

Key Factors Influencing Individual Knowledge Capability in KIFs

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Abstract—Knowledge management (KM) literature has mainly focused on the antecedents of KM. The purpose of this study is to investigate the effect of specific human resource management (HRM) practices on employee knowledge sharing and its outcome as individual knowledge capability. Based on previous literature, a model is proposed for the study and hypotheses are formulated. The cross-sectional dataset comes from a sample of 19 knowledge intensive firms (KIFs). This study has run an item parceling technique followed by Confirmatory Factor Analysis (CFA) on the latent constructs of the research model. Employees' collaboration and their interpersonal trust can help to improve their knowledge sharing behaviour and knowledge capability within organisations. This study suggests that in future, by using a larger sample, better statistical insight is possible. The findings of this study are beneficial for scholars, policy makers and practitioners. The empirical results of this study are entirely based on employees' perceptions and make a significant research contribution, given there is a dearth of empirical research focusing on the subcontinent.

Keywords—Employees' collaboration, individual knowledge capability, knowledge sharing, monetary rewards, structural equation modelling.

I. INTRODUCTION

EMPLOYEES' knowledge, as an intangible asset, is beginning to replace tangible assets for value creation in the current knowledge economy. The capability to share, apply and then generate new knowledge provides a competitive advantage to firms [1]. Though, the roots of knowledge are linked to the earliest human civilisations, it is only few decades ago that firms began to understand its significance [2]. Individuals' tacit knowledge that exists only in people's minds has a great worth and cannot transfer to others easily. In the current, knowledge economy, employees' knowledge, has a critical role, particularly, where the individuals' role is mostly intellectual and such organisations are known as KIFs [3].

Knowledge, in KIFs, is often supposed that it is the property of an individual employee. However, in actual practice, knowledge is created in the collective activities between employees of an organisation. KM initiatives can help organisations and their employees to improve decision-making, innovation, and profitability [4]. Several empirical studies in various business sectors indicate the importance of HRM practices to enhance employees' knowledge sharing behaviour, nevertheless, little is known regarding these

relationships in Asian countries and merits further empirical investigation [5].

The rational of this study is that several researchers have examined the knowledge sharing behaviour using student samples. Students are motivated to share knowledge with other students to improve and validate their knowledge and to get good grades. However, future research is required to understand trust and teamwork (collaboration) in the knowledge sharing context through the employees' perspective. Following that suggestion, this study tests the effect of trust and collaboration (through teamwork and face-to-face interactions) on employees' knowledge of sharing behavior [6].

In this study, the prime concern is: How employees' collaboration influences their and firms' knowledge capability? The success of any KM initiative, like knowledge sharing, also requires the trust and willingness to share their knowledge. The paper is structured so that following this brief introduction, a review of the relevant literature, and related hypotheses are proposed followed by research methodology, results discussion and brief conclusions.

II. LITERATURE REVIEW AND HYPOTHESES FORMULATION

Employees' knowledge, in KIFs, is a critical resource that knowledge remains with an individual and could be unproductive if it is not utilised or shared [1]. Next, section will discuss antecedents of employees knowledge sharing and its outcomes used in the research model of this study.

A. Employees' Collaboration

This study uses the term 'employee collaboration' as a HRM practice, when employees engage in face-to-face interactions and work together informally and formally for common goals in their organisations. Knowledge sharing acts as a goal for employees' collaboration, with an emphasis on learning. Employees' collaboration at the organisational level can be enhanced through cross functional teams [5]. Collaboration for an employee may be high even if the individual is not involved in the knowledge sharing. Collaboration is based on communication and teamwork to improve skills in an informal setup. Employee collaboration among staff may be high when involved in knowledge sharing. If the employee believes that knowledge sharing is something that is commonly done at their organisation, and thus something expected by colleagues and management, an employee is more likely to engage in knowledge sharing. This is supported by the theory of reasoned action [7]. Hence, people management practices, such as employee collaboration, positively improve the

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knowledge flow through employee knowledge sharing in organisations [8].

H1: Employee collaboration influences on employees knowledge Sharing

B. Role of Interpersonal Trust

There are some external factors attached to employees knowledge sharing. The external factor includes building interpersonal trust with the recipient through interpersonal similarities. HR managers can facilitate interpersonal trust between employees by providing a team-based environment. Employees can also mingle easily in networks on and off the job, which can boost the knowledge sharing process. The term 'trust' used in this study, refers to employees' interpersonal trust in their organisations [9]. Trust is a bandwidth of the communication. The study discussed trust as an antecedent of employees knowledge sharing. The concept of trust in this study is based on employee's trust in their colleagues and management [9]. Trust describes the extent to which the employee is prepared to put himself in a vulnerable position with respect to their colleagues and management. Sharing knowledge may make the employee vulnerable. Knowledge shared by the employee may be used against them by others (e.g., it may be easier to fire an employee who does not possess unique knowledge). At the same time, using knowledge shared by others may result in negative consequences because the knowledge may be invalid or because it was shared with the aim to manipulate the employee, rather than to help. Thus, if an employee believes that making themselves vulnerable in their organization will not result in negative consequences, then that employee is more likely to be involved in knowledge sharing. Hence, trust influences employee knowledge sharing behaviour [10].

H2: Trust has a significant influence on employees knowledge Sharing

C. Monetary Rewards

The reward systems are the one of the main motivational techniques to enhance knowledge sharing in organisations. First and foremost, for effective knowledge sharing, monetary rewards could be given to those organisational members who coordinate and participate in teams with valuable inputs. Second, visibility of knowledge sharing sources (who provide valuable inputs) could be improved in workplaces [11]. Employees perceive that open and transparent rewards should be given to those employees who spend their time supporting other members by adding value to the organisation, and mobilizing knowledge within an organisation [12]. As employees' sharing of their experience and knowledge is related to their willingness and behaviour, rewards could be focused to increase participation and coordination, rather than on outcomes.

Rewarding employees as an incentive scheme acts as a motivational technique that drives employees' knowledge sharing behaviour within organisations. However, on the other hand, one could argue that routine rewards and group based reward systems may encourage opportunistic behaviour and

freeloading on the contributions of others. Organisations can discourage opportunistic behaviour by designing their incentives to those employees who participate in knowledge sharing and creation activities. It could be argued that if the employee believes that participating in knowledge sharing is likely to result in monetary rewards by an organisation, he or she is more likely to engage in knowledge sharing. This is supported by the transactional leadership theory. Transactional leadership theory focuses on the exchange of resources by providing something to the employee they want in exchange for something the leader wants [13].

H3: Monetary rewards have a significant effect on employees knowledge sharing.

D. Individual Knowledge Capability

In today's knowledge economy, most organisations are attempting to be innovative to maintain competitive advantage. It has been suggested that managing knowledge can improve the capability of the organisations [14]. Through the employee's lens, for instance in the telecommunication sector, employees perceive that their knowledge has an asset value in emerging technologies, and their knowledge sharing related to technical skills can help both themselves (through their own learning) and their organisations (through improved knowledge capability) to survive in this dynamic business environment. It could be argued that by participating in knowledge sharing activities the employee engages in interactions within communities of practice, resulting in better understanding of how the knowledge that he or she has applies in different contexts and giving him or her access to the knowledge of others. The new knowledge, thus socially constructed, can take the form of new products and new processes. This is supported by tacit versus explicit knowledge theory (with new products and new processes seen as tacit knowledge captured as explicit knowledge) and by the social constructivism theory.

H4: Employees' knowledge sharing is associated with individual knowledge capability.

All hypotheses are shown in Fig. 1.

III. RESEARCH METHODOLOGY

The samples were obtained from populations in the educational and telecommunication sectors. The population of this study consisted of employees who use their experience and knowledge in their organisations. One of the reasons for choosing these two sectors for this study is that both the higher education institutions and telecommunication sectors are rapidly growing in Pakistan. Another reason is that employees' knowledge is a key resource, along with other resources, in both business sectors. In this study, a simple random sampling strategy was used on databases. Initially, 30 companies were agreed to participate in the study, later, a total of 19 companies made up the final sample.

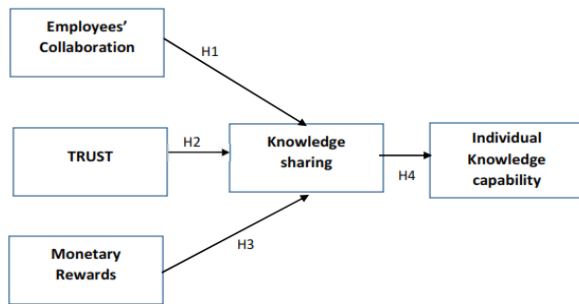


Fig. 1 Conceptual Model

A. Data Collection

Initially the selected organisations were contacted by email, which briefly stated the research topic, the research questions, and the significance of the research. This email pre-empted a visit to these organisations in Pakistan. When an organisation agreed to participate in the research, the researcher visited the selected organisation, with special attention being paid to the contact persons (gatekeepers). Survey packages were delivered, containing an information sheet for participants and a hard copy of the questionnaire. Questionnaires were distributed by the gatekeepers to the volunteer participants, and completed questionnaires were collected or received by the contact persons at a time convenient to the respondents. Researchers had no control on the distribution of the questionnaire to the recruited respondents. In order to maximize the overall response rate, follow up visits and emails were made to the gate keepers. A total of 390 valid questionnaires were used in the data analysis for a 65 % response rate.

IV. RESULTS

A. The Measurement Model

In the data analysis of this study, the items related to their constructs in the final model were used in CFA in the statistical software package, AMOS. As a procedure, the indicators that reflect the latent constructs are used [15]. The maximum likelihood (ML) method was selected because the sample size was greater than 150. The cut-off value of the factor loadings is equal to or above 0.50 [16].

The measurement model in this data analysis was evaluated by examining the factor loadings/regression weights of each item for statistical significance. As discussed in the previous paragraph, the factor loadings should be at least 0.50 and above for adequate individual item reliability [16]. Items in this study were dropped from consideration if their factor loadings were below the recommended level of 0.50.

B. Items' Parcelling

Initially Kenny (1979), accredited with an approach in which items are aggregated to provide a single indicator of a latent variable, which is known as item parcelling. Item parcelling leads to fewer indicators and provides better measurement model fit [16]. Two or more items can be parcelled together to improve the statistical model fit [17]. Furthermore, the new parcel may be more normally distributed as compared to the individual items.

The item parcelling technique is useful in small samples with comparatively lesser model parameters and can produce more reliable results with better model fit [16]. This study has used item parcelling based on aggregating two items in one parcel having similar meanings. EC11 was computed by adding EC7 and EC10; RR04 is computed by adding RR02 and RR03; and KS13 was computed by adding KS05 and KS06. Similarly, TR10 was computed by adding TR02 and TR06, whereas, IC04 was computed by adding IC01 and IC03. The items and their relevant parcel are shown in Table I.

TABLE I
ITEM PARCELING AND THEIR MEASURE

Items and their Descriptions	Parcel	Item Parcel Measure
EC: My organisation supports cross-functional team work for learning through collaboration. EC: Our employees interact and exchange ideas with people from different areas of the company.	EC	Learning in collaboration and Cross-functional
RR: I am satisfied with the monetary rewards that I receive in exchange for the knowledge I give the organisation. RR: My feelings about the monetary rewards I receive for sharing knowledge are excellent.	RR	Monetary rewards for sharing knowledge are good in my organisation
TR: I can trust the people I work with to lend me a hand if needed. TR06: I can trust the people in other departments to lend me a hand if needed.	TR	I can trust the people in my organisation to lend me a hand if needed.
KS: People in my organisation frequently collect knowledge of know-where or know-whom from other organisational members. KS: People in my organisation frequently share knowledge of know-where or know-whom with other organisational members.	KS	People in my organisation collect and share knowledge of know-where and know-whom from other organisational members
IC: I often develop new products and services that are well received by the market. IC: I often develop novel skills for transforming old products into new ones for the market.	IC	I often develop new skills to develop new products for market

C. Goodness of Fit Indices

This study used a number of goodness of fit indices to test the measurement model (CFA) and structural equation model (SEM). The fit indices used in this study are: the ratio of chi-square (χ^2), comparative fit index (CFI), goodness-of-fit index

(GFI), adjusted goodness-of-fit index (AGFI), normed fit index (NFI), the root mean square error of approximation (RMSEA), and the standard root mean square residual (SRMR) [18].

As shown in Table II, normed χ^2 was 4.00 at $p < 0.001$, whereas, the recommended value is ≤ 5 for model fit (Ryu, Ho, and Han, 2003). Other fit indices results are also encouraging, for instance, GFI and NFI are both 0.80, and equal to the recommended cut-off level of 0.80. The RMSEA was 0.80, which is acceptable, due to the below cut-off level of 0.10 [19]. Hence, the model showed an acceptable fit according to the dataset, as shown in Table II.

TABLE II
MEASUREMENT MODEL FIT *[19]

Goodness-of-fit measures	χ^2 Test statistics/df	GFI	NFI	RMSEA	RMR
*standard value	≤ 5.00	≥ 0.80	≥ 0.80	≤ 0.10	≤ 0.08
CFA model	4.0	0.80	0.80	0.80	0.07

D. Structural Model

In this study, a two-step recommended technique was used to obtain the SEM results [15]. Initially, a measurement model was designed, which is based on the indicators of the latent constructs to run CFA, and then the SEM was created according to Fig. 1. The SEM can help to confirm the dataset fit with the model of this study. In this study, the four hypotheses' paths in the final model were simultaneously tested. Overall, the model was supported and the data were a good fit. To determine the validity of the hypotheses paths, the statistical significance of all the structural parameter values was examined. The results from the analysis implied that of the four hypotheses, hypotheses H1, H1, and H4, were strongly supported, while, H3 was found to be not supported. Table III shows the hypotheses results.

TABLE III
HYPOTHESIS RESULTS OF THIS STUDY

Hypotheses	Path	Path coefficient	Std. error	Critical ratio	P-value	Remarks
H1	Employee collaboration \rightarrow KS	.495	.135	3.655	***	Supported
H2	Trust \rightarrow KS	.510	.072	7.039	***	Supported
H3	Monetary rewards \rightarrow KS	.001	.023	.057	.954	Not Supported
H4	KS \rightarrow Individual knowledge Capability	1.045	.119	8.813	***	Supported

*** Significant at $p < 0.001$.

Inspection of scalar estimates reveals that three of the four hypothesis paths are statistically significant. These are: employee collaboration to KS (H1, $\beta = 0.495$, $p < 0.001$), trust to employees' knowledge sharing (KS) (H2, $\beta = 0.510$, $p < 0.001$), and employee KS to organisational capability (H4, $\beta = 1.045$, $p < 0.001$). The remaining path from monetary reward to KS (H3, $\beta = 0.001$), was not significant at $p > 0.05$.

E. Rationale for Using the SEM Approach

SEM is more advanced and requires substantial computing power, but provides complete measurement of all path coefficients, even for complex models [18]. Although other multivariate methods, such as linear and multiple regression, are known to be statistically powerful in testing independent and dependant variables, human and behavioural factors are

complex in the field of management. The dependant and independent variables can be interchanged and are complex. SEM methodology is a useful statistical technique to test complex models, using measurement models and structural models.

V. DISCUSSIONS

A. Employees' Collaboration and Knowledge Sharing

As shown in Table III, the results suggest that employees' collaboration has a positive effect on knowledge sharing behaviour at ($\beta = 0.495$, $p < 0.001$). The results are consistent with the empirical research in the context of employees' knowledge sharing in higher education institutions, for instance, among Malaysian university teachers. The results of this study support the view that employee collaboration with other colleagues in organizations provides opportunities for learning. Knowledge of know-whom and know-where is an essential part of collaboration that can help employees find the appropriate knowledge holder(s) in organisations. Knowledge of know-where acts as a guide and pointer for potential collaboration, whereas, knowledge of know-whom can trigger collaboration among employees where the goal may be the sharing of their knowledge. This study focuses on informal interactions, whereas, virtual collaboration is gaining in popularity as emerging technologies save time and costs. Face-to-face collaboration keeps employees involved in the workplace, which will ultimately improve the organisational capability and knowledge sharing activities without the aid of technology.

B. Trust and Employees' Knowledge Sharing

The result of this study shows that trust has a strong positive effect on employees' knowledge sharing behaviour at ($\beta = 0.510$, $p < 0.001$). The latent construct trust has two dimensions in the results of this study. These dimensions are interpersonal trust and trust in the management. Firstly, this study discusses interpersonal trust (trust between employees) and later trust in management. Interpersonal trust among employees is a key antecedent of employees' knowledge sharing behaviour in organisations. This finding that trust between their colleagues has a positive impact on their knowledge sharing behaviour is consistent with [20].

The finding suggests that interpersonal trust positively impacts on employees' knowledge sharing behaviour in organisations. Employees' knowledge hoarding behaviour affects both an individual's learning capability and organisational knowledge capability in the long term. Firstly, the knowledge that exists in an individual's brain is of no use to an organisation until it is disclosed. Secondly, whilst organisations may have a large human capital pool, this is of little use if the knowledge contained within the brains of those individuals is not shared and utilised to further improve organisational knowledge capability. One of the key factors that binds employees and reduces knowledge hoarding is interpersonal trust.

C. Monetary Rewards in the Knowledge Context

Contrary to the literature, the results of this study shows that monetary rewards have no statistical significant effect on employees knowledge sharing behaviour at ($\beta=0.001$, $p>0.05$). This result shows that employees' knowledge sharing behaviour is independent of organisational incentives; hence, monetary incentives are not an influential technique to improve employees' knowledge sharing behaviour in organisations. This finding supports the previous research on the causative relationship between monetary incentives and employees' knowledge sharing behaviour. For example, [21] suggest that incentives (routine annual monetary rewards) negatively impact employees' knowledge sharing behaviour in the Korean public sector.

One reason that monetary rewards have no effect on knowledge employees' sharing behaviour in KIFs is due to younger employees who have less job experience in Pakistani KIFs. Almost half of the respondents were under 30 years of age and more than 85 % had less than five years' work experience. It could be argued that employees with relatively little work experience in Pakistani KIFs in the telecommunication and higher education sectors are more inclined towards career development than monetary rewards. The monetary rewards may be important but are not a priority. This perception is known as employees' instrumentalism, which is "...the belief that work is primarily a means to non-work ends rather than a central life interest" [22]. Hence, it could be argued that young Pakistani employees are orientated more towards knowledge sharing for their own personal development rather than towards incentives in knowledge intensive organisations.

D. Employees' Knowledge Sharing and Individual Knowledge Capability

The result of this study shows that employees' knowledge sharing has a strong positive effect on the individuals' capability (personal development) at ($\beta=1.045$, $p<0.001$). This study result supports findings of [23]. Employees' personal development takes place through the validation of employees' tacit knowledge. Validation of knowledge occurs when colleagues who receive the knowledge utilise it and provide feedback to the knowledge source. Once knowledge is validated, employees' reputation can be increased in their organisation. In fact, managing employees' knowledge is different from traditional management, where managers administer and engage in decision-making, and the employees' roles are to act according to the instructions of their line and top managers. However, in KIFs the role of managers may be as a coach and facilitator. When organisations provide opportunities to their skilled employees by asking them to take part in the organisational process, this may increase employees' willingness to share and improve their knowledge and organisational knowledge capability.

VI. CONCLUSION

People gain knowledge through their personal experience. Due to competitive pressures, organisations are focusing more

on how to manage knowledge resources. KM scholars argue that there is a need to develop a mechanism for effective KM in organisations. KM needs suitably motivated employees to share their knowledge in their organisation. HRM practices can influence employees' motivation and behaviour in workplaces to influence their knowledge sharing behaviour. By sharing employees' knowledge, organisations can improve their knowledge capability and perform better than their competitors. Collaboration and trust, through employees' knowledge sharing behaviour, can help to improve employee knowledge capability. For years, KM has been the topic of seminars, presentations, articles and organisational intervention strategies. The growing research on KM suggests that the effective utilisation of employees' knowledge can further improve employees' knowledge capability.

The results of this study suggest that in KIFs, particularly in the telecommunications and higher education sectors in Pakistan, employee collaboration and trust have a significant impact on employees' knowledge sharing behaviour.

This paper found a mix of consistent and contrasting results with regards to the antecedents of employees' knowledge sharing behaviour. The paper concludes that the first and highest priority for organisations is to focus on employees' collaborative practices and trust to foster knowledge sharing behaviour. The results show that employees' collaboration across departments in organisations positively influences knowledge sharing behaviour. Collaboration with other members in organisations for collecting knowledge is part of a collaborative learning process and leads to a better understanding of contextual knowledge. When employees collaborate for know-how to acquire knowledge, this form of collaboration acts as employee recognition, and may influence knowledge-sharing behaviour.

Furthermore, to improve employee collaboration, the role of managers and organisations is critical in boosting knowledge sharing in organisations. Fair and transparent policies may enhance trust at the organisational level, whereas a traditional administrative style may hinder knowledge sharing in organisations. The role of the manager may be a coach and facilitator within KIFs to foster employees' knowledge sharing in organisations. Although these results are based on only two business sectors in a developing nation, the role of employees' knowledge is critical in organisations where most of the work is of an intellectual nature. Hence, considering employees' knowledge as a resource, organisations can take measures to implement fair and transparent policies through managers who understand the value of employees' knowledge to their organisation. It could be argued that respondents of this study are orientated more towards knowledge sharing for their own personal development rather than towards incentives in knowledge intensive organisations. Another reason could be that employees feel recognised when they are hired by an organisation. Therefore, these employees may not be inclined towards incentives but to their own personal development. In essence, individuals' knowledge plays a pivotal role in organisational success in the current dynamic business environment. Several factors can hamper employees'

knowledge sharing, with the most important factors being employee turnover and lack of trust (between employees and management) which are critical to business success. Employee turnover may create a knowledge vacuum, when skilled employees leave their position and the company for good and take their tacit knowledge with them. To address this, employee collaboration fosters knowledge sharing behaviour and creates a collaborative learning culture.

A. Research Implications

Through the organisation lens, employees have knowledge, skills and abilities. Employees' knowledge and skills are trainable, and different organisations require different levels of skills and knowledge for particular jobs. However, employees' abilities are related to 'who employees are and what employees can do. For instance, some employees may have unique abilities and knowledge and by recognising employees' abilities, organisation can motivate their workforces to improve its capability.

The results of this study have a number of implications for managers and policymakers. Firstly, the highest priority in improving organisational capability is to facilitate employees' collaborative practices. The concept of managing knowledge in developing nations is in its infancy, leading to inadequate organisational support to improve collaborative practices through employees' knowledge sharing. Employee collaboration may help to create a learning culture where employees can share and utilise their knowledge. When a learning culture is established and supported by the organisation, employees are able to share their knowledge to support their colleagues. Moreover, the significant effect of knowledge sharing on individual capability suggests that sharing knowledge helps to improve individuals' learning ability. This result may help policymakers in improving individuals' capabilities through different channels. One of the channels is through sharing experiences and knowledge from foreign skilled individuals. For instance, foreign professionals are sometimes hired on short or long-term contracts for the purpose of knowledge transfer to improve the individual capabilities of local workers.

VII. LIMITATIONS OF STUDY AND FUTURE RESEARCH

The data for this study was collected from two business sectors only, in future, a larger sample size can provide more statistical power. The focus of this is on quantitative methodology using a survey questionnaire. Future researchers could utilise other research methodological techniques including qualitative methods (e.g. case study approach), or mixed methods approaches to explore the results reported in this study in more depth. Future research may use demographic variables (e.g. gender, education qualifications and job experience) and their relationships with employees' knowledge sharing behaviour. This study has discussed the results and provided support from existing literature to strengthen the findings, followed by the research contributions and research limitations of the results. This study briefly

provides some implications to theory, professionals and policymakers.

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