

The Mediating Effects of Trustworthiness on Social-Cognitive Factors and Knowledge Sharing in a Large Professional Service Firm

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Abstract: This paper extends the findings of a large empirical study of organizational information and knowledge sharing that examined the interplay of several notable social and cognitive factors, including trust, shared language, shared vision, tie strength, homophily, and relationship length. Initial data analysis examined the direct, relative, and collective effects of these social and cognitive factors on organizational knowledge sharing factors (Evans, 2012). The results of this analysis demonstrated that co-worker trust influences, in a statistically significant way, each factor used to operationalize organizational knowledge sharing, namely: willingness to share knowledge, willingness to use knowledge, and perceived receipt of useful information/knowledge (Evans, 2013). This study presents the results of a secondary data analysis, which examines whether perceived trustworthiness in co-workers acts as a mediating variable between the previously mentioned social-cognitive variables and knowledge sharing factors. Data were collected from 275 knowledge workers (legal professionals and paralegals) engaged in shared legal project work, at one of Canada's largest multijurisdictional law firms. The nature of their work requires a significant reliance on co-workers, across offices nationwide, for both explicit and tacit information and knowledge. The nature of projects allows respondents to objectively evaluate the outcomes, gaining a better sense of the perceived effects of knowledge shared. A method put forward by Baron and Kenny (1986), which includes hierarchical multiple regression analysis, was used to test for the mediating effects of perceived co-worker trustworthiness. The results of the study showed that the relationship between shared language and shared vision on information and knowledge sharing is mediated through perceived trustworthiness. Moreover, this mediation is subject to the nature of the relationship between co-workers. For shared language, the role of co-worker relationship is still more nuanced as perceived trustworthiness was found to have a mediating effect between shared language and knowledge sharing in relationships between co-workers with whom they worked well together on projects only. There is no apparent mediation of trust for shared language in negative co-worker relationships, which demonstrates one of the few interesting effects found to be dependent on the nature of the co-worker relationship.

Keywords: mediating effects of trust, knowledge sharing in a large professional service firm

1. Introduction

The effective utilization of intellectual capital hinges on valuable information and knowledge being shared throughout the organization - knowledge of who to turn to for help, of best practices, of innovative solutions, or of lessons learned from less successful endeavours. However, many organizations face challenges in promoting effective information and knowledge sharing among employees and there is little evidence-based guidance from empirical research to help them. Furthermore, information and knowledge-sharing interactions are embedded in multifaceted social contexts, influenced by several different social and cognitive (human) factors. A better grasp of the part played by these factors both individually and in combination is needed to help organizations build on past experiences, respond more efficiently to emerging problems, develop new ideas and insights, and avoid reinventing solutions or repeating prior mistakes.

This paper builds on earlier empirical work (Evans 2012, 2013, 2015) that explored the collective and relative effects of notable social and cognitive factors (i.e., trust, homophily, shared language, shared vision, tie strength, and relationship length) on information and knowledge sharing outcomes of knowledge workers engaged in shared legal project work at one of Canada's largest multijurisdictional law firms. Earlier work has demonstrated, that in this context, trust was the single most important social-cognitive factor influencing knowledge sharing, though shared vision was also found to have a significant positive effect (Evans, 2013). This paper seeks to further examine the influence of trust on organizational knowledge sharing by exploring whether perceived trustworthiness has a mediating effect between identified social-cognitive variables and information and knowledge sharing. This study is one of only few to determine the existence (or otherwise) of a mediating effect of perceived trustworthiness, and the first to have done so with this number of factors, or with such an inclusive conceptualization of knowledge sharing.

At the outset, it was difficult to predict the presence or strength of the mediating effects between specific social-cognitive factors and specific knowledge sharing factors because prior studies had not investigated these relationships

and did not use similar measures. Furthermore there has been no prior attempt to develop a theory to link knowledge sharing and social-cognitive factors (SCFs) through trust. Interestingly, in one study by Levin and Cross (2004), which controlled for homophily and other knowledge related factors, trust was found to mediate the relationship between tie strength and perceived receipt of useful knowledge. Predicting the effect of positive and negative working relationships was equally difficult, as previous studies that examined trust and knowledge sharing in this manner (i.e., Holste, 2003; Holste and Fields, 2010) did not measure the effect of any other factors (e.g., shared language, shared vision, etc.). For these reasons, strategies to uncover the mediating effects of *perceived trustworthiness*, in the study, were largely exploratory in nature.

2. Key Constructs

2.1 Information and Knowledge Sharing

Holste (2003) proposed that successful organizational information and knowledge sharing requires that employees are willing to share the knowledge they have, as well as willing to use the knowledge that is shared with them. Further, successfully shared information/knowledge should have a positive impact on the individuals involved in the exchange, the project they are working on, or the organization, as a whole (Levin and Cross, 2004). Building on these ideas from Holste (2003; Holste and Fields, 2010) and Levin and Cross (2004), information and knowledge sharing (IKS) is understood, in this study, using three behavioural and perceptual conditions, reported by the employee. These conditions are: the knowledge source must be *willing to share* the information and/or knowledge they possess; the knowledge receiver must be *willing to use* the information or knowledge that is shared; and the knowledge receiver must *perceive the information/knowledge shared as being useful* to their individual work, the project, or the firm. The authors acknowledge that this conceptualization of IKS is grounded in employee perceptions, which do not measure actual employee knowledge sharing behaviours, rather self-reported behavioural precursors (i.e. willingness or intentions) and post-behavioural outcomes (i.e. perceived usefulness). Though it has been previously argued that this conceptualization of IKS is appropriate and, in many cases, better than other attempts to measure information/knowledge transfer through frequency of exchange or awareness of source (Evans, 2013).

2.2 Perceived Co-worker Trustworthiness

In this study, *perceived trustworthiness* is grounded in Mayer et al's (1995) model for interpersonal trust, though several other empirical trust studies were used in developing an understanding of trust (e.g., Chattopadhyay, 1999; Johnson et al, 1996; Levin and Cross, 2004; Levin et al, 2006; Mayer and Davis, 1999; McAllister, 1995).

Mayer et al (1995: 712), define trust as

"[...] the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party."

The authors (Mayer, et al, 1995) argue that in order to be trusted by the trustor, the trustee must be perceived as having ability¹, benevolence², and integrity³, which together help them (as the trustor) determine their co-worker's 'trustworthiness'. All three factors are interrelated and important to trust, yet each, by itself, may be insufficient for establishing trust. "Each element contributes a unique perceptual perspective from which the trustor considers the trustee" (Mayer et al, 1995: 722). For a further discussion of how perceived trustworthiness is understood and used in this study see Evans (2012, 2013).

2.3 Shared Language / Shared Vision

Based on the work of Levin et al (2006), shared language is defined as the extent to which the respondent and co-worker are able to easily understand, communicate, and agree with one another. This condition is sometimes referred to as being "on the same wavelength" (Levin et al, 2006: 1166), or a case of the two individuals sharing "a 'technical

¹ Ability relates to a co-worker having domain specific skills, competencies, and characteristics. (Mayer et al, 1995, p. 717)

² Benevolence relates to the extent to which the respondent believes their co-worker wants to do good or act in a way that is not egocentric. (Mayer et al, 1995: 718)

³ Integrity relates to the extent to which a co-worker adheres to what the respondent believes is an acceptable set of principles. (Mayer et al, 1995: 719)

grammar' for communication" (Argyres, 1999: 162). Shared vision, on the other hand, is the extent to which a respondent and co-worker (in the eyes of the respondent) share goals, concerns, and purpose (Levin et al, 2006; Tsai and Ghoshal, 1998). Tsai and Ghoshal (1998: 467) further explain shared vision as embodying "the collective goals and aspirations of the members of an organization; [...] as a bonding mechanism that helps different parts of an organization to integrate or to combine resources".

2.4 Homophily

Homophily implies the existence of a positive relationship between the degree of similarity between two individuals and the strength of the relationship between them. In other words, greater similarity between two individuals leads to a stronger relationship (e.g. *perceived trustworthiness*, IKS, etc.) between them. McPherson et al (2001: 416) define homophily as "the principle that contact between similar people occurs at a higher rate than among dissimilar people". Noted causes of homophily include geography⁴, family ties⁵, organizational foci⁶, isomorphic sources⁷, and cognitive processes⁸ (McPherson et al, 2001). According to McPherson et al (2001), there are two distinct types of homophily: *status homophily*⁹ and *value homophily*¹⁰. However, this research study will only explore status homophily, as value homophily may be too conceptually similar to *shared vision*. The characteristics explored in this paper include both ascribed characteristics (i.e., age and gender) and acquired characteristics (i.e., education).

2.5 Relationship length

Relationship length is defined by Levin et al (2004) as how long one co-worker has known another. Knowing someone for a longer period of time should theoretically lead to more trust and knowledge sharing, since it provides the individuals with opportunities to develop trust and a history of IKS practices between them (Dirks and Ferrin, 2002). However, according to Levin et al (2004: 11) the "construct of relationship length has been largely neglected in the trust literature". It is also an important construct largely neglected in the IKS literature. Existing research has shown a positive connection between relationship length and trust (e.g. Dirks and Ferrin, 2002; Lewicki and Bunker, 1996; Coleman, 1988; Levin et al, 2004) and between relationship length and knowledge sharing (e.g. Mäkelä and Brewster, 2009; Mäkelä et al, 2012), though the interrelatedness of these relationships require further exploration.

2.6 Tie Strength

Tie strength is defined as "a combination of the amount of time, the emotional intensity, the intimacy, and the reciprocal services which characterize the tie" (Granovetter, 1973: 1361). Granovetter (1973) further added that each of the determinants act independently, although the set, as a whole, are highly intra-correlated. Several other researchers (Hansen, 1999; Levin and Cross, 2004; McFadyen and Cannella, 2004) followed similar conceptualizations, defining tie strength as a mix of interaction frequency and closeness. Interaction frequency can practically be thought of as synonymous with communication frequency and, in a corporate setting, could presumably include interactions that are face-to-face, by phone, through email, etc. Closeness relates to an emotional intensity felt by the individuals in the relationship towards one another, which Marsden and Campbell (1984: 498) argued is "on balance the best indicator of the concept of tie strength." In fact, the authors warned that measures of tie strength based on interaction frequency alone do not accurately capture tie strength among co-workers. In a more recent paper, Levin et al (2011: 924) supported Marsden and Campbell's (1984) claim by arguing that interaction frequency is not a perfect indicator of tie strength, because not all interactions are "the same length, do not occur at a constant rate, and have unequal emotional impact" The variation in these ultimately causes different lasting outcomes.

2.7 Nature of Co-worker Relationship

Based on similar distinctions made in comparable research studies (McAllister, 1995; Tsui, 1984, 1986; Holste, 2003) this study chose to ask respondents to comment on both a positive co-worker (i.e., someone they worked best with,

⁴ Geography relates to geographic distance. More likely to have contact with those that are closer

⁵ Family Ties refers to a family relation (biological tie). Likely to be the same race, ethnicity, and religion

⁶ Organizational Foci relates to a focused activity which fosters the relationship (e.g. school, work, or voluntary organizations)

⁷ Isomorphic Sources relates to occupied positions or roles (e.g. workplace roles (status, seniority, functional division), family roles (wives), or political roles (senators))

⁸ Cognitive Processes refers to perceived similarity (e.g. people who share similar knowledge domains)

⁹ Status Homophily is based on informal, formal, and ascribed status. Includes ascribed characteristics (race, ethnicity, gender, age) and acquired characteristics (religion, education, occupation, behavior patterns)

¹⁰ Value Homophily is based on values, attitudes, and beliefs

on a project they worked on recently) and a negative co-worker (i.e., someone they did not work well with, on a project they worked together on recently).

Further theoretical development of all the above factors is detailed in Evans (2012, 2013).

2.8 Theoretical Framework

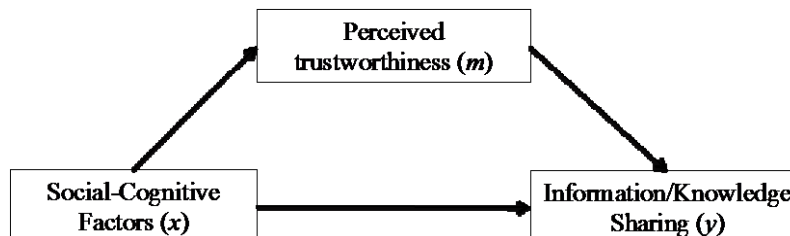


Figure 1: Theoretical Model

This paper examines whether *perceived trustworthiness is a mediating variable between social-cognitive factors (SCFs) and information and knowledge sharing (IKS)*. The theoretical model (Figure 1) shows the role of trust as an intervening or mediating variable, where m mediates a relationship between x and y (i.e. $x \rightarrow m \rightarrow y$). The independent variables (i.e., SCF; x) were predicted to affect the dependent variables (i.e., IKS; y) indirectly, through the intervening variable (i.e., perceived trustworthiness m). This would mean that SCF variables (x) have a direct effect on IKS (y) and a direct effect on perceived trustworthiness (m); while perceived trustworthiness (m) also has a direct effect on IKS (y). An intervening variable “delineates the causal mechanisms producing the observed relationship between the focal independent and dependent variables” (Aneshensel, 2002: 155). Since it must serve a connective function, both these connections are necessary for perceived trustworthiness to be confirmed as a mediating variable. Specifying perceived trustworthiness as a mediating variable also suggests that the connection between SCF and IKS is indirect (i.e., SCFs influences perceived trustworthiness, which in turn influences IKS).

3. Methods

3.1 Data Collection

Data were collected as part of a larger study examining the effect of social and cognitive factors on knowledge sharing outcomes of knowledge workers. Respondents were engaged in shared legal project work at one of Canada’s largest multijurisdictional law firms. The nature of their work required a significant reliance on co-workers, across offices nationwide, for both explicit and tacit knowledge. The nature of the projects allowed respondents to objectively evaluate the outcome of the projects, giving a better sense of the perceived effects of knowledge shared.

After pretesting, the survey was published on the web using an academic survey suite. A senior partner sent a firm-wide email inviting approximately 900 legal professionals and paralegals/law clerks in six national offices to participate. To be eligible, the respondent had to be assigned to a project with at least two co-workers. All those contacted were knowledge workers engaged in knowledge-intensive legal project work. Of the potential respondents, 775 were “legal professionals” which the firm defined as lawyers (735), trademark or patent agents (30), accountants (5), or governmental professionals (5). In addition, 120 questionnaires were sent to “paralegals” and “law clerks”. No administrative staff participated.

The anonymous survey had three sections, asking respondents to answer questions about: themselves and their background; a positive referent (i.e. someone they worked well with on a recent project – Group 1); and a negative referent (i.e. someone they did not work well with on a recent project – Group 2).

3.2 Operationalized Measures

Table 1 provides an overview of the operationalization of the various independent, mediating, and dependent measures used in the study. Factors were operationalized primarily using existing measures; in some cases items were reworded to match the legal domain, or additional items were added to increase reliability.

Table 1

	Source	Items	Cronbach α		Sample Items	Scale
			Gr 1	Gr 2		
Independent Variables	Homophily: Age	N/A*	3	N/A	N/A	Collected by asking respondents their age and the ages of each of their co-workers in Groups 1 and 2 (if known) 1. 21-30 2. 31-40 3. 41-50 4. 51-60 5. Over 61 6. I am not able to assess / I prefer not to say
	Homophily: Educational	N/A	3	N/A	N/A	<i>What is the highest level of educational qualification that you have [your co-worker has] achieved?</i> 1. High School / GED 2. Some College / 2-year College Degree 3. 3 or 4-year Univ. Degree 4. Prof. Degree (JD/LL.B.,MD) 5. Master's Degree 6. Doctoral Degree
	Homophily: Gender	N/A	3	N/A	N/A	Collected by asking respondents their gender and the genders of each of their co-workers in Groups 1 and 2. Male/Female
	Shared Language	Levin et al. 2006	3	0.882	0.776	<i>I was familiar with the jargon/terminology that he or she used</i> 1 (Strongly Disagree) – 5 (Strongly Agree)
	Shared Vision	Levin et al. 2006 Tsai and Ghoshal 1998	5	0.887	0.827	<i>I believed that this person and I shared a commitment to a common purpose</i> 1 (Strongly Disagree) – 5 (Strongly Agree)
	Relationship Length	Levin et al. 2004, 2006	2	N/A	N/A	<i>Approximately, how long have you known each of the co-worker you selected</i> 1. < 1 month 2. 1 < 3 months 3. 3 < 6 months 4. 6 < 9 months [...] 15. 9 < 10 years 16. 10 < 15 years 17. Over 15 years
	Tie Strength prior/ while	Levin and Cross, 2004; Hansen, 1999**	8	0.889/ 0.887	0.752/ 0.827	<i>Prior to (While) working with each of the co-workers on the project you shared, to what extent did you typically interact with each of them?***</i>
Mediating Variable	Perceived Trustworthiness	See Footnote****	24	0.943	0.935	<i>Given his or her track record, I saw no reason to doubt this person's competence and preparation.</i> 1 (Strongly Disagree) – 5 (Strongly Agree)
Dependent Variables	Willingness to Share	Holste, 2003	4	0.859	0.908	<i>I would take the initiative to provide this individual with useful tools I have developed</i> 1 (Strongly Disagree) – 5 (Strongly Agree)
	Willingness to Use	Holste, 2003	5	0.877	0.878	<i>I would eagerly receive and use tools developed by this person including precedents, memos, client information, and industry information</i> 1 (Strongly Disagree) – 5 (Strongly Agree)
	Perceived Receipt Useful Knowledge	Levin and Cross, 2004	6	0.917	0.917	<i>The information I received from each of the co-workers made (or is likely to make) the following contribution to: this projects quality;</i> 1 (Very negative) – 5 (Very positive)

* This study used Statistics Canada's 2006 Census questions to capture all homophily related survey items (Statistics Canada 2006)

** The creation of a fourth (new) "closeness" item was the result of conversations with Daniel Levin (Evans, personal communication, October 2010), who, with his colleagues, suggested a rethinking of Marsden and Campbell's (1984) understanding on tie strength. Levin et al (2011) suggested that emotion-based (or closeness) measures were, at the very least, as important as the commonly used interaction and communication frequency measures.

*** Co-worker tie strength was measured prior to the project and while on the project. Each has 4 items. See Evans (2012) for specific scales, as they slightly vary across items.

**** Ability-based trust – 9 items adapted from Mayer and Davis (1999); Levin and Cross (2004); McAllister (1995); and Chattopadhyay (1999). Benevolence-based trust – 9 items adapted from Mayer and Davis (1999); Levin et al (2006); and Johnson et al (1996). Integrity-based trust – 6 items adapted from Mayer and Davis (1999).

3.3 Data Analysis

Four conditions are necessary for a variable to be confirmed as a mediator variable (Baron and Kenny, 1986): 1) there must be a significant relationship between the independent variable (IV; x) and the dependent variable (DV; y); 2) there must be a significant relationship between the IV and the mediator (m) variable; 3) the mediator variable must still predict the DV after controlling for the IV and; 4) the relationship between the IV and the DV is reduced when the mediator variable is in the equation. Therefore, to be considered a mediator variable, the inclusion of the trust variable (i.e., *perceived trustworthiness* or *PTrust*) should account for some or all the relationships between SCF and IKS. For the purposes of the statistical analysis, the chain of factors established by including *PTrust* in between SCF and IKS is referred to as the indirect component, while the relationship between SCF and IKS without *PTrust* is referred to as the direct component. Aneshensel (2002) has argued that if mediation is present, an increase in the indirect component decreases the direct component. In other words, a reduction in, or even elimination of, the relationship

between the independent variables (SCF) and the dependent variables (IKS) implies that a part or all of the relationship is explained through the mediating variable (*PTrust*).

If the inclusion of *PTrust* entirely eliminates the relationship between IV and DV, the relationship is said to be ‘fully elaborated’ and the mediation is said to be perfect (‘full’ or ‘complete’). “This pattern of results tends to occur because the dependent variable is more proximal to the intervening variable than the focal independent variable and because proximal effects tend to be stronger than distal effects” (Aneshensel, 2002: 164). However, if the inclusion of *PTrust* only partially accounts for the relationship, it is said to be ‘partially elaborated’, and the mediation is said to be ‘partial’. Finally, if the inclusion of *PTrust* leaves the SCF-IKS relationship unchanged, it is said to be ‘unelaborated’ and it could be concluded that *PTrust* is not a mediating variable.

To test the mediating effect of *PTrust*, hierarchical multiple regression analysis (HMRA) was used (Baron and Kenny, 1986). In the first stage, the IKS variables were regressed on the SCF variables. In this step, *PTrust* was excluded from the model,

$$IKS_1 = \beta_1 Age + \beta_2 Edu + \beta_3 Gen + \beta_4 S.Lan + \beta_5 S.Vis + \beta_6 R.Len + \beta_7 T.S.p + \beta_8 T.S.w$$

However, in the second step of the HMRA, the mediating variable, *PTrust*, was included as an independent variable, along with the others,

$$IKS_2 = \beta_1 Age + \beta_2 Edu + \beta_3 Gen + \beta_4 S.Lan + \beta_5 S.Vis + \beta_6 R.Len + \beta_7 T.S.p + \beta_8 T.S.w + \beta_9 PTrust$$

The contribution of *PTrust* as a mediating variable to the explanation of IKS was assessed using the change in R^2 between the two models. If the change was significant, then changes in betas (β) for each individual variable were assessed. The focus of the analysis was on what happens to the regression coefficient for the focal relationships (SCF-IKS), when the mediating variable (*PTrust*) was added to the model. Mediation can be argued to be present when the β of the IV-DV relationship decreases. The mediation was said to be complete if the focal relationship was no longer significant, after *PTrust* was introduced into the model. In the case of partial mediation there would still be a statistically significant relationship in the second step, however β would be reduced, as *PTrust* explained only part of the relationship. Finally, the focal relationship would be found not to be mediated by *PTrust* if the regression coefficient for the relationship was unchanged with the addition of the mediating variable.

4. Results

4.1 Mediating Effect of Perceived Trustworthiness with Co-Workers with Whom the Respondent Worked Well

Figure 1 summarizes the statistically significant relationships found between the respondent and the co-worker with whom they reported to have worked well on a recent project. The two variables that satisfied the first two conditions set out by Baron and Kenny (1986) were *Shared Language* and *Shared Vision*. *Homophily*, *Relationship Length*, and *Tie Strength* did not meet the criteria, as they had no significant relationships with *PTrust* and the knowledge sharing variables.

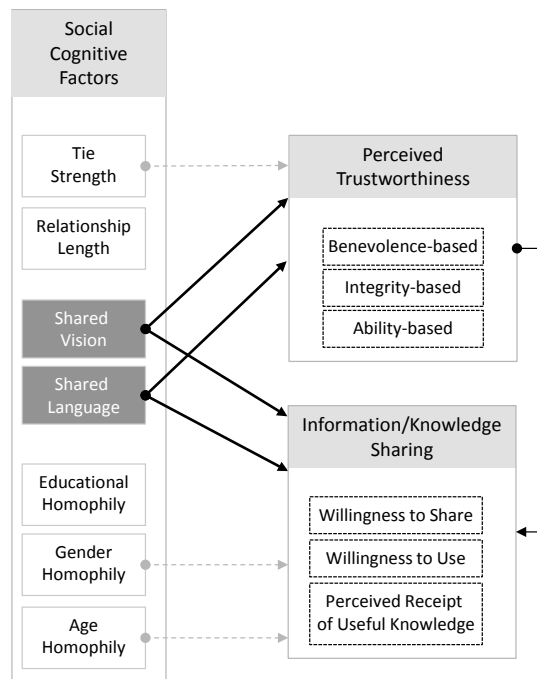


Figure 1 Significant Relationships with Co-workers the Respondent Worked Well With.

Table 2 Results of the HMRA with Co-workers the Respondent Worked Well With

	Willingness to Share									9.999 p < 0.05
	Overall			Explicit			Tacit			
	β_1^*	β_2^{**}	Δ^{***}	β_1	β_2	Δ	β_1	β_2	Δ	
Perceived Trustworthiness		<u>0.178</u>			0.153			0.172		
Relationship Length	0.006	0.009	0.003	0.052	0.054	0.002	-0.014	-0.012	0.002	
Tie Strength (Prior)	-0.005	-0.019	-0.014	-0.075	-0.086	-0.011	0.021	0.008	-0.013	
Tie Strength (While)	0.080	0.036	-0.044	0.116	0.078	-0.038	0.061	0.018	-0.043	
Shared Language	<u>0.366</u>	<u>0.320</u>	<u>-0.046</u>	<u>0.364</u>	<u>0.325</u>	<u>-0.039</u>	<u>0.339</u>	<u>0.294</u>	<u>-0.045</u>	
Shared Vision	<u>0.307</u>	<u>0.240</u>	<u>-0.067</u>	<u>0.210</u>	0.153	<u>-0.057</u>	<u>0.325</u>	<u>0.260</u>	<u>-0.065</u>	
Homophily: Age	0.098	0.086	-0.012	0.072	0.062	-0.010	0.100	0.088	-0.012	
Homophily: Education	0.013	0.016	0.003	-0.044	-0.042	0.002	0.033	0.035	0.002	
Homophily: Gender	0.054	0.062	0.008	0.036	0.042	0.006	0.055	0.063	0.008	
N	189			192			189			
Adj. R2	0.413	0.424	0.014	0.321	0.329	0.010	0.388	0.399	0.013	
F Value	13.002	12.54	4.576	8.789	8.789	2.957	11.837	11.384	4.117	
Sig. F Change	0.034			0.087			0.044			

	Willingness to Use									9.999 p < 0.05
	Overall			Explicit			Tacit			
	β_1	β_2	Δ	β_1	β_2	Δ	β_1	β_2	Δ	
Perceived Trustworthiness		<u>0.308</u>			<u>0.461</u>			<u>0.266</u>		
Relationship Length	-0.043	-0.034	0.009	0.057	0.070	0.013	-0.059	-0.053	0.006	
Tie Strength (Prior)	-0.052	-0.082	-0.030	-0.093	-0.135	-0.042	-0.043	-0.069	-0.026	
Tie Strength (While)	0.105	0.030	-0.075	0.046	-0.065	-0.111	0.101	0.037	-0.064	
Shared Language	0.127	0.047	-0.080	<u>0.213</u>	0.095	<u>-0.118</u>	0.106	0.036	-0.070	
Shared Vision	<u>0.382</u>	<u>0.265</u>	<u>-0.117</u>	<u>0.248</u>	0.072	<u>-0.176</u>	<u>0.382</u>	<u>0.282</u>	<u>-0.100</u>	
Homophily: Age	-0.085	-0.109	-0.024	0.065	0.032	-0.033	-0.125	<u>-0.144</u>	-0.019	
Homophily: Education	0.029	0.036	0.007	-0.029	-0.019	0.010	0.056	0.060	0.004	
Homophily: Gender	0.066	0.084	0.018	0.119	<u>0.143</u>	0.024	0.047	0.063	0.016	
N	188			192			190			
Adj. R2	0.274	0.316	0.042	0.193	0.288	0.094	0.268	0.298	0.032	
F Value	7.431	8.185	11.570	5.142	7.444	25.166	7.287	7.674	8.532	
Sig. F Change	0.001			0			0.004			

Perceived Receipt of Useful Knowledge			
	β_1	β_2	Δ
		<u>0.309</u>	
	0.022	0.025	0.003
	0.047	0.026	-0.021
	-0.037	-0.114	-0.077
	<u>0.204</u>	0.123	<u>-0.081</u>
	<u>0.500</u>	<u>0.385</u>	<u>-0.115</u>
	0.092	0.069	-0.023
	0.007	0.011	0.004
	0.060	0.075	0.015
N	189		
Adj. R2	0.392	0.434	0.043
F Value	12.003	13.030	14.365
Sig. F Change	0		

4.1.1 Mediating Effect of Perceived Trustworthiness between Shared Language and Information and Knowledge Sharing

The third and fourth conditions proposed by Baron and Kenny (1986) were tested using a two-step hierarchical multiple regression analysis (HMRA). The complete results of this HMRA appear in Table 1. The results of the analysis showed that *PTrust* still predicted IKS. Further, that the relationships between *shared language* and IKS, and between *shared vision* and IKS, weakened when *PTrust* was introduced into the model; i.e., the difference (Δ) in β is negative.

This suggested that *PTrust* mediated most of the relationships between *Shared Language* and IKS, and all of the relationships between *Shared Vision* and IKS.

Willingness to Share

The addition of *PTrust* made a small contribution to the explanation of *Willingness to Share* knowledge, as indicated by the increment of R^2 from the Step 1 Model (i.e. *Overall willingness to share knowledge (WSO)* $\Delta R^2 = 1.4\%$; $p < 0.001$; *Willingness to share explicit knowledge (WSE)* $\Delta R^2 = 1.0\%$; $p < 0.001$; and *Willingness to Share tacit knowledge (WST)* $\Delta R^2 = 1.3\%$; $p < .001$). The addition of *PTrust* reduced the coefficient for *Shared Language* (on *WSO*) by 12.6% ($\Delta\beta = 0.320 - 0.366 = -0.046$). Mediation was present, but only partially, as *Shared Language* remained statistically associated with *WSO*. The results also showed that the addition of *PTrust* reduced the coefficient for *Shared Language* with *WSE* by 10.7% ($\Delta\beta = 0.325 - 0.364 = -0.039$) and with *WST* by 13.3% ($\Delta\beta = 0.294 - 0.339 = -0.045$). In both cases, the mediation was partial, as relationships (β_2) between *Shared Language* and *WSE* and *WST* remained statistically significant.

Willingness to Use

The addition of *PTrust* also made a substantial contribution to the explanation of *Willingness to Use* knowledge, as indicated by the increment of R^2 from the Step 1 Model (i.e., *Overall Willingness to Use knowledge (WUO)* $\Delta R^2 = 4.2\%$; $p < 0.001$; *Willingness to Use explicit knowledge (WUE)* $\Delta R^2 = 9.4\%$; $p < 0.001$; and *Willingness to Use tacit knowledge (WUT)* $\Delta R^2 = 3.2\%$; $p < 0.001$). The coefficient for *shared language* was found to be not significantly associated with *WUO* in either model when *PTrust* was introduced. However, it was found that the addition of *PTrust* reduced the coefficient for *Shared Language* with *WUE* by 55.4% ($\Delta\beta = 0.095 - 0.213 = -0.118$) and, interestingly, β_2 was no longer statistically significant, suggesting that *PTrust* had a complete mediating effect for the relationship between *Shared Language* and *WUE*. The coefficient for *Shared Language* was found to be not significantly associated with *WUT* in either model.

Perceived Receipt of Useful Knowledge

PTrust made a moderate contribution to the explanation of *Perceived Receipt of Useful Knowledge (PRUK)*, as indicated by the increment of R^2 from the Step 1 Model (*PRUK* $\Delta R^2 = 4.3\%$; $p < 0.001$). The addition of *PTrust* reduced the coefficient for *Shared Language* by 39.7% ($\Delta\beta = 0.123 - 0.204 = -0.081$). Further, because *Shared Language* was no longer statistically significant after *PTrust* was introduced into the model (β_2), it can be concluded that *PTrust* had a complete mediating effect for the relationship between *shared language* and *PRUK*.

4.1.2 Mediating Effect of Perceived Trustworthiness between Shared Vision and Information and Knowledge Sharing

Willingness to Share

The addition of *PTrust* reduced the coefficient for *Shared Vision* (on *WSO*) by 21.8% ($\Delta\beta = 0.240 - 0.307 = -0.067$). Mediation was present, but only partially, as *Shared Vision* remained statistically associated with *WSO*. The results also showed that the addition of *PTrust* reduced the coefficient for *shared vision* with *WSE* by 27.1% ($\Delta\beta = 0.153 - 0.210 = -0.057$) and with *WST* by 19.2% ($\Delta\beta = 0.260 - 0.325 = -0.065$). In the case of *WSE*, *Shared Vision* was no longer statistically significant after *PTrust* was introduced into the model (β_2). This suggested that *PTrust* had a complete mediating effect for the relationship between *Shared Vision* and *WSE*. For *WST*, the mediation was present, but only partially, as the relationship between *Shared Vision* and *WST* remained statistically significant after *PTrust* was introduced into the model.

Willingness to Use

The addition of *PTrust* also reduced the coefficient for *Shared Vision* (on *WUO*) by 30.6% ($\Delta\beta = 0.265 - 0.382 = -0.117$). Mediation was partial, as *Shared Vision* remained statistically associated with *WUO* (β_2). The results also showed that the addition of *PTrust* reduced the coefficient for *shared vision* with *WUE* by 71% ($\Delta\beta = 0.072 - 0.248 = -0.176$) and with *WUT* by 26.2% ($\Delta\beta = 0.282 - 0.382 = -0.100$). In the case of *WUE*, *Shared Vision* was no longer statistically significant after *PTrust* was introduced into the model. This suggested that *PTrust* had a complete mediating effect for the relationship between *Shared Vision* and *WUE*. For *WUT*, the mediation was partial, as the relationship between *Shared Vision* and *WUT* remained statistically significant after *PTrust* was introduced into the model.

Perceived Receipt of Useful Knowledge

Finally, the addition of PTrust reduced the coefficient for shared vision (on PRUK) by 23% ($\Delta\beta = 0.385 - 0.500 = -0.115$). Mediation was partial, as the relationship between Shared Vision and PRUK (β_2) remained statistically significant after PTrust was introduced into the model.

4.2 Mediating Effect of Perceived Trustworthiness with Co-Workers with Whom the Respondent did not Work Well

Figure 2 summarizes the statistically significant relationships between the respondent and the co-worker with whom they reported to have *not* worked well on a recent project. *Shared Vision* was the only variable that satisfied the first two conditions proposed by Baron and Kenny (1986) (i.e., *homophily* measures, *shared language*, *relationship length*, and *tie strength* variables did not have significant relationships with either *PTrust* or any knowledge sharing variables). Further, the results of the HMRA suggested that *PTrust* mediated most of the relationships between *Shared Vision* and IKS. The complete results of this HMRA appear in Table 2.

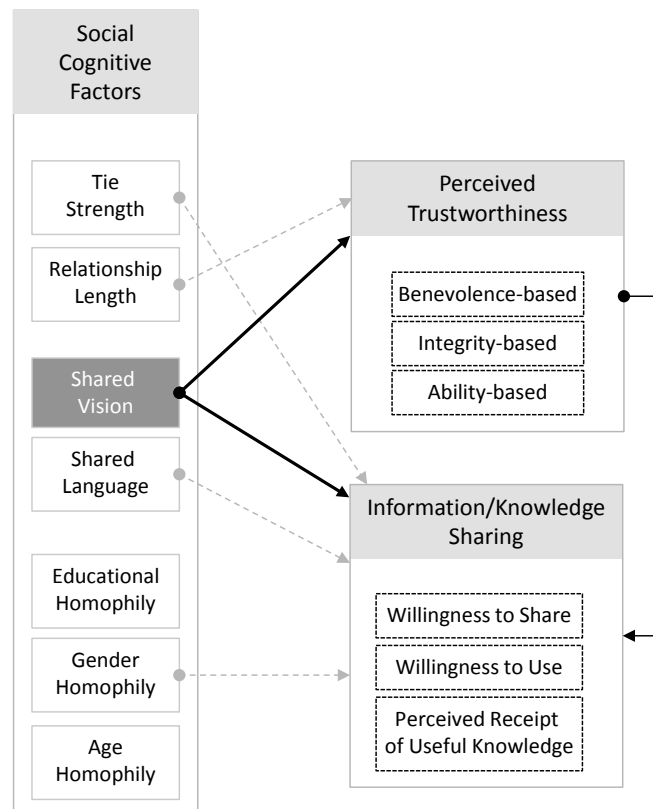


Figure 2 Significant Relationships with Co-workers the Respondent Did Not Work Well With.

Table 3 Results of the HMRA with Co-Workers the Respondent Did Not Work Well With

	Willingness to Share									* β_1 : HMRA Beta for Step 1 ** β_2 : HMRA Beta for Step 2 *** Δ : Step 2 – Step 1
	Overall			Explicit			Tacit			
	β_1^*	β_2^{**}	Δ^{***}	β_1	β_2	Δ	β_1	β_2	Δ	
Perceived Trustworthiness		<u>0.211</u>			<u>0.226</u>		<u>0.194</u>			
Relationship Length	0.004	0.046	0.042	0.047	0.092	0.045	-0.015	0.024	0.039	
Tie Strength (Prior)	<u>0.191</u>	<u>0.179</u>	-0.012	0.139	0.124	-0.015	<u>0.201</u>	<u>0.189</u>	-0.012	
Tie Strength (While)	-0.101	-0.109	-0.008	-0.057	-0.066	-0.009	-0.110	-0.118	-0.008	
Shared Language	0.108	0.099	-0.009	<u>0.156</u>	<u>0.146</u>	-0.010	0.081	0.073	-0.008	
Shared Vision	<u>0.302</u>	<u>0.222</u>	-0.080	<u>0.250</u>	<u>0.165</u>	-0.085	<u>0.300</u>	<u>0.227</u>	-0.073	9.999
Homophily: Age	0.106	0.094	-0.012	0.114	0.101	-0.013	0.093	0.083	-0.010	p < 0.05
Homophily: Education	-0.039	-0.049	-0.010	-0.061	-0.072	-0.011	-0.029	-0.039	-0.010	Mediation: Partial
Homophily: Gender	0.018	0.033	0.015	0.083	0.100	0.017	-0.010	0.004	0.014	Mediation: Complete
N	189			191			189			
Adj. R2	0.171	0.203	0.034	0.140	0.177	0.039	0.160	0.186	0.029	
F Value	4.531	4.996	8.112	3.818	4.416	9.103	4.246	4.574	6.685	
Sig. F Change	0.005			0.003			0.011			

	Willingness to Use									Perceived Receipt of Useful Knowledge		
	Overall			Explicit			Tacit			β_1	β_2	Δ
	β_1	β_2	Δ	β_1	β_2	Δ	β_1	β_2	Δ	β_1	β_2	Δ
Perceived Trustworthiness		<u>0.306</u>			<u>0.359</u>		<u>0.277</u>				<u>0.462</u>	
Relationship Length	-0.119	-0.066	0.053	-0.130	-0.055	0.075	-0.111	-0.063	0.048	-0.220	-0.177	0.043
Tie Strength (Prior)	<u>0.179</u>	<u>0.178</u>	-0.001	<u>0.244</u>	<u>0.230</u>	-0.014	0.162	<u>0.159</u>	-0.003	0.029	0.005	-0.024
Tie Strength (While)	-0.006	-0.029	-0.023	0.021	-0.003	-0.024	-0.023	-0.043	-0.020	<u>0.214</u>	<u>0.189</u>	-0.025
Shared Language	-0.015	-0.026	-0.011	-0.030	-0.043	-0.013	-0.017	-0.026	-0.009	-0.029	-0.039	-0.010
Shared Vision	<u>0.431</u>	<u>0.312</u>	-0.119	<u>0.261</u>	0.128	-0.133	<u>0.457</u>	<u>0.348</u>	-0.109	0.092	-0.082	-0.174
Homophily: Age	0.031	0.009	-0.022	0.054	0.022	-0.032	0.023	0.004	-0.019	0.102	0.069	-0.033
Homophily: Education	0.069	0.055	-0.014	0.017	0.000	-0.017	0.076	0.063	-0.013	0.092	0.069	-0.023
Homophily: Gender	0.090	0.116	0.026	0.046	0.067	0.021	0.095	0.119	0.024	0.114	<u>0.148</u>	0.034
N	186			191			187			189		
Adj. R2	0.205	0.277	0.071	0.114	0.215	0.099	0.208	0.266	0.058	0.077	0.247	0.165
F Value	5.331	6.896	18.284	3.215	5.328	24.023	5.441	6.613	14.784	2.422	6.151	41.128
Sig. F Change	0			0			0			0		

4.2.1 Mediating Effect of Perceived Trustworthiness Between Shared Vision and Knowledge Sharing

The addition of *PTrust* made a substantial contribution to the explanation of *WSO* indicated by the increment of R^2 from the Step 1 model ($WSO \Delta R^2 = 3.4\%$; $p < .001$; $WSE \Delta R^2 = 3.9\%$; $p < 0.001$; $WST \Delta R^2 = 2.9\%$; $p < 0.001$). The addition of *PTrust* also reduced the coefficient for *Shared Vision* (on *WSO*) by 26.5% ($\Delta\beta = 0.222 - 0.302 = -0.080$). Mediation was present, but only partially, as *Shared Vision* remained statistically associated with *WSO*. The results also showed that the addition of *PTrust* reduced the coefficient for *Shared Vision* with *WSE* by 34% ($\Delta\beta = 0.165 - 0.250 = -0.085$), and with *WST* by 24.3% ($\Delta\beta = 0.227 - 0.300 = -0.073$). In both cases, the mediation was present, but only partially, as relationships between *Shared Vision* and *WSE* and *WST* remained statistically significant after *PTrust* was introduced into the model.

The addition of *PTrust* also made a substantial contribution to the explanation of *WUO* as indicated by the increment of R^2 from the Step 1 Model ($WUO \Delta R^2 = 7.1\%$; $p < 0.001$; $WUE \Delta R^2 = 9.9\%$; $p < 0.001$; $WUT \Delta R^2 = 5.8\%$; $p < 0.001$). The addition of *PTrust* reduced the coefficient for *Shared Vision* (on *WUO*) by 27.6% ($\Delta\beta = 0.312 - 0.431 = -0.119$). Mediation was present, but only partially, as *Shared Vision* remained statistically associated with *WUO*, after *PTrust* was introduced into the model. The results also showed that the addition of *PTrust* reduced the coefficient for *Shared Vision* with *WUE* by 51% ($\Delta\beta = 0.128 - 0.261 = -0.133$) and with *WUT* by 23.9% ($\Delta\beta = 0.348 - 0.457 = -0.109$). In the case of *WUE*, *Shared Vision* was no longer statistically significant after *PTrust* was introduced into the model. This suggested that *PTrust* had a complete mediating effect for the relationship between *Shared Vision* and *WUE*. For *WUT*, the mediation was partial, as the relationship between *Shared Vision* and *WUT* remained statistically significant after *PTrust* was introduced into the model.

Finally, the coefficient for *Shared Vision* was found to be not significantly associated with *PRUK* in either model, when *PTrust* was introduced.

4.3 Summary of the Mediating Effects of Perceived Trustworthiness

A summary of the mediating effect of *Perceived Trustworthiness* for both types of working relationships is presented in Table 4.

Table 4 Summary of the Mediating Effects of Perceived Trustworthiness

		Co-worker with whom respondent worked best		Co-worker with whom respondent did not work well	
		Shared Language	Shared Vision	Shared Language	Shared Vision
Willingness to Share	Overall	Partial	Partial		Partial
	Explicit	Partial	Complete		Partial
	Tacit	Partial	Partial		Partial
Willingness to Use	Overall		Partial		Partial
	Explicit	Complete	Complete		Complete
	Tacit		Partial		Partial
Perceived Receipt of Useful Knowledge		Complete	Partial		

5. Discussion

Based on the previous studies and the interrelatedness of the constructs (see Evans, 2012, Sections 2.2.2 and 2.4.4) it was expected that perceived trustworthiness would have a mediating effect between social-cognitive factors (SCFs) and information/knowledge sharing (IKS). Overall, this study provides supports for this expectation.

In earlier reported research it has been demonstrated that co-workers who possess shared language have greater trust in each other (see Evans, 2012, Section 2.3.2) and are more effective in their knowledge sharing (Evans, 2012, Section 2.4.2; Evans, 2013; Evans et al, 2012), so it comes to no surprise that these constructs are closely interrelated. The results of this study found that, with co-workers respondents worked well with, perceived trustworthiness had a partial mediating effect between *shared language* and each type of *willingness to share knowledge* (i.e., overall, explicit, and tacit).

This suggests that when working conditions are favourable, perceived trustworthiness in a co-worker forms a stronger relationship between shared language and an individual’s willingness to share explicit and tacit knowledge. Interestingly, perceived trustworthiness is found to not have a similar effect on overall willingness to use co-worker knowledge (or willingness to use co-worker tacit knowledge), yet had a complete mediating effect between *shared language* and *willingness to use explicit knowledge*. One suggestion for this result is that explicit knowledge may have a more visibly associated risk in the legal setting. For example, it may be less risky to use someone’s tacit knowledge than their explicit knowledge. In a legal setting, explicated knowledge is highly relied on and disseminated (e.g., legal documents, precedents, contracts, etc.). Therefore, explicit knowledge is more likely to be directly used and reused in projects, decision-making, and deliverables. It is also more probable that explicit knowledge is seen and used by clients, managers, and partners, in evaluating the project outcomes and the project team. When knowledge is made explicit, it is made formal, forcing the employees to place it “on the record”, which carries accountability and social risk. Trust is more important, since the individual inherently takes a risk in sharing and using a co-worker’s explicit knowledge, because they must ultimately be accountable for the information and knowledge shared/used. This is especially true in a closed network structure like a law firm, where reputations may be created and destroyed based on information and knowledge made visible (Coleman, 1988; Burt, 2005). There is less risk for tacit knowledge to be shown as being used inappropriately, because tacit knowledge is more difficult to codify in formal project deliverables and firm-wide artifacts.

With co-workers respondents worked well with, *perceived trustworthiness* is also found to have a complete mediating effect between *shared language* and *perceived receipt of useful knowledge*. This suggests that when trust is higher among co-workers, it forms a stronger relationship between shared language and the co-workers’s perception that knowledge received is more useful. Practically, this finding highlights the important role trust plays in perceived information and knowledge outcomes.

An interesting observation is how the nature of the working relationship plays a substantial role in affecting *perceived trustworthiness*, as a mediating variable. Specifically, *perceived trustworthiness* is found to have a mediating effect between *shared language* and IKS with co-workers respondents worked well with (i.e., with co-workers that respondents did not work well with, no direct relationships between *shared language* and trust is found) (Evans, 2012). Having a *shared language* may be a necessary prerequisite for working on a legal project and, by virtue of inclusion in the work group it may be assumed that their co-workers shared some degree of language. This, however, does not guarantee that the co-workers trust each other, or that trust plays any role. On the other hand, with co-workers that respondents did not work well with, there were significant relationships found between *shared language* and IKS (Evans, 2012, 2013). This could be because respondents only involved negative referents in knowledge sharing, when the two shared a language, to simplify and quicken the exchange (e.g., as it was a negative experience and individuals did not want to prolong interaction with someone they did not work well with).

Shared vision, perceived trustworthiness, and knowledge sharing are also closely interrelated: Co-workers who share a vision have greater trust in each other (see Evans, 2012, Section 2.3.2) and are more efficient in knowledge sharing (see Evans, 2012, Section 2.4.2; Evans, 2013; Evans et al, 2012). However, no known research has specifically explored the mediating effects of trust between *shared vision* and IKS. The results of this study suggest that *perceived trustworthiness* had a mediating effect between *shared vision* and each form of *willingness to share* and *use knowledge* (i.e., overall, explicit and tacit). As with *shared language*, one explanation for these findings may be that trust shapes the extent to which respondents are forthcoming about their lack of *shared vision*, creating a condition (i.e., willingness or need) for knowledge sharing. In other words, with higher perceived trustworthiness, there is more transparency for the need to create opportunities to establish a unified vision. These opportunities to build a *shared vision* manifested themselves as increased willingness to share and use knowledge. In either case, the effect of trust on willingness to share and use knowledge, in lieu of *shared vision*, really exhibits its role in organizational knowledge sharing. This is especially true because similar mediating effects are found in relationships with those co-workers individuals work well with and those they do not work well with.

With respect to *perceived receipt of useful knowledge*, perceived trustworthiness is found to have a partial mediating effect on *shared vision* and full mediating effect on *shared language*, in positive co-worker relationships and in both cases no mediating effects in negative ones. When respondents had little trust in co-workers, on the other hand, they default back on *shared language* or *shared vision* as a basis for deciding how useful their co-worker's knowledge is to them or the firm. One reason for this may be that individuals cannot get past the nature of poor working relationships and generally see a majority of information and knowledge from negative referents as not being useful, even if the two co-workers happen to share a common language or vision. This is quite an interesting finding, which reinforces the decision to ask respondents for two co-worker referents, and highlights the need to further explore the effect of positive and negative working relationships on information and knowledge sharing.

Generally, trustworthiness has a slightly stronger mediating effect on the *willingness to share* and *use explicit knowledge*, versus tacit knowledge. As previously suggested, this may be due to the proposed associated risk involved with explicit knowledge in a legal setting. Also, trustworthiness seems more likely to have a mediating effect in positive working relationships, as opposed to negative ones, but further research is required to specifically explore why this was the case.

The study has some limitations. It may have limited external validity because it surveyed knowledge workers in only one organization, within one industry. As it was suggested, in some cases the practices and routines in the legal industry may have influenced the make-up and outcomes of working relationships differently from what may be found in other organizational settings. Examples of this may be the risk associated with sharing and using explicit knowledge, or the unique relationships between legal professionals and law clerks/paralegals. Further research would be needed to explore similar types of sharing relationships, in alternative (non-legal) settings. The study only measured self-report data (i.e., expressed willingness and perceived usefulness) for knowledge sharing, and not actual exchanges of knowledge, actual employee sharing behaviours, or project outcomes. Future research may attempt to correlate findings from both expressed and actual knowledge sharing.

6. Conclusion

The results of the study showed that the relationship between *shared language* and *shared vision* on information and knowledge sharing is mediated through perceived trustworthiness. Moreover, this mediation is subject to the nature of the relationship between co-workers. For shared language, the role of co-worker relationship is still more nuanced

as perceived trustworthiness was found to have a mediating effect between shared language and knowledge sharing in relationships between co-workers with whom they worked well together on projects only. There is no apparent mediation of trust in negative co-worker relationships, which demonstrates one of the few interesting effects found to be dependent on the nature of the co-worker relationship.

The finding that trust plays a substantive role in how people share, use, and perceive the worth of information and knowledge is both cautionary and encouraging. That is, it points to trust as a pivot point for possibly enhancing effective information and knowledge sharing, but also as a point of intervention when those environments face challenges in effective sharing.

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