

The Role of Knowledge Creation in Knowledge Management: A case of Sri Lankan Research Officers

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Abstract: There are considerable levels of gaps identified in ‘Knowledge Creation’ (KC) and ‘Knowledge Management’ (KM) at individuals’ level as well as the organizational level. The present study examines whether the ‘Social Capital’ (SC) and ‘Information Technology Capability’ (IT) have any significant impact on KM and determine the mediating role of KC on the above relationship in the public sector Research Institutions in Sri Lanka. The study follows the positivistic philosophy and used the hypothetico-deductive method. A questionnaire-based survey was used to collect data and it was done as a cross-sectional survey with a self-administered questionnaire. The population is defined as the research officers in Public Research Institutions in Sri Lanka and the selected sample was 220. The successful response rate is 67%. The findings confirmed that SC and IT have a significant impact on the KM with the model accuracy as 31.3%. When the KC mediates the relationship from SC to KM and IT to KM, the explained variation of the KM can be enhanced up to 61.2% and 45.2% respectively. Therefore, the research institutions should pay special attention to KC while facilitating for SC, IT and KM.

Keywords: Explicit and Implicit Knowledge, Information Technology Capability, Knowledge Creation, Knowledge Management, Social capital.

I. INTRODUCTION

In the modern world, sustainable economic growth is one of the main goals of a country and it requires the mobilization of new scientific knowledge into action [1]. Further, this new knowledge needs to shape-up to fit the existing environment. Researchers play a major role in this context by accruing, disseminating, sharing, and preserving the knowledge to be re-used [2], [3]. ‘Knowledge’ is considered as the most important intangible resource which generates a competitive advantage to any organization [4], [5]. Therefore, managing this resource effectively is one of the crucial challenges of any organization [6], [7]. Knowledge Management (KM) is a process of systematic management of acquisition, retention, sharing, and usage processes of explicit and implicit knowledge [8].

Humans cannot utilize the full potential of their knowledge. Therefore, an organization also cannot fully utilize their human resources potential [6]. It is important to make the best use of knowledge within an organization. Therefore, the management has to improve the process of capturing, developing, sharing, and using organizational knowledge effectively [2], [3]. A “knowledge reservoir” in any institution is much more than the accumulation of the individual’s knowledge of the institution [9]. These ‘knowledge reservoirs’

are enhanced over time with new information products such as documents, databases, software etc. [10]. Henceforth, decision-makers or the management should carefully consider developing successful “knowledge reservoirs” and arrange it to store the learned knowledge and accumulated experiences, to make a breakthrough in the research and advocacy process [11].

Investments in Research and Development (R&D) help to collect and record high-quality data that are necessary for effective decision making and to achieve sustainable economic growth [12]. As to Jangraiz, Khattak, and Ur [12], the outcomes of the R&D activities significantly affect the real gross domestic product (GDP) per capita in Pakistan and hence they recommended increasing the investment in R&D to achieve sustainable economic growth. The economic growth in Sri Lanka is mainly contributed from the growth in the industry, services and agriculture-related activities. Therefore, a reasonable level of investments in R&D activities that help to create new knowledge and utilize it for the development of all these sectors, is essential. To maintain the systematic process of KM, a number of Public Research Institutions (PRIs) are established and are funded by the government of Sri Lanka, and they play a vital role in Knowledge Creation (KC) and KM. As to the OECD report [13], the ‘PRIs’ main responsibility is to create, discover, use and diffuse new knowledge through their activities to enhance the innovation and economic performance of the country and finally, create a ‘knowledge society’. PRIs are the main actors in the public research system and the information providers to take decisions[13]. Nonetheless, these PRIs also face various challenges when managing their knowledge.

In order to implement and take the optimum use of KM, the organizations must have a clear understanding of how knowledge is formed, disseminated and applied within organizations [14]. In this context, the public research institutions are facing challenges in managing knowledge within the process of acquisition, storage, distribution and use of knowledge. Lack of trust in sharing knowledge with subordinates or with peers [15], language barriers in communication [16], less opportunities for knowledge creation [17], social gap within vertical and horizontal communication [18] and difficulty in handling information technology tools are some of the challenges in KM [3]. All these issues lead to problems in achieving an institution’s goals. Similarly, a majority of managers face several challenges in understanding

the practical aspect of knowledge management and providing facilities to enhance this knowledge management process. The extent to which each individual interacts with the other depends on the organizational culture [6]. Therefore, it becomes critical for the management to find some commonality between individual and organizational knowledge and provide necessary incentives to employees to share their knowledge and enhance the contents of the organizational knowledge base.

Researchers have identified several factors influencing KM at individuals' level as well as at the organizational level [19]. However, there are only a few studies on how research organizations actually create and manage their knowledge. The main objective of this study is to test whether there is any significant enhancement of impacts of Social Capital (SC) and IT capability/ facilities (IT) on KM due to the mediating impact of KC.

II. LITERATURE REVIEW

A. *The Concepts of Knowledge*

Nonaka [17], and Nonaka and Takeuchi [21] proposed the dynamic theory of organizational knowledge creation and it stated that knowledge is either explicit or tacit. Tacit knowledge is experience-based knowledge and deeply rooted in action that cannot be expressed in words, sentences, numbers or formulas. Explicit knowledge can be codified and is held in databases. It is easy to communicate, store and distribute. Therefore, explicit is opposite to tacit knowledge [17].

According to Drucker in 1992 (cited in [22]) knowledge has become a major economic resource in the world and hence, organizations should identify the two types of knowledge (tacit and explicit) and develop a process to manage this asset. Therefore, organizations create work centered environment for the maximum utilization of tacit and explicit knowledge [23]. It has now been identified that knowledge of both tacit and explicit dimensions reside at multiple levels in an organization: individual, group and organization [9]. New knowledge is created through an interaction between tacit and explicit dimensions of knowledge and the various levels at which it resides [23]. The organizations need to develop strategies to transform tacit knowledge into explicit knowledge to get the maximum benefit of the organizations' intellectual capital [3]. Since the transformation of knowledge between individuals and organizations is a dual process, organizations should explore and implement suitable strategies for this duality [6].

Intellectual Capital

The term "knowledge" or "intellectual capital" described as a "hidden asset" of an organization and it is said to be important in a knowledge society [24]. Intellectual capital has also been defined as "the difference between a firm's market value and the cost of replacing its assets. Its main elements are human capital, structural capital, and relational capital and customer capital" [25]. Unless utilized and applied in an effective manner, the knowledge asset may not yield

sufficient return in terms of financial performance measures [26]. In the Knowledge Economy, the relationships between the different components of intellectual capital play an integral part in the success of an organization. These relationships also need to be managed and developed properly to be as a competitive member in the knowledge economy [27].

B. *Knowledge Management (KM)*

KM is a multidisciplinary theme where it improves the performance of individuals and organizations [8]. According to Newman's general knowledge model, knowledge flows into four primary activity areas such as knowledge acquisition, retention, transfer, and utilization. Each of these phases are activated through organizational activities. The "soft" actions are the development of an organizational context that supports creation, dissemination, and use of the acquired knowledge. The second type which is named as "hard", involves the use of IT as a support mechanism for knowledge distribution and storage processes

Acquisition: This process brings new knowledge into a system. Knowledge generation means the process in which the knowledge is acquired by an organization from outside sources and those created within the organization itself [28]. It also can be seen as a process of transforming from its explicit form to the tacit one [20]. Some of the actions that can be handled through acquisition process are: Training of individuals, encouraging the trial and error process, development of a culture aimed at learning, hiring and partnerships with other firms, hiring new employees representing new knowledge, and acquisition of patents [11].

Retention: After new knowledge is generated or acquired, there should be KM mechanisms at the organization to incorporate it into the organization's memory to maximize long term reusability [29]. This includes retention of knowledge generated by individuals and socialized in groups, forming an organizational memory, and explanation process of tacit knowledge [20]. Gonzalez and Martins [11] explained some best practices of retention of knowledge as:

...registration of learned lessons, incorporation of knowledge acquired in procedures and rules of the organization, retention of individuals (tacit knowledge repository), development of an organizational culture that represents the values and beliefs of the company, use of IT as a tool for knowledge retention, and training of organizational memory.

Knowledge sharing practices: Knowledge transfer and knowledge sharing are sometimes used synonymously or are considered to have overlapping content [30]. Knowledge sharing can also be both formal and informal. Dissemination of knowledge between individuals can occur through continuous social contacts [30]. Davenport and Prusak [31], defined the knowledge sharing (also called knowledge transfer or knowledge diffusion) as "the process by which knowledge is transferred from one person to another, from individuals to groups, or from one group to another group". Further, IT can

be used as a facilitator of the dissemination process. Therefore, the best practices identified are disclosure of the retained knowledge to employees, development of working-groups, development of communities for practice/exchange of specialized knowledge, and use of IT as a tool for the distribution of organizational knowledge.

Knowledge Utilization: Knowledge utilization (also called knowledge application or knowledge implementation) is defined as “the process that is oriented toward the actual use of knowledge” [7]. There are various ways to use this knowledge to get effective decisions in an organization. The ownership of knowledge which is the last element of this construct, can be used to describe knowledge as an identity of an individual or a group (specialists) or a general sources of knowledge in a given organization [23].

C. Social Capital

Social capital has emerged as an increasingly popular concept at the level of both society and organizations [32]. It facilitates the development of collective intellectual capital of an organization and the intellectual community [33]. As to Cohen and Prusak [34] Social Capital refers to “networks, norms, trust, and mutual understanding that binds together the members of human networks and communities, and enable participants to act together more effectively to pursue shared objectives”.

In an organization or cooperative group, the social capital bridges the gaps between people [35]. It is seen through the characteristic elements of high levels of trust, strong personal networks and vibrant communities, shared understandings, and a sense of equitable participation in a joint enterprise [36], [37]. This kind of connection supports collaboration, commitment, ready access to knowledge and talent, and coherent organizational behaviour. This description of social capital suggests appropriate organizational investments [34].

Nahapiet and Ghoshal [33] defined social capital as organizational perspective. They believe social capital is the sum of actual and potential resources within relationship networks of a person or a social unit. Social capital can be divided into three dimensions: structural, relational and cognitive [33]. Hence, social capital describes the relations between people that they can use to utilize the knowledge of their colleagues. Through these social relations, they share knowledge and contribute to knowledge creation in the organization [36].

Structural dimension: Structural refers to the overall pattern of connections between actors (i.e., people in organizations) or the extent to which people in an organization are connected and access the intellectual capital of others [38]. It is believed that a structure is necessary for the development and utilization of social capital. This dimension is concerned with access to other actors, individual and corporate.

Relational dimension: It is explained as the nature and the quality of the connections among employees and also referred as generalized trust among individuals [38]. Relational dimension focuses on the quality of relations on trust and is expressed in the form of norms, shared values and trust. It describes the kind of personal relationships that people have developed with each other through a history of interactions [33].

Content/cognitive dimension: Cognitive focuses on the extent to which relational capital is shared among actors in the organization and a marker for a shared organizational mind [33]. It is the content dimension, or the communication, which is a visible condition necessary for the formation and utilization of social capital. As a result, employees share a common understanding and are willing to share the collective goals [38].

According to Burt [39], social capital can be viewed as an asset connected to a certain position in the structure of exchanges, that certain people or groups are dependent on. These people or groups trust others and are obligated to support each other [39].

D. Information Technology Capability (IT Capability)

Zhang and Chen [41] stated that with the development of information and communication technologies, human society has evolved into a knowledge era. According to literature and the analysis of critical success factors of KM, information technology (IT) is one of the three components [42]. Tippins and Sohi (2003) indicates that IT also enhances the ability of an organizational memory. Through IT, a significant amount of valuable information can be gathered and it provides an ideal mechanism for linking individuals, which is also considered a part of the organizational memory [44].

Three dimensions of IT capability is discussed in literature as IT Knowledge, IT Operations, and IT infrastructure [43], [44]. As expressed by Pebrianto [44], IT knowledge is defined as the extent to which an individual is capable to use IT and the IT operations expressed as the extent to which an institution utilizes IT. Finally, the IT Infrastructure is defined as the extent to which the computer-based hardware, software, and support personnel involved in an organization [44].

E. Knowledge Management in Research Institutions

In a Knowledge-Based Economy, research institutions play a vital role. Therefore, the knowledge capital they accumulate through their activities is a strong strategic issue and the management of these assets has become crucial. There is a subsystem, which is called “Knowledge capital” built within these research institutions [45].

KM in a research institution is seen as a productivity tool for knowledge creation or innovation. The knowledge base in a research institution is much more than the sum of individual knowledge of employees, and it is capitalized, more or less over time, through information products (documents,

databases, software etc.) or by knowledge exchanges/transfers among individuals or groups [10]. According to Drucker (cited in [22]), Knowledge workers are defined as high-level employees who apply the theoretical and analytical knowledge that is acquired through formal education in developing new products or services.

F. Public Research Institutions in Sri Lanka

The PRIs are imperative for innovation due to their role in knowledge creation and diffusion. They are one of the main actors in the public research system and are a primary tool for governments seeking to spur research and innovation in their economies [45]. PRIs remain critical for countries' innovation and economic performance through their activities in creating, discovering, using and diffusing knowledge.

With this background the government should focus on investing large sums of money in research and development (R&D) and related innovative activities [46]. There is ample research carried out in Sri Lanka and most of them are conducted through universities, government organizations, semi-governmental organizations and non-governmental organizations with the aid of the Sri Lankan and/or foreign entities. The apex body in Sri Lanka for government research funding is the National Research Council of Sri Lanka. There are 15 universities who are engaged in research work and 25 National level research Institutions in Sri Lanka [47]. In addition to these institutions most of the Ministries have their own R&D Units which are conducting researches to fulfil their ministry objectives.

According to this contextual environment, maximum results need to be gained from R&D and it should be a positive outcome for the economic growth of the country. A study conducted in Pakistan showed that R&D significantly affects the real GDP per capita in Pakistan and it has recommended increasing the investment in R&D to achieve sustained economic growth. It is also recommended to collect and record quality R&D data for effective policy-making in the field of science and technology, and social sectors in Pakistan [12].

In literature, there are several challenges found in organizing and managing knowledge within an organization, such as the technical challenge which is to design human and information systems to organize effective information and knowledge management [48]. The second challenge is the creation of a knowledge-sharing environment within the whole information culture of an organization [49]. The third is a personal challenge in which the acceptance of opinion of others. Since the knowledge resides in the mind of the employees, the contextual and cultural means are important to encourage knowledge sharing and communication [50]. Finally, the social challenge which is the same that describes as the social networks under a social capital paradigm.

In this context, the PRIs in Sri Lanka also facing similar challenges in managing knowledge within the process of acquisition, storage, distribution and use of knowledge. Lack of trust in sharing knowledge with subordinates or with peers [15]

language barriers in communication [16], fewer opportunities for knowledge creation [17], the social gap within vertical and horizontal communication [51], and difficulty in handling information technology tools are the main challenges in KM [3]. All these issues lead to a poor level of achievement in institution's goals. Similarly, managers of an organization sometimes face several challenges such as awareness of the practical aspect of KM and the ways of providing the facilities to enhance this knowledge management process.

The extent to which each individual interacts with others depends on the organizational culture [52]. Therefore, it becomes critical for management to find some commonality between individual and organizational knowledge and provide the necessary incentives to employees to share their knowledge and enhance the contents of the organizational knowledge base.

III. RESEARCH QUESTIONS AND HYPOTHESIS

The present study raised the questions whether the SC and IT have any significant impact on KM in PRIs in Sri Lanka and whether the KC plays a significant mediating role when the said relationship exists. Based on the literature, this study proposed three hypotheses as:

- H1: SC and IT will have significant influences on KM
- H2: SC and IT will have significant influences on KC
- H2: KC will mediate the relationship of SC to KM
- H3: KC will mediate the relationship of IT to KM

IV. METHODOLOGY

A. Research Design

The study follows the positivistic philosophy and used the hypothetico-deductive method. A questionnaire-based survey was used as the method of data collection and it was done as a cross-sectional survey with a self-administered questionnaire. The population is defined as the research officers in PRIs in Sri Lanka which is approximately 618 [47], and the sample was selected from four such PRIs in the Agricultural sector and one from the Technology sector. A random sample of 220 research officers was selected from these five institutions and the successful response rate was 66.8%.

B. Research Model

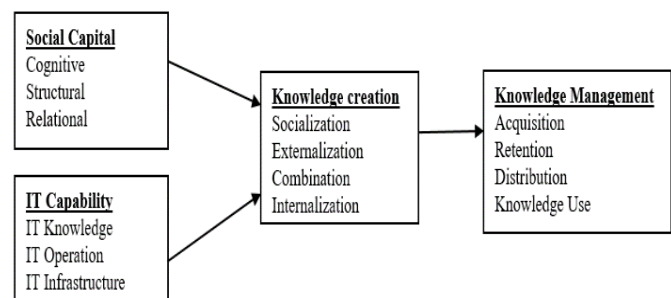


Figure 1: Conceptual Framework of the Study

According to the literature, the study argues that SC and IT Capability have a positive effect on knowledge creation.

Additionally, knowledge creation supports and facilitates knowledge management. Therefore, this study proposed a model shown in Figure 1 by positioning Knowledge Creation as a mediator between SC/IT Capability and Knowledge Management.

V. DATA ANALYSIS

It is important to have both content and construct validity to ensure the validity of a measure [53]. The questionnaire was developed by selecting the initial measurements with an extensive review of the literature to assure a reasonable level of content validity. Further, the questionnaire was amended based on the feedback of the pilot survey and the opinions of the experts in the field were also incorporated. Construct validity is ensured with the Confirmatory Factor Analysis (CFA) and it supports further to refine the coherent subscales.

The estimation of reliability is also an important quality parameter in a study to ensure the reliability of the data. One of the main components in reliability is the internal consistency which means the degree to which the items that make up the scale ‘hang together’. One of the most commonly used indicators of internal consistency is Cronbach’s Alpha coefficient. Ideally, the Cronbach’s alpha coefficient of a scale should be above 0.7 [53], [54] while maintaining a reasonable level of correlations among the items in the scale.

The collected data were analysed by appropriate statistical methods using the Statistical Software Package for Social Sciences (SPSS). The data analysis consists of descriptive and inferential analysis. The impact of SC and IT with the mediating effect of KC on the KM was analysed using multiple linear regression analysis.

VI. KEY FINDINGS

The CFA was done for all the subscales of the SC, IT Capability, KC, and KM. The results of the Kaiser-Meyer-Olkin (KMO) test, Bartlett’s test, and the Communalities were examined. As the findings, all the KMO values are above 0.6 and it is sufficient to justify the sample adequacy for a CFA [55]. All scales have significant results for Bartlett’s Test which explains the sufficient level of correlation among the items of one scale. The items which have communality values less than 0.4 were removed from the analysis due to its lower level of variability. All the subscales of the variables SC, IT, KC, and KM showed satisfactory level consistency with the Cronbach’s Alpha values are above as 0.7, which is the threshold level for the reliability coefficient. [54].

The general characteristics of the sample with respect to age, academic qualifications, job positions, years of experience, and job position of the respondents were considered here. Figure 2 illustrates the composition of the institutions according to the sex of the Research Officer. In each institution the majority of the Research Offices is female and it is nearly 57% of the population. Young Researcher Officers who are

below the age of 30 years represent 13.6% of the population and 20% of the population are above 50 years in age.

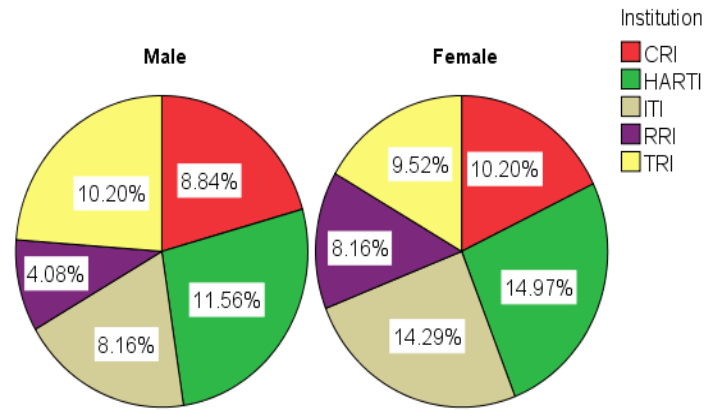


Figure 2: Composition of the Institution with the sex of the Research Officer

Note: CRI, HARTI, RRI, TRI are Agricultural Research Institutions and ITI is a IT Research Institution

51% of the population consists of Junior Research officers and 46% of the Research Officers (Senior and Junior) have less than 10 years of experience. Educational qualifications of these Research Officers is at a satisfactory level as 78% of them are have Postgraduate qualifications, including 26% of Doctoral Degrees.

The variable ‘Social Capital’ consists of the subscales as Structural, Relational, and Cognitive and the average ratings given to these subscales are in between 4.33-5.17. Thus, the respondents are reasonably happy with the environment in their institutions to maintain trustful relationships, use expertise tacit knowledge, and share their accrued knowledge with due recognition. However, the respondents (Research Officers) think that the discussions and documentation are effective and useful when using Sinhala rather than English. The Cognitive dimension is the only factor with a slight low level of ratings.

Table I: Summary measures of the subscales

	Mean	Std. Deviation	Mini	Max	Quartiles		
					25%	50%	75%
Social Capital (Rating scale 0-7)							
Structural	4.86	0.98	1.50	7.00	4.25	5.00	5.50
Relational	5.17	1.01	1.67	7.00	4.67	5.33	6.00
Cognitive	4.33	1.38	1.00	7.00	3.50	4.50	5.50
IT Capability/ Facilities (Rating scale 0-7)							
Infrastructure	4.21	1.21	0.80	6.60	3.40	4.40	5.20
Knowledge	5.99	0.69	4.00	7.00	5.50	6.00	6.50
Operations	4.91	0.90	2.67	7.00	4.33	5.00	5.67
Knowledge Creation (Rating scale 0-7)							
Socialization	4.70	1.20	1.00	7.00	4.00	5.00	5.67
Externalization	5.45	0.93	2.00	7.00	5.00	5.67	6.00
Combination	4.93	1.12	2.00	7.00	4.00	5.00	5.75
Internalization	4.63	1.25	1.50	6.50	3.50	5.00	5.50
Knowledge Management (Rating scale 0-7)							
Acquisition	4.71	0.91	1.50	7.00	4.00	4.75	5.25
Retention	3.93	1.34	0.00	6.00	3.00	4.00	5.00
Sharing	3.97	1.06	0.40	6.40	3.40	4.00	4.70
Utilization	4.26	1.21	0.00	6.75	3.75	4.25	5.00

Source: Survey data

The variable IT consists of the level of IT knowledge of respondents (Research Officers) and the IT team of the institution, operations using IT, and the infrastructure facilities given by the institution. The average ratings given to these subscales are also at a satisfactory level as 4.21-5.99 (Table I). Nearly 25% of the Research Officers have rated the infrastructure of their institutions as poor by giving a rate below 3.4. Nearly 90% of the Research Officers believe that they have a good level of IT knowledge and 82% also think similarly regarding the IT team of their institution. Usage of the electronic resources of the Research Officers is at a very satisfactory level. Around 88% of the respondents refer Online-Journals and 74% of the respondents use Online-books for their research work. Nearly 86% of the respondents frequent search Web-information for various purposes.

The variable KC consists of facilities and opportunities provided by the institution to socialize, externalize, combine, and internalize the crated knowledge. It is also at a satisfactory level with the average ratings in between 4.63-5.45. It implies that the institutions provide a satisfactory level of support to create new knowledge, and giving acceptance and application for such innovations. However, the Research Officers are not happy with the opportunities or the facilities provided by their institutions to represent/participate for international forums. Only 36% of the Research Officers rated this facility at a good level. More than 50% of the Research Officers rated the facility for accessing the external databases such as Emerald, PubMed, Science Direct etc., as very poor. Further, nearly 50% of the Research Officers are not satisfied with the existence/maintenance of their own institutional database. As a good practice, appointing specialists for different subject areas does not in most of these institutions.

Finally, the variable Knowledge Management is measured under four dimensions as acquisition, retention, sharing, and utilization. Management of acquired knowledge, storing or keeping it for future use, sharing the acquired knowledge with the internal and external parties, and utilization of the existing knowledge for the decision making and

development activities of the country were discussed here. The average ratings given to these subscales varied from 3.93 to 4.71.

The dimensions of Retention and Sharing are not at a satisfactory level. Poor level of mechanisms to retain the acquired and existing knowledge, and to work collaboratively with the expertise are highlighted here. Since Sri Lankan Research Institutions lack institutional level online repositories, it is difficult to share the acquired knowledge with the external parties or even among the internal researchers. Though the facilities and willingness are available to share the knowledge, these institutions do not have a proper mechanism to manage a knowledge-sharing system. Only about 15% of Research Officers claimed that they have a good mechanism to share their knowledge. Grouping people for the research work is at a good level but there are complaints about non-allocation of specialists to these groups.

The tested direct effects and indirect effects are illustrated in Figure 3. SC and IT has significant direct effects on KM. Further, the indirect effects through KC are also significant at 5% level.

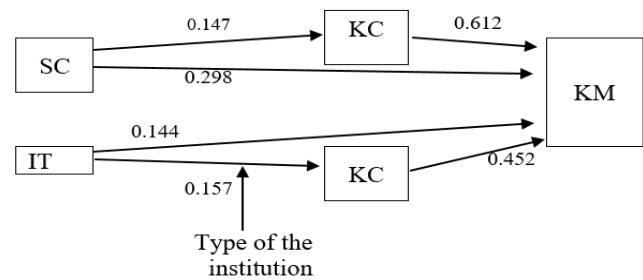


Figure 3: Models with R-squared values

As to the table II and figure 3, the KC has a significant *partial mediating* effect on the relationship existing from SC to KM.

Table II: Results of Regression models

Model No.	Model	R ²	Sobel test statistic
1	KC=3.035+0.406SC	0.147*	
2	KC=2.596+0.399IT+0.490Type	0.157*	
3	KM=0.945+0.668KC	0.532*	
4	KM=0.645+0.386SC+0.358IT	0.313*	
5- Direct Model	KM=1.722+0.537SC	0.298*	
6- Indirect Model	KM=0.019+0.301SC+0.563KC	0.612*	4.2144*
7- Direct Model	KM=2.319+0.395IT	0.144*	
8- Indirect Model	KM=0.297+0.282IT+0.510KC	0.452*	2.4268*

Source: Survey data. *- significant at 5% level

As a result of it, the Beta-coefficient of the SC has reduced from 0.537 (direct model) to 0.301 (indirect model, see the model 5 & 6 in Table II) and increased the model accuracy

simultaneously. Similarly, the KC has a significant *partial mediating* effect on the relationship existing from IT to KM. Thus, the Beta-coefficient of IT has reduced from 0.395 (direct model) to 0.282 (indirect model, see the model 7 & 8 in Table II) and increased the model accuracy simultaneously. The Sobel test statistics have also confirmed the mediating effect of KC on both moles at 5% level. The direct model without KC (model 4 in Table II) highlights that the SC has a higher impact on KM than the IT by having the standard Betas as 0.411 and 0.332 respectively.

VII. CONCLUSIONS AND RECOMMENDATIONS

The study revealed that Knowledge Management system of a research institution can be improved by enhancing the facilities and opportunities given to improve the Social Capital and IT capability/infrastructure of the institution. Though these two factors have a significant impact on Knowledge Management, improving Social Capital will be more useful to enhance Knowledge Management than improving the IT capability/infrastructure. Enhancing the facilities to create new knowledge (KC) is essential to develop a Knowledge Management system, but it does not completely ignore the importance of Social Capital and IT capability /infrastructure (partially mediate). Facilitating to enhance Knowledge Creation simultaneously with the Social Capital and IT will help to manage the acquired knowledge successfully and efficiently.

Managing effective and updated databases in an institution and facilitating the internal and external parties to access the existing knowledge will be beneficial to all the Research Officers, policy-makers and to other relevant authorities. Providing facilities to share the knowledge is not sufficient; there should be a proper mechanism to manage the sharing-system while having a trusting environment and giving the credibility to the knowledge-creator. The PRIs can consider this major drawback found in this study. The PRIs should provide facilities to access online databases, journals, and other materials to Research Officers to get a better level of knowledge creation and it will improve the quality of the researchers. This study contributes to extend the strategies of KM by using the employees' perspectives in PRIs in Sri Lanka and the findings can be used for wider public sector research community in order to improve the national research outputs/outcomes.

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