Multi-Group Moderation Analysis for Relationship between Knowledge Sharing Orientation and Business Performance

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ABSTRACT

This paper examines the moderating effect of firm age on relationship between knowledge sharing orientation and business performance. Convenience sample of 274 firms from manufacturing and service sector was taken as sample for the study from National Capital Region (NCR) and Punjab State of India. The survey questionnaire was administered to the managerial level employees (C.E.O's, top level and middle level managers who were key decision makers in the organizations). The findings show that the knowledge sharing orientation exhibits a positive impact on business performance; firm age does not moderate the relationship between knowledge sharing orientation and business performance. The findings of the research will help knowledge management researchers as well as practitioners develop a better understanding of the role of knowledge sharing in successful implementation of knowledge management programs.

Keywords: Business Performance, Knowledge Sharing Orientation, Moderation Analysis, Multi-Group, SEM

INTRODUCTION

Knowledge sharing orientation stands for the tendency in the organization to facilitate, encourage and reward knowledge exchange with a motive of capturing tacit and explicit learning gained by the employees. Knowledge sharing orientation is one of the important dimensions of knowledge management orientation (Vij & Sharma, 2004). Knowledge sharing is the critical means through which employees can contribute to knowledge application, innovation and ultimately the competitive advantage. Knowledge sharing oriented knowledge management practices include: appointment of facilitators to help people better express what they know so that others can understand it, making knowledge sharing behaviors integral part of performance appraisal system, depriving people of some organizational benefits for not sharing the

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knowledge, publicly recognizing and rewarding the knowledge sharing employees. In such an atmosphere, people do not have any reservations while parting with their tacit knowledge. Intra-organizational knowledge sharing keeps knowledge and information obtained from various sources up-to-date and serves as a guide for future action (Hsu & Wang, 2008).

Business performance is normally defined as the degree to which the organization is able to meet the needs of its stakeholders and its own needs for survival. It is influenced by different factors that are combined in different ways to both increase and detract performance (Ramayah, Samat & Lo, 2011). The focus on organizational performance to gain competitive advantage is essential for any business organization. Business performance is considered as a complex multidimensional construct. Organizations may assess performance based on tangible outcomes like profitability, market share, growth in number of employees, product quality etc. Other criteria may be intangibles such as customer satisfaction, employee satisfaction or product development. Though measure of performance may be objective (available in financial statements) or perceived/subjective, the use of subjective measure is common practice in strategy related research when financial statement data are unavailable or they do not allow for accurate comparisons amongst firms. Financial data for empirical research cannot be easily obtained because of sensitivity of this data (Rhodes et al., 2008; Rasula, Vuksic & Stemberger, 2012). Moreover, literature shows that there is high correlation between subjective and objective measures of performance (Dess & Robinson, 1984).

The present study endeavours to find the impact of knowledge sharing orientation of business on its performance, in the Indian context.

PREVIOUS STUDIES

The construct of knowledge sharing has been studied from different facets. Knowledge sharing includes not only the transmission (sending) of knowledge but also the absorption of the knowledge by the receiver (Khalil & Shea, 2012).

The Literature suggests that top management supports are positively associated with knowledge sharing (Gupta, 2008; Hsu & Wang, 2008). Jennex et al. (2008) suggest that continuous management support is a critical success factor and also necessary for sustaining knowledge management success. However, CEO's and other critical decision makers provide the necessary environment that encourages knowledge management through knowledge creation and reuse and provides the necessary resources for the effective knowledge management initiative.

Continuous senior management support is a critical success factor and significantly influences knowledge sharing process through employees' perception of a knowledge sharing culture and their willingness to share knowledge, providing the management environment that encourages KM through knowledge creation and reuse by members of the organization (Connelly & Kelloway, 2003; Lin, 2007, Jennex et al., 2008, Wang & Noe, 2010, Mathew et al., 2012). However, Wickramasinghe & Widyaratne (2012) did not find evidence for a positive and significant relationship between team leader support and knowledge sharing.

Organizational support is positively associated with organizational perceptions of innovation characteristics and interpersonal trust, which in turn are positively related to organizational intention to facilitate knowledge sharing (Lin, 2006). Martin et al., (2005) observed that lack of trust, diverse cultures and lack of time can prevent knowledge sharing. Support from management particular to knowledge sharing is better predictor of employee knowledge sharing (Arzi et al., 2013). French (2010) has concluded that employees are more likely to share knowledge within an environment where there are high levels of trust. Trust acts as an antecedent to the knowledge sharing or knowledge transfer in the organizations (Antonova, Csepregi & Jr, 2011; Holste & Fields, 2010). However, Bakker et al. (2006) contradict and

conclude that trust is not a significant predictor of knowledge sharing.

Individual's attitude and the level of tendency towards knowledge sharing is the primary factor influencing intention to share knowledge (Abzari & Abbasi, 2011; Chatzoglou & Vraimaki, 2009). Team climate, past sharing behavior and sense of self-worth leads to positive attitude towards knowledge sharing (Welschen et al., 2012; Xue et al., 2012). Cohesiveness positively affects exchange of advice between team members and openness for sharing opinions; on the other hand, disagreement negatively affects openness for sharing opinions (Woerkom & Sanders, 2010). Muhammed et al. (2011) suggest that engaging in knowledge creation increases an individual's task knowledge through the practices of sharing and applying the knowledge in an organization. Personal interactions and work group communications are significant predictors of knowledge sharing (Wickramasinghe & Widyaratne, 2012). However, Yesil & Hirlak (2013) have not found any relationship between individual innovation behavior and knowledge sharing.

Interpersonal trust and rewards positively affect knowledge sharing (Wickramasinghe & Widyaratne, 2012; Casimir et al., 2012; Eze et al., 2013). Islam, Ahmed, Hasan & Ahmed (2011) suggest that cultural elements viz., trust, communication between staff, and leadership are vital for knowledge sharing. Kim and Lee (2006) have found that performance based reward systems, centralization, and social networks are significant variables that affect employee knowledge sharing capabilities in public and private organizations. Open mindedness, reward and incentives are important predictors of knowledge sharing (Wah et al., 2007). The managers who want to increase the incentives to share knowledge need to establish harmonious atmosphere that nurtures interpersonal congruence between employees and encourage employees to work closely together (Lin, 2007). But, Islam, Ahmed, Hasan & Ahmed (2011) have found that reward system does not have any impact on knowledge sharing.

The mainstream approach to business performance has been to consider profitability which is frequently regarded as return on investment. But, many scholars have knocked the validity of return on investment as the only indicator of business performance. The objection to the use of this parameter is that short-term profits can be increased at the expense of long term growth (Kroeger, 2007; Martinette and Leeson, 2009). Performance measures based on mere financial indicators are not enough; so non-economic indicators including market share, product development, or production efficiency are used for business performance (Zaman et al., 2012). The subjective measures of performance are preferred over objective measures because the organizations are reluctant to provide required information and objective financial data on the firms is not publicly available which makes it unmanageable to ascertain the accuracy of any reported financial figures (Covin and Slevin, 1989). Because of the sensitive nature of objective performance, the relative measures compared to the industry average in terms of growth in sales, growth in assets and growth in number of employees over the last three years can be used (Pet and Wolff, 2010; Said et al., 2010). The subjective measures are operationalized with relative performance compared to major competitor in the same industry over the last three years in terms of profitability, innovativeness, overall business performance, customer satisfaction and quality in process (Daud and Yusoff, 2010).

Studies have found that sharing of knowledge in the organization creates competitive advantage, augments innovation and performance (e.g. Darroch, 2005; Zhang, Tian & Qi, 2006; Haas & Hansen, 2007; French, 2010 and Javadi, Zadeh, Zandi & Yavarian, 2012).

Kang et al. (2008) have concluded that perceived trustworthiness between individuals involved in knowledge sharing has positively influenced both knowledge sharing and individual work performance. Knowledge sharing is recognized as an important facilitator of

organizational performance today (Endres & Chowdhury, 2013). Organizations need to develop knowledge sharing practices and agile capabilities to gain competitive advantage in an organization (Almahamid et al., 2010). Boumarafi and Jobnoun (2008) have found that organizational culture, organizational infrastructure, management support, vision clarity are good indicators for measuring the contribution of knowledge management to performance improvement. Organizations need to provide and support the acquisition, sharing and application of knowledge for effective knowledge management and systems (Navarro & Conesa, 2007; Gold, Malhotra, Segars & Albert, 2007). Organizational memory, knowledge sharing, knowledge absorption, and knowledge receptivity serve as first-order indicators of the higher-order construct labeled knowledge management orientation, which, in turn, has a positive link with market orientation and performance (Wang, Hult, Jr & Ahmed, 2009). Knowledge sharing is related to performance, and different dimensions of knowledge sharing contribute to performance differently. Knowledge sharing leads to a shared organizational understanding of weaknesses and strengths within the organization and a common frame of reference on the most effective strategies to improve performance (Ho & Hallet, 2011). Contingent factors (integration of activities, organicness of structure and characteristic of top management) influence the relationship between knowledge sharing and performance (Du, Ai & Ren, 2007). Successful knowledge transfer requires high level of individual motivation so that knowledge seeker and knowledge provider openly share and accept it, because both motivational factors and knowledge sharing have significant and major effect on performance (Akram & Bokhari; 2011). The organization's performance is strongly influenced by the extent to which the appropriate knowledge is available and utilized by those who need it (Chilton & Bloodgood, 2008).

Various researchers have used firm size, age of organization and industry type as moderating variables in research relating to strategic management. Firm size has been found to be moderating the relationships in various studies (e.g. Temtime, 2003; Chelliah, Pandian, Sulaiman & Munusamy, 2010; Kannadhasan & Nandgopal, 2011 and Varum & Rocha, 2012). Studies have shown that industry type moderates the relationships in strategy related models (e.g. Hitt, Ireland, & Stadter, 1982; Banerjee, Iyer & Kashyap, 2003; and Ortega, Martinez & Hoyos, 2006). Researcher in the field of strategy have also studied the firm age and firm size as moderating variables and proved that larger firms present more capability than smaller firms, and young firms can better exploit the resources than middle-aged-firms (e.g. Schumpeter, 1934; Stinchcombe, 1965; Hannan & Freeman, 1984; Hannan, 1998; Sorensen & Stuart, 2000; Macher & Boerner, 2006; Carr, Haggard, Hmieleski & Zahra, 2010 and Savino & Petruzzelli, 2012). Explicit knowledge sharing negatively mediated the relationship between creativity and task innovativeness but is positively mediated by tacit knowledge sharing based on know-how among project team members (Reychav et al., 2012). Organizational knowledge sharing climate mediates the relationship between knowledge sharing behavior and intellectual capital (Radaelli et al., 2011).

OBJECTIVES OF THE STUDY

In the light of above discussion, the current study endeavors:

1. To study the relationship between knowledge sharing orientation and business performance; and
2. To study the moderating effect of firm age on relationship between knowledge sharing orientation and business performance.

RESEARCH HYPOTHESES

H_1: Knowledge sharing orientation has significant, direct and positive impact on business performance;

H_2: Knowledge sharing orientation will have impact on business performance; which is invariant across firms differing by age.

RESEARCH INSTRUMENT

Self-designed non disguised questionnaire has been used for this study. The questionnaire included two scales for measuring 'Knowledge Sharing Orientation' and 'Business Performance'. For the purpose of selecting items for the scales, a battery of items was identified from the previous research and modified for the purpose of current study. The selected items were shown to experts in this field to evaluate the content validity. Based on the feedback of experts, some items were deleted / modified. Eleven statements have been selected for knowledge sharing orientation scale (Table 7 in the Appendix) and ten statements have been selected for business performance scale (Table 8 in the Appendix). Relative performance of the organization compared to major competitor for the last three years has been considered as the measure of business performance for this study. The relative performance is measured on different dimensions related to all functional areas as suggested by Balance Score Card approach (Kaplan & Norton, 1992). The instrument was pilot tested and was found to be satisfactory. Scales used for measuring the constructs were validated before further use for analysis.

RESEARCH SETTING AND SAMPLE

The unit of analysis for the study was firm. Convenience sample of 274 firms (manufacturing as well as service) was taken from National Capital Region (NCR) and Punjab State of India. The survey questionnaire was administered to 2 or 3 managerial level employees (C.E.O's, top level and middle level managers who were key decision makers in the organizations) from each of 274 firms. The average score for each firm was calculated by averaging the response of these key informants and was used for analysis. Table 1 shows the profile of the sample based on firm size, firm age and industry type.

ANALYSIS AND INTERPRETATION

The study proposed that knowledge sharing orientation impacts business performance of an organization. Structural Equation Modeling (SEM) was used to check whether knowledge sharing orientation has any impact on business performance or not. Confirmatory factor analysis (CFA) utilizing Maximum Likelihood estimation (ML) method was used to validate the Knowledge Sharing Orientation (KSO) and Business Performance scales. The psychometric properties of the scales were assessed using χ^2/df, Goodness-of fit index (GFI), Comparative-Fit Index (CFI), Root Mean Square Error of Approximation (RMSEA), Adjusted Goodness of Fit Index (AGFI) and Root Mean Residual (RMR).

VALIDATION OF KNOWLEDGE SHARING ORIENTATION SCALE

Knowledge sharing orientation (KSO) has been measured using 11 item scale. After applying the CFA on the scale, the psychometric properties of the scale were not found good and a lot of modification indices were found. Hence, it was decided to reduce observed variables to a smaller number of correlated factors using exploratory factor analysis (EFA).

In order to test the suitability of the data for factor analysis, the correlation matrix was computed and examined. The results indicated that there were enough correlations to justify the application of factor analysis. Kaiser-Meyer-Olkin measure of sampling adequacy (MSA) for individual variables was found to be sufficiently high for all variables. Overall MSA was found to be 0.722 which indicated that the sample was good enough for sampling. Bartlett's Test of Sphericity showed statistically significant

Table 1. (Sample profile)

Criteria	Category	Number of Respondents (N = 240)	%
Firm Size (Based on Investment)	≤10 Crore	186	77.9
	>10 Crore	88	32.1
Firm Size (Based on Number of Employees)	≤ 250	98	35.8
	Above 250	176	64.2
Firm Age	≤15 Years	18	6.6
	> 15 Years	256	93.4
Industry Type	Manufacturing	195	71.2
	Service	79	28.2

number of correlations among the variables (Approx. chi-square=400.887, df = 55, significance=.000). Hence, all of these standards revealed that data was fit for factor analysis. Principal Component Analysis was employed for extracting factors. The number of factors to be extracted was finalized on the basis of 'Latent Root Criterion'. Oblique rotation with Promax was run. Rotation converged in 25 iterations. All factor loadings greater than 0.50 (ignoring signs) have been considered. Three factors were extracted, which accounted for 48.041 per cent of the total variance. The three extracted factors have been given appropriate names on the basis of variables represented in each case. The Table 3 summarizes the results of EFA.

The Confirmatory Factor Analysis was applied to validate the knowledge sharing orientation scale, reflected in terms of these three factors i.e. 'Top Management Support', 'Organizational Culture' and 'Knowledge Sharing Rewards'. The RMR, GFI, AGFI, RMSEA and Normed chi square were reflecting a good fit but CFI was below the threshold value as shown in Model-I in Table 2 so it was decided to go for item purification and the item S6 was deleted because of high modification indices and the incremental fit of the scale are shown in Model-II in Table 2 Thus, the psychometric properties of the model indicated a good model fit.

VALIDATION OF BUSINESS PERFORMANCE SCALE

Business performance has been measured as subjective performance relative to major competitors, in terms of 10 item scale. On application of CFA, the psychometric properties of the scale were not found satisfactory and many modification indices were observed. Therefore, it was decided to reduce the measured variables to a smaller number of correlated factors through exploratory factor analysis (EFA).

Table 2. Model fit indices for KSO scale

Default Model	RMR	GFI	AGFI	CFI	RMSEA	$\chi 2$	Df	p-Value	$\chi 2$/df
I	0.041	0.948	0.916	0.858	0.067	90.894	41	0.000	2.217
II	0.028	0.969	0.946	0.949	0.042	47.607	32	0.037	1.488

Table 3. Results of exploratory factor analysis for knowledge sharing orientation scale

Factor Name	Name of Dimensions (% of Variance)	Statement (Factor Loading)	Cronbach's Alpha
Factor 1	Top Management Support (25.456)	We do not share ideas with other people of similar interest, especially when they are based in different departments (0.712)	0.645
		There is no restriction for employees if they want to talk to anyone in organization, including top management (0.712)	
		Top managers provide most of the necessary help and resources to enable employees to share knowledge (0.580)	
		Top Managers do not support and encourage employees to share their knowledge with colleagues (0.573)	
		In our organization, everyone speaks up if they have an idea or opinion to offer (0.530)	
Factor 2	Organizational Culture (13.277)	Our company culture welcomes debates and stimulates discussions (0.759)	0.523
		A climate of openness and trust permeates my organization (0.740)	
		Knowledge sharing behavior is built into performance appraisal system in my organization (0.587)	
Factor 3	Knowledge Sharing Rewards (9.308)	In our organization, we are rewarded for sharing knowledge with the colleagues (0.827)	0.430
		My organization's culture encourages and facilitates knowledge sharing (0.587)	
		In my organization, relatively more committed employees are more willing to share their learning and experiences with others (0.550)	

In order to test the suitability of the data for factor analysis, the correlation matrix was computed and examined. The results indicated that there were enough correlations to justify the application of factor analysis. Kaiser-Meyer-Olkin measure of sampling adequacy (MSA) for individual variables was found to be sufficiently high for all variables. Overall MSA was found to be 0.720 which indicated that the sample was good enough for sampling. Bartlett's Test of Sphericity showed statistically significant number of correlations among the variables (Approx. chi-square=728.036, df = 45, significance=.000). Hence, all of these standards revealed that data was fit for factor analysis. Principal Component Analysis was employed for extracting factors. The number of factors to be extracted was finalized on the basis of 'Latent Root Criterion'. Orthogonal rotation with Promax was run. Rotation converged in 25 iterations. All factor loadings greater than 0.50 (ignoring signs) have been considered for further analysis. One of the items 'Service Quality' did not load on to any of the factors. Three factors were extracted which accounted for 61.547 per cent of the total variance. The three extracted factors have been given appropriate names on the basis of variables represented in each case. The Table 4 summarizes the results of EFA.

Summated scales were generated for the three factors, to be used for further analysis. The Confirmatory Factor Analysis was applied to validate the business performance relative to major competitor (PER_COM) construct,

Table 4. Results of exploratory factor analysis for business performance scale

Factor Name	Name of Dimensions (% of Variance)	Statement (Factor Loading)	Cronbach's Alpha
Factor 1	Satisfaction Relative to Major Competitor (21.298%)	Customer satisfaction Compared to the major competitor (0.827)	0.707
		Employee satisfaction Compared to the major competitor (0.761)	
		Product quality Compared to the major competitor (0.667)	
Factor 2	Profitability Relative to Major Competitor (21.013%)	market share Compared to the major competitor (0.737)	0.684
		Return on investment Compared to the major competitor (0.802)	
		Sales growth compared to the major competitor (0.682)	
Factor 3	Innovativeness Relative to Major Competitor (19.237%)	Employee turnover compared to the major competitor (0.622)	0.628
		Process innovation Compared to the major competitor(0.814)	
		Product innovation Compared to the major competitor (0.776)	

reflected in terms of these three factors i.e. PER_SAT (Satisfaction relative to major competitor), PER_PRO (Profitability relative to major competitor) and PER_INN (Innovativeness relative to major competitor). Chi square statistic was equal to zero; as the model was just identified model i.e. degrees of freedom were equal to zero. In this case, the model fits the data perfectly as indicated by GFI and CFI being equal to 1. Thus, the psychometric properties of the model indicated a perfect model fit.

STRUCTURAL EQUATION MODELING

To study the first objective, i.e. to study the relationship between knowledge sharing orientation and business performance, a two stage approach has been adopted. In the first stage, the measurement model has been fitted to assess for the convergent validity and discriminant validity; and to ensure strength of measurement at the item level such that estimates among constructs are not confounded. The transition from a measurement model to structural model is strictly the application of the structural theory in terms of relationships among constructs. A measurement model typically represents all constructs with non-causal relationships among them. The structural model applies the structural theory by specifying which constructs are related to each other and the nature of each relationship. In measurement model the relationship between the different variables is represented by two-headed curved arrow while in Structural model this relationship changes to a dependence relationship and is represented by a single headed arrow.

The measurement model, showing the covariance arrow, has been presented in Figure 1.

The part-A of Table 5 shows the psychometric properties of the fitted measurement model and indicates a good model fit. The Chi-square statistic is 128.570 and is significant at $p<0.05$. Normed chi-square is below the suggested threshold level of 3. RMR and RMSEA are very near to 0. GFI, AGFI and CFI are close to the threshold level, indicating a near perfect

Figure 1. Measurement model

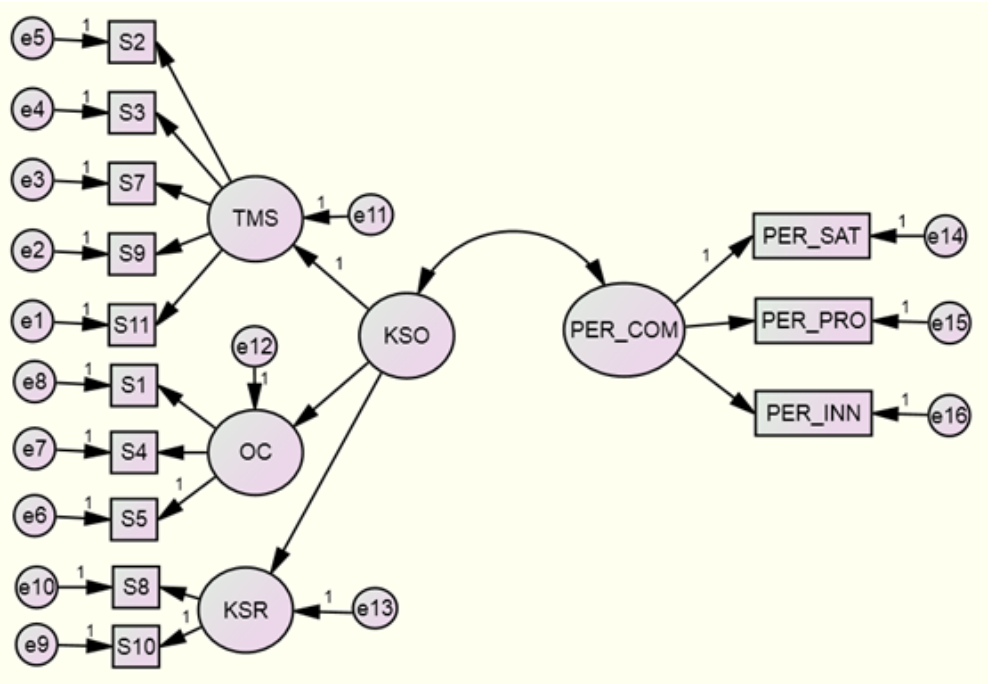


Table 5. Comparative model fit indices for measurement model and structural model

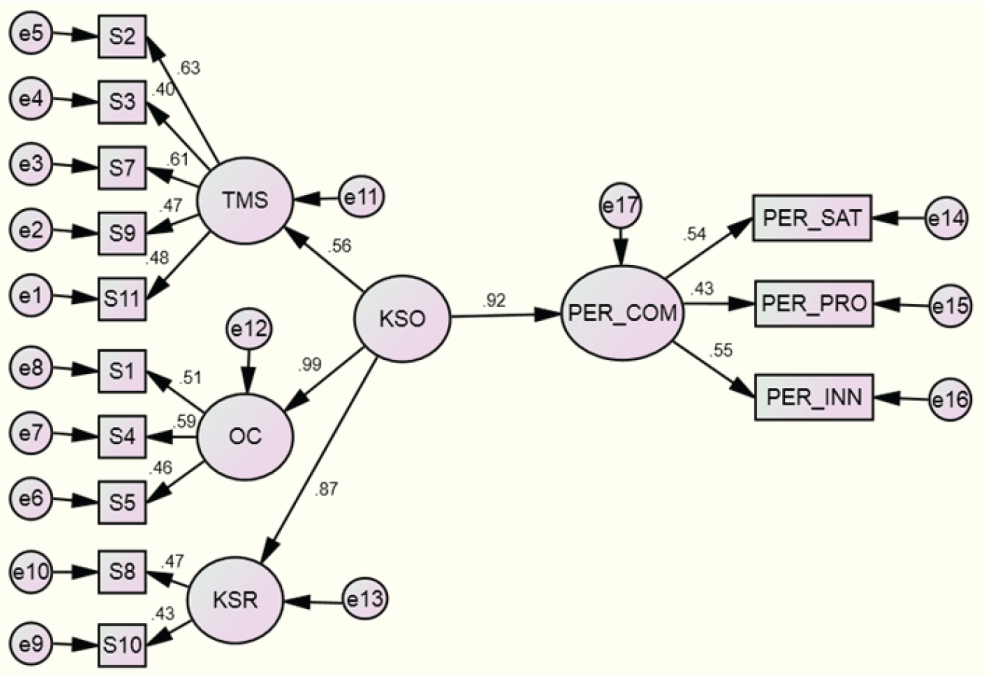
Default Model	RMR	GFI	AGFI	CFI	RMSEA	χ2	Df	p-Value	χ2/df
(A) Measurement Model	0.033	0.933	0.900	0.861	0.064	128.570	61	0.000	2.108
(B) Structural Model	0.033	0.933	0.900	0.861	0.064	128.570	61	0.000	2.108

model fit. The average variance extracted for knowledge sharing construct was 0.685 and 0.260 for the performance construct. The construct reliability for KSO was 0.861 and 0.511 for PER_COM. AVE and CR of PER_COM has bit lower values because of relatively lower standardized regression weights of the items in the validated construct.

In the second stage, structural model was fitted by replacing the covariance arrow with directional arrow between the constructs, as shown in Figure 2. The goodness of fit indices for SEM indicated a very good model fit as shown in part-B of Table 5. There is no change in model fit indices while moving from measurement model to structural model, which indicates that structural model has not reduced the model fit due to its specified relationship.

The standardized estimates for path KSO →PER_COM is 0.92 and is significant at 1% level. Thus, the first hypothesis that 'knowledge sharing orientation has significant, direct and positive impact on business performance' is accepted.

Figure 2. Structural model



MULTI-GROUP MODERATION

The second objective is to study the moderating effect of firm age on relationship between knowledge sharing orientation and business performance. A moderation effect occurs when a third variable or construct changes the relationship between two related variables/constructs. Moderation typically involves the testing of structural model estimates. The process involves multi-group analysis for testing measurement invariance. The first group model is estimated with path estimates calculated separately for each group. Then a second group model is estimated where the path estimate of interest is constrained to be equal between the groups. Comparison of differences between models with a chi square difference test indicates if the model fit decreased significantly when the estimates were constrained to be equal. A statistically significant difference between models indicates that the path estimates were different and the moderation does exist.

The results of moderation analysis with firm age as the moderator are presented in Table 6. The table shows the model fit indices for unconstrained model, constrained model and the chi-square difference test. χ^2 difference test was used to evaluate if the differences in the modeled relationships are statistically significant across groups. First, the unconstrained model (where both paths of KSO and PER_COM were allowed to vary freely across groups) was tested and resulted in χ^2 =331.926, df = 122. Second, constrained model was tested which resulted in χ^2=348.803, df = 134.

The χ^2 difference test for constrained model and unconstrained model was not found to be significant (p-value = 0.154) at 5% level. This indicates that model is invariant at group level, implying that there is no moderation and the two groups under consideration do not affect the KSO→PER_COM relationship differently. This implies that both young and mature firms can improve their business performance by improving knowledge sharing orientation in their

Table 6. Testing of age as moderator in the model

Model Characteristics	Unconstrained Model (TF for Each Group)	Constrained Model (KSO → COM Equal Across Groups)	Model Differences $\Delta\chi 2$
Chi-Square	331.926	348.803	16.877**
Df	122	134	12
CFI	0.678	0.671	-
RMSEA	0.080	0.077	-

*Significant at 0.05 level, **Not Significant

organization; as business performance has been found to be highly and significantly dependent upon the way the firm and its employees are oriented for knowledge sharing.

Thus, the second hypothesis that 'knowledge sharing orientation will have impact on business performance which is invariant across firms differing by age' is accepted.

DISCUSSION

The results of this study indicate top management support as most important factor of knowledge sharing orientation. Top Managers should provide conducive environment in their organizations by providing necessary help, encouragement and resources for knowledge sharing. A stimulating organizational climate needs to be created where constructive debates, discussions and openness are encouraged as well as rewarded.

The findings of the current study support the earlier findings (e.g. Bresman, Birkinshaw & Nobel, 1999; Lee & Choi, 2003; Kang, Kim & Chang, 2008). Organizations need to effectively develop knowledge sharing to achieve success in knowledge management and therefore organizational performance. Knowledge sharing requires top management capabilities in managing people and technology in a synergetic way. Managers should also be careful of the contingent factors when they strive for knowledge sharing. Abzari and Abbasi (2011) suggest that attitude toward knowledge sharing affects the tendency towards knowledge sharing. Managers should endeavor to strengthen the attitude of employees to derive knowledge sharing behavior from them. They should create a suitable organizational climate to improve the knowledge sharing orientation of the employees. An understanding of the trust components would guide practitioners on how to create and support a knowledge sharing environment (Usoro, Sharratt, Tsui & Shekhar, 2007). Rahab, Sulistyandari & Sudjono (2011) suggested that managers need to improve the awareness of their workers, that the knowledge they have are assets for the corporation which are very important for the sake of firm improvement. The improvement of workers' awareness for knowledge sharing is significant in improving workers' self-confidence to share knowledge. Ma, Qi & Wang (2008) suggested that knowledge management practitioners can improve knowledge sharing by designing measures to help convert tacit knowledge into explicit knowledge, such as encouraging team members to write down or crystallize their technique, know-how or management expertise, developing modern databases to help the converting process, and design friendly organizational mechanism to help knowledgeable members to share their tacit knowledge. In the light of the emerging emphasis on e-governance and human capital management, managers must collaboratively respond by encouraging employees' commitment to knowledge-sharing activities and organizational performance (Kim & Lee, 2006).

CONCLUSION

The study contributes to the existing literature on knowledge management by operationalising the constructs and validating the scales for 'knowledge sharing orientation' and 'business performance'; following the scale development paradigm suggested by Churchill (1979). Strong positive relationship has been identified between these two constructs. Second major finding of the study is that impact of knowledge sharing orientation on business performance is not moderated by the firm age.

Though every effort was made to avoid it, some amount of response bias may have crept in. Using the key respondents as proxy for the opinion of different stakeholders may be questioned but we have tried to normalize the response by taking average of the responses of 2-3 respondents from each firm studied.

The findings can't be generalised, as the sample is related to one particular region, i.e. firms from north Indian State of Punjab and National Capital Region only. Despite this limitation, this study contributes by providing empirical evidence to support that knowledge sharing orientation has a direct impact on business performance and firm age does not moderate the effect of knowledge sharing orientation on business performance.

Operationalisation of business performance construct includes financial and operational indicators. Future researchers may widen the scope of business performance by incorporating the interests of some other stakeholders e.g. by including indicators for social and environmental performance. In addition to firm age, future researchers may test the moderating effect of other possible variables like industry type (manufacturing *vs* service) and firm size (large *vs* small) etc. to better understand KSO → Business Performance relationship. Possibility of mediating variables between KSO and business performance can also be explored. Future studies may check the cross-cultural validity of knowledge sharing orientation construct by comparing the dimensionality of KSO in different contexts.

The findings of the research will help knowledge management researchers as well as practitioners develop a better understanding of the role of knowledge sharing and successful implementation of knowledge management process. The suggestions provided for employees and managers can go a long way in achieving superior business performance through knowledge sharing.

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APPENDIX

Table 7. Items selected for knowledge sharing orientation scale

Code	Statement	Source/s
S1	A climate of openness and trust permeates my organization.	Handzic, Lagumdzija & Celjo, (2008).
S2	In our organization, everyone speaks up if they have an opinion or idea to offer.	Vij & Sharma (2004).
S3	We do not share ideas with other people of similar interest, especially, when they are based in different departments.*	Holtshouse (1998).
S4	Knowledge sharing behavior is built into the performance appraisal system in my organization.	Vij & Sharma (2004), Lin (2006), Rahab, Sulistyandari & Sudjono, (2011).
S5	Our company culture welcomes debates and stimulates discussions	Popper & Lipshitz (1998).
S6	In our organization, we are rewarded for sharing knowledge with the colleagues.	Vij & Sharma (2004), Lin (2006), Rahab et al., (2011).
S7	There is no restriction for employees if they want to talk to anyone in organization including top management.	Vij & Sharma (2004).
S8	In my organization, relatively more committed employees are more willing to share their learning and experiences with others.	Hislop (2003), Lin (2006), Peltokorpi (2004).
S9	Top managers provide most of the necessary help and resources to enable employees to share knowledge.	Huang & Stewart (2010), Rahab et al., (2011).
S10	My organization's culture encourages and facilitates knowledge sharing.	Handzic et al., (2008).
S11	Top managers do not support and encourage employees to share their knowledge with colleagues.*	Huang & Stewart (2010), Rahab et al., (2011).

* These statements are negative and have been reverse coded

Table 8. Items selected to measure the subjective performance relative to major competitor (PER_COM)

Code	Compared to the major competitor in your industry, in the last three years, how has your business performed on the following parameters?
CC1	...Sales Growth
CC2	...Return on Investment
CC3	...Market share
CC4	...Service Quality
CC5	...Customer Satisfaction
CC6	...Employee Satisfaction
CC7	...Employee Turnover
CC8	...Product innovation
CC9	...Process innovation
CC10	...Product Quality

Sources: Adapted from various studies: Berthon and Hulbert (2004), Darroach (2005), Wang and Wei (2005), Lin, Peng & Kao, (2008), Martinette and Leeson (2009), Mahmoodsalehi & Jahanyan (2009), Pett and Wolff (2010), Daud and Yusoff (2010), Hou and Ying (2010), Said, Shu & Othman (2010), Eshlaghy and Maatofi (2011)