FIT BETWEEN KNOWLEDGE TRANSFER COMPLEXITY AND MEDIA CAPABILITY: A META-ANALYSIS

Research-in-Progress

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Abstract

This paper develops a knowledge transfer complexity (KTC) framework by synthesizing the various knowledge characteristics into four distinct KTC dimensions including: explicitness, depth, diversity, and rate of knowledge transfer (KT). Based on the notion of fit between knowledge complexity and media capabilities, we ask: which specific KTC dimensions are associated with which particular media capabilities in the context of KT at the individual level? We address this question using a meta-analysis methodology, and consider four key media capabilities in the media synchronicity theory. We examine 162 effect sizes from 70 journal publications and dissertations. Preliminary results provide support for the hypotheses that explicitness of knowledge requires high media parallelism, while depth of knowledge requires a media with high transmission velocity. As hypothesized, diversity of knowledge is associated with reprocessability, and rate of KT is associated with symbol sets, although these correlations are significant only with fail-safe statistic at this stage.

Keywords: Knowledge transfer complexity, media synchronicity capability, Meta-analysis
Introduction

Knowledge transfer’s importance is widely recognized for firm survival and growth (March 1991). Knowledge transfer (Argote et al.) is affected by the characteristics of the knowledge being transferred as well as the capabilities of the communication media used for KT (in addition to characteristics of the entities engaged in KT and other contextual factors) (Rhodes et al. 2008). For example, it is well established that tacit knowledge is more difficult to transfer than explicit knowledge (Ancori et al. 2000). Further, it is also well accepted that a richer communication media, such as face-to-face communication, may be an appropriate media for effective transfer of knowledge that is tacit (Vickery et al. 2004). However, empirical research has generally explored only one or two specific knowledge characteristics (Meyer et al. 1991), and there is no study in the literature that considers a comprehensive set of knowledge characteristics in a single study to understand the role different knowledge characteristics play in effective KT. Further, most of the KT studies in the organizational literature have been conducted at the group or organizational level (Cha et al. 2008; Ko et al. 2005; Slaughter et al. 2006), even though it is individuals within groups or firms who actually engage in knowledge sharing activities (Nonaka 1994). Finally, there is no study in the literature that considers the various capabilities of communication media (Dennis et al.) in conjunction with different knowledge characteristics to shed light on appropriate media choices given certain knowledge characteristics for successful KT (Scott et al. 2010). This study seeks to fill this void. Based on an in-depth review of the literature dealing with issues of KT, we synthesize four key characteristics of knowledge in transfer in a knowledge transfer complexity (KTC) framework. We also consider four key media capabilities proposed in the media synchronicity theory (Dennis et al.). We ask the question: which specific KTC dimensions are associated with which particular media capabilities in the context of KT at the individual level? We address this research question using a meta-analysis methodology, which is an empirical methodology for conducting a systematic and rigorous review of the literature and which can be used at both individual (Balkundi et al. 2006) and organizational levels (Geyskens et al. 2006). We hope to make two contributions to the literature. First, we hope to contribute to the literature by proposing a new comprehensive framework of KTC. Second, we also hope to enrich the literature by proposing and providing evidence for the specific relationships between the four KTC dimensions and the four media capabilities based on the notion of fit between specific KTC dimensions and specific media capabilities. This paper represents a research-in-progress paper and we present here preliminary results only for four hypotheses, each one pertaining to each of the four KTC dimensions and their hypothesized strongest relationships to each one of the four media capabilities.

Theoretical Background

Knowledge Transfer Complexity (KTC)

Knowledge has been described as a justified true belief that increases an entity’s capacity for effective action (Alavi et al. 2001; Nonaka 1994). KT is the process through which one individual is affected by the experience or knowledge of another (Argote et al. 2000). The individual-level KT process includes four components: a KT context, a knowledge reservoir, an individual knowledge sender, and an individual knowledge receiver. KT occurs when a knowledge reservoir is moved from the sender to the receiver or the reservoir is modified by the sender (Argote et al. 2000). In this context, we define KTC as the level of difficulty in moving or modifying the knowledge to be transferred or knowledge being transferred. This definition considers both the perspectives of action and potential (Hargadon et al. 2002), uses and inventories (Nissen 2005-6), and the process of applying expertise and object to be stored and deployed (Alavi et al. 2001). Based on an in-depth review of the knowledge literature (details are not included here due to page length limitations), we synthesized the various KTC notions into four KTC dimensions: explicitness, depth, diversity and rate of KT. These four KTC dimensions are well-studied constructs with high reliability and validity in previous studies. Further, these four KTC dimensions cover both the static and dynamic knowledge notions. Table 1 provides the KTC framework.
<table>
<thead>
<tr>
<th>Complexity</th>
<th>Definition</th>
<th>An example measurement item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explicitness of Knowledge</td>
<td>The extent to which knowledge to be transferred or being transferred is codified or can be expressed in words, numbers, scientific procedures, or universal principles (Haas et al. 2007; Zander et al. 1995)</td>
<td>A useful manual or document describing my area of expertise could be easily written. (Reagans et al. 2003)</td>
</tr>
<tr>
<td>Depth of Knowledge</td>
<td>The amount and level of sophistication of knowledge in a certain domain/topic that is to be transferred or being transferred (Meyer et al. 1991; Zhou 2011)</td>
<td>Knowledge search service I regularly use differ from other search services in the amount of their domain knowledge (Kim 2007)</td>
</tr>
<tr>
<td>Diversity of Knowledge</td>
<td>The extent to which knowledge to be transferred or being transferred covers a variety of perspectives, topics or domains (Harrison et al. 2007; Zhou 2011)</td>
<td>Knowledge and information provided by search service company I regularly use are quite diverse (Koo et al. 2010)</td>
</tr>
<tr>
<td>Rate of KT</td>
<td>The frequency of knowledge transfer within a certain time period (Fonner et al. 2010; Zahra et al. 2000)</td>
<td>During the course of a typical day, how often do you exchange information with colleagues? (Fonner et al. 2010)</td>
</tr>
</tbody>
</table>

**Media Capabilities**

Enhancing Shannon and Weaver’s communication model, Dennis (Dennis et al. 2008) proposed media synchronicity theory and proposed five media capabilities: transmission velocity, parallelism, symbol sets, rehearsability, and reprocessability. Since KT effectiveness is usually judged from the receiver’s perspective, we include all media capabilities in this study except rehearsability because the latter considers a sender’s perspective. Transmission velocity is “the speed at which the medium can deliver a message to intended recipients” (Dennis et al. 2008). Parallelism is “number of simultaneous transmissions of messages that can occur effectively” (Dennis et al. 2008) through the medium. Symbol sets are “number of ways in which the medium allows messages to be encoded for communication” (Dennis et al. 2008) using different symbols such as verbal cues (e.g., text, figure), visual cues (e.g., video, cartoon), oral cues (e.g., voice) (Hess et al. 2009). Reprocessability is the “extent to which the medium enables a message to be reexamined or processed again, during decoding, either within the context of the communication event or after the event has passed” (Dennis et al. 2008).

**Media Selection Theory**

In KT, media acts as the tool to represent the knowledge and move the knowledge during transmission. DeSanctis and Poole (DeSanctis et al.) describe the spirit of a technology as the property of the technology in terms of values and goals underlying the set of structural features and characteristics as presented to the users. Kozma (Kozma) argues that different types of media themselves “possess particular characteristics that make them both more and less suitable for the accomplishment of certain kinds of learning tasks”. In the trait theory of media selection, it is believed that media selection is a function of the traits of the media as well as the characteristics of the task on hand (Carlson et al. 1998). Since the task of knowledge transfer is to deliver or modify knowledge, the selection function is composed of the traits of media and the characteristics of the knowledge that is being transferred or to be transferred. There are two major schools of thought in selection theory: one declares that media selection is essentially a cost benefit function (Allen 1977); the other suggests that media selection is a matching task which considers both the characteristics of the media and the knowledge. Theories such as media richness theory (Daft et al. 1987) or social presence theory (Short et al. 1976) exemplify the latter school of thought.
Research Hypothesis

Based on the media selection theory discussed above, we propose that each KTC dimension would have a best fit with one of the four media capabilities considered in this study. Due to the preliminary stage of this research and page length limitations, below we present only four major hypotheses, each one pertaining to the best fit, i.e., the strongest expected, relationship of each of the four KTC dimensions with one of the four media capabilities.

Knowledge Transfer Explicitness and Media Parallelism

Media selection can be treated as a function of cost benefit analysis (Ancori et al. 2000; Carlson et al. 1998). Knowledge transfer begins with the sender’s activity of preparing to share the knowledge (Szulanski 2000). For knowledge senders, the first step is to change the knowledge into a transferable format (Ancori et al. 2000). The cost lies in codifying knowledge to make it explicit, which requires effort and is a time consuming activity (Cohendet et al. 2001). The benefits of knowledge transfer for individuals can be a pursuit of reputation or of enjoyment from helping others (Wasko et al. 2005). If the knowledge to be transferred can be easily codified into formulas, drawing, documents, more focus is paid to the diffusion of the codified knowledge to multiple recipients from a cost benefit perspective (Prencipe et al. 2001). The sender has an interest in receiving as much reputation or enjoyment as possible at one knowledge-codification cost. The benefit to the sender is maximized when s/he can transfer the knowledge to multiple receivers in one transfer activity, considering the fact that explicit knowledge has the characteristics of availability and openness to multiple users in a community (Alavi et al. 2001, Nonaka, 1994 #200; Bardon 2004). A single transfer to multiple recipients can save time and energy for the sender that would be incurred in codifying the knowledge again and again. Considering codification of the knowledge as a transfer cost, the achievement of full benefits by the sender requires that the transmission tools (e.g., the media) enlarge the range and magnitude of potential knowledge recipients. As the knowledge sender chooses the knowledge transfer media, the foregoing suggests that the sender would prefer a media that allows transmission of the codified, explicit knowledge to multiple knowledge receivers at the same time. Parallelism is the media capability that allows a number of simultaneous transmissions (Dennis et al. 2008). Therefore, we propose the following:

H1. Explicitness of knowledge in KT is positively associated with media parallelism.

Knowledge Transfer Depth and Media Velocity

The receiver faces two problems when receiving a large amount of knowledge in a certain domain (i.e., knowledge depth): first is to handle the large amount of knowledge, and the second is to deal with the interconnections among the various pieces of knowledge received. The deeper the knowledge covered within one topic or domain, the higher is the level of inter-correlations among pieces of such knowledge stock or knowledge flow (Zhou 2011). Knowledge transfer is effective when receivers are able to understand and learn the knowledge they received (Pérez-Nordtvedt et al. 2008). Knowledge receivers are motivated to learn when they are in control of all the knowledge materials quickly rather than waiting for the knowledge pieces to arrive slowly, as a slow arrival may make it more difficult to understand the vast and complex interconnections among the various pieces of knowledge and the receivers may lose patience (Piccoli et al. 2001). Therefore, when a large amount of inter-related knowledge is to be processed by a receiver, quick arrivals can reduce the burden on the receiver to easily and rapidly find the interconnections among various knowledge pieces, and thereby systematically absorb the deep knowledge that was received by them. Considering this learning burden on the part of the receiver, the knowledge sender may choose communication media that support high transmission velocity so that a large amount of knowledge can be rapidly transferred to the knowledge receiver. Therefore, we propose that:

H2. Depth of knowledge in KT is positively associated with media velocity.

Knowledge Transfer Diversity and Media Reprocessability

Poor communication can happen when there is missing information or failed understanding during communications (Sun et al. 2007), especially in the context of information that covers multiple domains,
topics or backgrounds (Gruenfeld et al. 2000). A high variety of knowledge from different domains in a particular task can also cause distractions in completing that task (Jehn et al. 2001), as the individual can easily lose track of certain parts of the information due to the wide variety of information from different domains. In such a scenario, the receiver needs to go back to the original message to recover the unintentionally missed knowledge pieces or intentionally ignored information. Diversity of knowledge in transfer or to be transferred, therefore, increases the efforts on the part of the receiver to re-access or reexamine the various pieces of knowledge received from various domains to be able to effectively understand the interconnections among those diverse pieces of knowledge. Such an ability to re-access or re-examine or re-process the received message is the media’s reprocessibility capability (Dennis et al. 2008). This reprocessability capability has proved its effectiveness in e-mail as a communication media as users can reexamine the contents of the received e-mails many times to overcome the problem of missing or ignored or not understood information pieces due to barriers of language, culture, etc. (Shachaf 2008). Reprocessability of the media also positively affects the extent of knowledge internalized by the recipients. In academic fields, scientists often combine multiple sources of knowledge, diverse methodologies and varied competences to search for new ideas (Zander et al. 1995). It has also been shown that the ability to support repeat access to knowledge storage can help a new group member get up to “speed” easily in a cognitive learning process (Törlind et al. 2005). Considering this need for reprocessability on the part of the knowledge recipient in the context of understanding and learning from high diversity knowledge, the knowledge sender is expected to choose a media with a high capability for reprocessability for transferring knowledge with high diversity. Thus, we hypothesize that:

H3. Diversity of knowledge in KT is positively associated with media reprocessability.

**Rate of Knowledge Transfer and Media Symbol Sets**

As its definition suggested, a high rate of KT raises the frequency of knowledge transfer activities. The predominant reason for such frequent KT activities is due to the change of knowledge itself. When knowledge becomes obsolete quickly, it needs frequent updating activities (Fonner et al. 2010; Zahra et al. 2000). This frequent knowledge transfer creates a pressure on the part of the recipient to quickly learn the specific pieces of knowledge that have changed, how will the changed pieces of knowledge impact other pieces of knowledge, and how should the new pieces of knowledge be used in completing her tasks. There is no spare time for the receivers to only handle knowledge transmission and leave the transferred knowledge to be understood and learned later. This stress to keep up with frequent knowledge transfer requires the media to assist the receiver understand these finer nuances of the knowledge received so the new knowledge can effectively supersede the obsolete knowledge and be put to use rapidly and effectively by the receiver. Symbol sets supported by a media not only help construct several perspectives to understand the knowledge received, they also place certain constraints on the receiver’s capacity to process new knowledge effectively (Brown et al. 2000). In the context of a high rate of KT, a media that provides a richer symbol set, such as a face-to-face meeting will allow the transferred knowledge to be absorbed and understood faster as this media capability affords the possibility of generating a fuller understanding using multiple symbols with a quick back and forth between the sender and the receiver. Considering this need on the part of the receiver, the sender is expected to choose media with a high capability of multiple and rich symbol sets. Therefore, we propose that:

H4. Rate of KT is positively associated with media symbol sets.
Research Methodology

Sample

A computer search was conducted using several databases (Business Source Complete, ScienceDirect, PsyINFO and PsyArticle) to search for articles published during 2000 – 2011 that focus on the key constructs, relationships, and context of the present study. Therefore, our search string included concepts related to knowledge transfer complexity, media capability, and learning. Additional volume-by-volume search was also conducted in 19 major journals in knowledge management, social science, and psychology. Studies were selected based on several inclusion criteria (Balkundi et al. 2006; David et al. 2004). First, we include only those empirical studies that reported sample sizes and an outcome statistic with an effect size. Second, a study had to report on relationships involving at least one of the four hypothesized relationships from KTC to media capabilities. Third, only those studies that measured constructs at the individual level were included. Fourth, when the same sample was used in multiple primary studies, effect sizes only from the latest publication using that sample were considered in our study. As a correlation-based meta-analysis, each effect size for a particular relationship is taken from reported correlations or other statistics in the meta-analytic sample papers that can be transferred into appropriate correlations following Wu and Lederer (2009). As a result, we have so far obtained a total of 70 studies in our meta-analytic sample.

Coding process

As (Bardon 2004 & Rothstein, 2009; Haas et al. 2007) recommended, a coding protocol was first developed to specify the kinds of variables and statistics that should be coded. The protocol was also revised based on two business school professors’ feedback to ensure the coding schema is accurate and faithfully captures the conceptual definitions of the constructs of this study. Then, a coding Excel file was built for the coders to keep track of data about the variables of interests, including outcome statistics (e.g., correlations, ANOVA test), sample size in each studies, statistical indices (e.g., reliability index about the correlation). In Table 1, we provided one coding example from an actual empirical study for each of the four KTC dimensions. We coded media capabilities based on the definitions provided above. Examples of our coding include: 1) media transmission velocity – “The information system responded on time to my information needs” (Lee et al. 2011); 2) media parallelism – “Knowledge search service I regularly use is easy to discuss matters with other users” (Koo et al.); 3) symbol sets – percentage of symbols in the text (Luik et al. 2008). A large number of studies in our meta-analytic sample report media type such as face-to-face, e-mail, etc. rather than specific media capability-related variables. To convert each media type into its relevant media capabilities, we use the mapping provided by Dennis et al. (2008) in table 2 in their media synchronicity paper and a two-level coding schema for each media capability – low capability (-1) and high capability (+1). We treated Dennis et al’s Low capability as (-1), Medium as (+1), and High as (+1). For cases where Dennis et al. use multiple levels for a single capability for a particular media type (e.g., low-medium transmission velocity for e-mail), we assigned a code of (-1) for a particular capability if low was included in that particular capability. If a value of low was not included for a particular media capability for a particular media type, we assigned a code of (+1). We accordingly created four correlations for a media type that was correlated with a particular KTC dimension based on this two-level coding schema for each media capability for that media type. We did not find specific items or measures for media reprocessability in our meta-analytic sample and used media type as the basis for coding for media reprocessability using table 2 in Dennis et al. (Dennis et al. 2008) that compares selected media types and their capabilities. We similarly used media type to code for the other three capabilities in articles where specific items or scales were not used to measure those media capabilities. In such cases, if a media type was found related to one or more of the four KTC dimensions, the appropriately adjusted correlation was added to our study database. For example, one original correlation between email and explicitness of knowledge is 0.1. According to table 2 in Dennis et al.’s (Dennis et al.) paper, the correlation between
explicitness of knowledge to the four capabilities for e-mail will be appropriately adjusted as -0.1 (velocity), 0.1 (parallelism), -0.1 (symbol sets), and 0.1 (reprocessability).

**Analysis and Results**

First, all effect sizes were transferred into correlations between two constructs. These correlations were corrected for measurement errors by dividing with the product of the square root of the two constructs reliabilities. R software was used to estimate the mean effect size, standard deviation, p value, 95% confidence boundaries, and fail-safe numbers (Kirca et al. 2011). Among them, the fail-safe number is one of the best-known statistical indices to help understand the estimated mean effect size significance in meta-analyses. For testing the reliability of the coding schema and the coding itself, two management PhD students coded 10 random-selected journals (Hall et al. 1988). The inter-rater agreements ranged from 75% to 100%. The two coders came to total agreement in cases of disagreement after discussions in two meetings. As a result, corresponding revisions were also made to the final coding schema which was then used to code the rest of the articles and dissertations. During the course of this study, all the article are planned to be coded by two coders and inter-rater reliability will be assessed based on full sample coding by the two coders.

In table 2 below, we report the results of the four hypotheses proposed above: number of study samples used for testing the relationship (N), total sample size from N study samples (K), corrected mean correlations (mean correlation estimate), standard errors (SE), P value, and 95% confidence intervals boundaries of the correlation estimate (ci.lb as lower boundary and ci.ub and upper boundary), as well as the fail-safe statistic for each relationship.

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>N</th>
<th>K</th>
<th>Mean Correlation Estimate</th>
<th>SE</th>
<th>P-Value</th>
<th>ci.lb</th>
<th>ci.ub</th>
<th>Fail-safe</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1: Explicitness -&gt; Parallelism</td>
<td>13</td>
<td>4627</td>
<td>0.18</td>
<td>0.08</td>
<td>0.02</td>
<td>0.03</td>
<td>0.33</td>
<td>296</td>
</tr>
<tr>
<td>H2: Depth -&gt; Velocity</td>
<td>20</td>
<td>18893</td>
<td>0.07</td>
<td>0.04</td>
<td>0.09</td>
<td>-0.01</td>
<td>0.16</td>
<td>392</td>
</tr>
<tr>
<td>H3: Diversity -&gt; Reprocessibility</td>
<td>9</td>
<td>9023</td>
<td>0.12</td>
<td>0.08</td>
<td>0.12</td>
<td>-0.03</td>
<td>0.27</td>
<td>73</td>
</tr>
<tr>
<td>H4: Rate of KT -&gt; Symbol sets</td>
<td>12</td>
<td>17904</td>
<td>0.14</td>
<td>0.11</td>
<td>0.18</td>
<td>-0.07</td>
<td>0.35</td>
<td>2042</td>
</tr>
</tbody>
</table>

We interpret the results in table 2 using the mean correlation estimate, the P-value, and the fail-safe statistic. P-value indicates the 95% significance level of the correlation estimate in terms of whether it is statistically different from zero at that significance level. The fail-safe statistic indicates the number of additional studies that would be required to reduce the correlation estimate to statistical non-significance. Fail-safe is one of the best-known statistics in the meta-analysis methodology to help understand the significance of the mean correlation estimate (Kirca et al. 2011). Therefore, we use both P-values and fail-safe statistic in understanding the mean correlation estimates in our study. We obtained a significant mean correlation from the relationship between explicitness of knowledge and media parallelism (r=0.18, p=0.02), and this provides support to H1. The bivariate correlation estimate between depth of knowledge and media transmission velocity shows a marginally significant positive sign, although the fail-safe statistic is high (r=0.07, p=0.09), providing support for H2 proposed. Meta-analysis results for the relationship between diversity of knowledge and media reprocessibility show a positive but not significant correlation (r=0.12, p=0.12). The fail-safe statistic for this relationship is also the lowest as compared to the other relationships indicating that this is a statistically weaker correlation. Finally, the results also show that rate of KT has a positive high correlation with symbol sets which shows a not significant p-value but the highest fail-safe statistic (r=0.14, p=0.11). In conclusion, three of the four proposed hypotheses are supported by our meta-analysis results, with H3 finding weaker support. Cumulatively, these findings indicate that the four dimensions of KTC (explicitness, depth, diversity and rate of KT) are indeed strongly
related to one of the four media capabilities based on the logics of media selection theory and the notion of fit between KTC and media capability.

Discussion

Theoretical Contributions

As mentioned earlier, we hope to make two significant contributions to the literature with this study. First, we hope to contribute by proposing a new comprehensive framework of KTC based on an in-depth qualitative review of the knowledge literature. The second, and perhaps a more important contribution, that we hope to make by proposing and providing evidence for the specific relationships between the four KTC dimensions and the four media capabilities based on the media selection theory and the notion of fit between specific KTC dimensions and specific media capabilities. Preliminary results from a meta-analysis of 70 publications do begin to make the two contributions that we hope to make through our final study. Our preliminary results also provide some insights that we discuss in the following paragraphs.

The significant positive relationship from explicitness of knowledge to media parallelism is the strongest among all the hypothesized relationships in terms of the mean correlation estimate, the P-value, and the fail-safe statistic. This suggests that explicitness is one of the most important KTC dimensions when it comes to media choice. This should come as no surprise because explicitness of knowledge is one of the most studied knowledge characteristic in the KT literature due to its central and important role in KT activities.

Our results also show that depth of knowledge is positively associated with high media transmission velocity, albeit the mean correlation estimate is the lowest at 0.07 among the four correlations. This result correlation is marginally supported by our meta-analysis sample based on the P-value but is strongly supported by the fail-safe statistic. A further look at our results indicates that the variance (SE) for this correlation is the lowest at 0.04 among all the four relationships. Our small effect size for this relationship is supported by Scott et al. (Scott et al. 2010) who suggest that the link from depth of knowledge to media velocity has a smaller magnitude.

Our results also show that frequent knowledge transfer requires high media symbol sets. Results for this relationship based on 12 primary samples with a total sample size of 17,904 data points show that the mean correlation estimate is the second highest at 0.14 among the four relationships. While the P-value is not significant for this relationship, the fail-safe statistic is the highest at 2,042 additional studies indicating that this relationship is statistically significant and strong. The not-significant P-value may be on account of some moderating effects from one or more variables which have to potential to not only dampen the strength of the correlation but also its significance (because the correlation may be positive in one group and may be negative in another group). The possibility of moderators of this relationship needs to be investigated further.

Future Work

As a research-in-progress, we only report in this paper the dyadic relationship effect sizes from one KTC dimension to one media capability based on our hypotheses of one best fit relationship of each KTC dimension with one media capability. The full model is composed of 16 relationships and corresponding mean effect size estimations, for the four KTC dimensions and the four media capabilities. While we reported four mean effect sizes above pertaining to the four hypothesized best-fit relationships, we computed all the 16 mean effect sizes as part of this ongoing study. These full results provide evidence that support our choice of one best-fit relationship for each KTC dimension. The mean estimate for the relationship from explicitness to parallelism is the highest among all the four relationships of explicitness with the four media capabilities. The diversity to reprocessability relationship has the highest positive value in the four possible relationships from diversity. Depth as a KTC dimension has significant relationships with two media capabilities – velocity and parallelism, with evidence of significance available from both the p-value and the fail-safe statistic. According to fail-safe as significance index, rate of KT has best-fit relationships with media velocity and symbol sets. These results indicate that one KTC dimension has good fitting relationships with two media capabilities, and not one. Therefore, in our future
work, we will develop hypotheses about the relationships of each complexity dimension with two media capabilities.

Furthermore, prior literature indicates that individual characteristics such as personality, age, work experience, education level, network position, absorptive capacity etc. are also important in the context of knowledge transfer. Therefore, we revisited the 70 papers in our meta-analytic sample to identify individual variables that were measured in those papers. A review of these additional variables found in the 70 papers indicated that some of them, such as age and gender, can be used as moderators of the main effects between the four KTC dimensions and the four media capabilities as adequate meta-analytic sample size is available for them (in terms of number of papers in which a particular variable is measured). Further, meta-analysis literature also suggests the use of some other important variables, such as sample source, etc., as moderators to assess methodological artifact biases. Therefore, the following variables were coded from each of the 70 papers, where available, as moderator variables: (a) publication year, (b) sample source, (c) data collection location, (d) sample average age, (e) male percentage in the sample. In sample source, we coded for data from students versus organizational staff. In data collection location, we coded from a value of 0 to 6 representing “not mentioned,” Australia, Asia, Europe, Africa, North America, and South America, respectively. We also tried to include some social network related variables (Inkpen and Tsang, 2005; Ko, Kirsch and King, 2005; Szulanski, 2000) as individual context factors, but were not able to do due to the lack of sufficient sample size for these variables. We hope to present results pertaining to these moderator analyses at the ICIS conference.

References


