation effect of technological competencies between knowledge sharing and job performance was tested according to the process suggested by [20]. Accordingly, they have suggested four conditions to be fulfilled by the model to identify mediation effect. (1). The relationship between independent and dependent variables, (2). The relationship between independent and mediate variables, (3). The relationship between mediate and dependent variables (4). Weaken or non-significant relationship between independent and dependent when mediating variable in action. Accordingly, after the second step of adding the technological competencies of employees as the mediate variable, the model is statistically significant (r = 0.708, p<0.01). Overall 70 per cent variation of job performance is explained by the model. An increase of 0.017 is reported when it is compared to the first model. This improvement is also significant (Partial F = 8.204, p<0.01). However, the results of model 02 (Table 02), still, tacit knowledge sharing is significant with job performance ($ß$ = 0.435, p <0.05). But the relationship has weakened from 0.652 to 0.435 as per results in the second model. At the same time, explicit knowledge is reported as non-significant. The four conditions of mediation effect suggested by Baron and Kenny,(1986) is evident in the results which confirm the partial support for hypothesis 06 of this study. However, it can be concluded that the relationship between tacit and explicit knowledge sharing is mediated by technological competencies of employees in KBIs in Sri Lanka.

Table 02, Output of Two Models of Hierarchical Regression

Variable	Model 01		Model 02	
	ß	t	ß	t
Age of employees	0.090*	5.651	0.092*	5.902
Experience of employees	-0.058*	-2.766	-0.067*	-3.244
Tacit knowledge sharing	0.652*	8.257	0.435*	4.023
Explicit knowledge sharing	0.108*	2.277	0.065	1.329
Employee's technological capabilities			0.245*	2.864
R^2	0.691*	77.049	0.708*	66.498

Δ in R^2 (Partial *F)*	0.017*	8.204

* $P<0.05$
Source: Data Analysis Based on Survey Results, 2016

This study focuses on analysing job performance of employees in reference to knowledge sharing in KBIs in Sri Lanka. The key message delivered by this study is that job performance of employees correlate with tacit and explicit knowledge sharing and technological competencies of employees in KBIs that mediate the relationship between knowledge sharing and performance. Tacit and explicit knowledge sharing intentions also correlate together. This signifies the same view of the KBV theory. Specifically, the strength of the relationship between tacit knowledge sharing and job performance has been weakened by technological competence making the practical implication of the study more valuable. The positive relationship between tacit and explicit knowledge suggests that both these knowledge types are important for workers who are engaged in knowledge based industries.

V. CONCLUSION OF THE STUDY

Many empirical studies on knowledge management suggest that knowledge sharing among employees is critical to performance. This study also shows that tacit and explicit knowledge sharing positively correlates with job performance while tacit and explicit knowledge sharing itself is correlated to each other. The mediate effect of technological competency of employees on the relationship between knowledge sharing and job performance in KBIs in Sri Lanka is confirmed by these study results. A partial mediatory influence of technological competency on the relationship between tacit knowledge sharing and job performance is identified. However, the relationship of explicit knowledge sharing and job performance has been fully mediated by the technological competency of employees.

This study brings some implications to the practices of KBIs in general. As knowledge sharing is identified as a pre-requisite to gain competitive advantages, managers of KBIs can solicit knowledge workers to effectively make the required knowledge available to members. Different divisions or departments also can collaborate on knowledge sharing practices to increase job performance of employees. At the same time, knowing the intervening influence on knowledge type as tacit and explicit would make the task of the managers easier in relation to the overall performance of the division. Policies, procedures and systems can be established based on this knowledge base.

A few aspects of this study have limited the interpretation of results. The size and selection of the sample only from four job categories and the 13 KBIs, the nature of the data for analysis (only cross sectional), respondent's difficulty in understanding the difference between tacit and explicit knowledge are recognized as limitations of this study. Future studies can focus to eliminate one of these limitations to discuss the same concept in detail.

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