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RESEARCH ARTICLE

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Procedural Justice, Not Absorptive Capacity, Matters in Multinational Enterprise ICT Transfers

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Abstract:

- This paper empirically tests the effectiveness of information and communications technology (ICT) knowledge transfer and adoption in the multinational enterprise (MNE) as an issue of critical importance to contemporary MNE functioning. In contrast to mainstream thinking on absorptive capacity, but in line with prevailing international business theory, our research supports the proposition that perceptions of procedural justice, rather than absorptive capacity, determine effectiveness, especially in cases of high tacit knowledge transfers.
- Data was collected from senior ICT representatives in 86 Canadian subsidiaries of foreign owned MNEs. Each of these subsidiaries recently experienced a significant ICT transfer imposed by the parent organization.
- Support was found for the main propositions: Procedural justice significantly predicted successful ICT transfer and adoption, while absorptive capacity was not significant. These findings are consistent even when knowledge tacitness was high.
- The perceived success of the ICT transfer as well as its adoption varied widely across these firms. The potential reasons for this divergence in effectiveness are manifold, but our findings suggest that in situations of substantial knowledge tacitness, a higher level of procedural justice, rather than a higher level of absorptive capacity, is critical to effective transfer and adoption.

Keywords: Absorptive capacity · Information and communications technology · Knowledge management · Knowledge tacitness · Multinational enterprises · Procedural justice

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Introduction

Multinational enterprises (MNEs) function as vehicles for the international transfer of proprietary knowledge, commonly referred to as non-location bound firm specific advantages (FSAs) (Rugman and Verbeke 2005). MNE knowledge diffusion processes include inter-organizational ones, as well as transfers within the internal network that are dispersed across geographic borders (Dunning 1958; Meyer et al. 2011; Rugman and Verbeke 2001; Vernon 1966).

The functioning of the contemporary MNE typically takes on features of "federative rather than unitary organizations" (Yamin and Sinkovics 2007, p. 322). Such configuration allows subsidiary management to enjoy a high degree of autonomy (Birkinshaw and Hood 1998), but has also led to a significant loss of information at the head office level potentially resulting in a knowledge deficit. In other words, subsidiary autonomy has allowed many local activities in the subsidiary network to remain invisible to the MNE head office. This knowledge deficit and the associated perceived lack of control is now facing increased intolerance from head offices (Yamin and Sinkovics 2007), and has at times triggered a power struggle between the head office and the subsidiaries. However, technological advances have provided MNE head offices with new tools to counter the knowledge deficit problem. More specifically, information and communications technology (ICT) is critical here: "ICT advancement facilitates significant structural changes in multinational enterprises, away from the traditional federative system towards more tightly integrated and controlled entities" (Yamin and Sinkovics 2007, p. 324).

ICT performs a dual role in these knowledge transfer processes. First, ICT can act as an FSA, in the form of a knowledge bundle, in its own right, allowing efficiencies in how information is managed in the MNE. Second, ICT can be a tool for diffusing other non-location bound FSAs throughout the enterprise's internal and external networks (Eccles and Nolan 1993; Pan and Leidner 2003). This article focuses primarily on ICT's first role. Much work to date on cross-border knowledge transfer has focused on the recipients of such transfers, more specifically on the recipients' absorptive capacity (Mahnke et al. 2005; Minbaeva et al. 2003).

In the context of *inter-organizational* transfers, one can safely assume that recipients want a successful transfer to occur, or else the recipient organization would not have agreed to the transfer process in the first place. However, this assumption is not necessarily valid with *intra-organizational* transfers, whereby the corporate head office can simply mandate a knowledge transfer that is undesired by subsidiary management. Importantly, because the transfer can be a strategy implementation that often involves a top-down decision by the head office, subsidiary managers may feel disinclined to commit fully to the decision and implementation. Subsidiary managers may feel that a mandated knowledge transfer is being imposed by a clueless overseer (Ciabuschi et al. 2011). The MNE head office is not only spatially removed from the subsidiaries, but subsidiaries enjoy some level of autonomy and, as a result, their managers may have substantive objections to the head office decision. Allowing subsidiary managers to voice their concerns and head office subsequently addressing these concerns may alleviate any reluctance on the part of the subsidiary. Szulanski (1996) emphasized the impact of recipient resistance in knowledge transfer should not be taken lightly. This is especially the case when the

transfer of highly tacit knowledge is involved, whereby knowledge-related barriers were found to be of greater significance than motivation-related barriers. In such situations, not only issues of motivation, but also issues of knowledge needed to make the transfer successful, must be examined.

As noted above, ICT implementation can greatly benefit the MNE, but there is a paucity of research examining the 'affective' element on the recipients' side in ICT knowledge transfers. This affective element includes the enthusiastic embracing (or the lack thereof) by subsidiary personnel, of mandated ICT knowledge transfers. In other words, ICT implementation may result in much improved knowledge held by the head office about subsidiary activities, but such an improvement may also lead to a substantial reduction of voice by the subsidiaries in the corporate system, at least as perceived by the subsidiary managers themselves. Thus, subsidiary managers may feel that ICT implementation does not benefit them because of a perceived or real loss in autonomy. Here, it is critical for the MNE head office to involve subsidiary managers and to enlist their cooperation in terms of effective ICT knowledge transfer and subsequent usage.

A considerable body of evidence suggests that procedural justice is a key determinant of subsidiary managers' motivation to make head office directives work. Procedural justice reflects the perception by subsidiary management that a head office decision has been reached in a fair and transparent fashion (Hunton and Price 1997; Kim and Mauborgne 1993; Korsgaard et al. 2002; Sapienza and Korsgaard 1996). The present paper argues that procedural justice plays a key role in determining the success of mandated (i.e., compulsory) intra-organizational knowledge transfers, and is likely to be much more important than the recipient's absorptive capacity. In other words, when subsidiary managers believe that the MNE head office has made decisions regarding the transfer in a procedurally fair fashion, our main proposition is that they will be more likely to apply themselves fully to ensuring transfer and subsequent usage success. Prior research has concluded that procedural justice increases subordinates' commitment to strategic decisions made by the leader (Korsgaard et al. 1995). In addition, Yamin et al. (2011) reported that dyadic 'willingness' was considerably more important in lateral innovation transfers than even absorptive capacity. Hence, these studies suggest that the motivation of the recipient is critical for knowledge transfer with this motivation being influenced by procedural justice. Consequently, subsidiary managers will better understand and more readily accept the rationale behind the decisions and not view knowledge transfers as a threat to be resisted or as orders to be reluctantly obeyed. In contrast, it could be argued that cases of inadequate absorptive capacity at the subsidiary level largely represent a technical rather than a social challenge. Here, additional resources, whether from outside suppliers or from inside the network, are likely to be provided by the transfer promoters at the head office or inside the subsidiary to guarantee a successful process.

Interestingly, the reduced role of internal absorptive capacity proposed here, which would appear at odds with the mainstream literature on this concept, is actually consistent with prevailing international business theory, namely internalization theory. Internalization theory suggests, as far as classes of transactions with underlying competences are concerned, that MNEs will choose to conduct these classes of transactions inside the firm or to outsource these, as a function of comparative efficiency (Rugman and Verbeke 2003). This implies that when engaging in knowledge transfers inside the firm, an insuffi-

cient level of subsidiary absorptive capacity can be interpreted as the absence of requisite complementary knowledge on the recipient side. Such lack of complementary knowledge may then lead the MNE to purchase in the external market, e.g., from ICT consultants, both the needed skills to adopt the newknowledge, and more importantly for the long run, the skills to help subsidiary managers develop better internal knowledge absorption.

The present study analyzes the decision-making processes driving the transfer of ICT knowledge to the MNE subsidiary, as well as the acceptance thereof by subsidiary management. Our focus is on senior management's view of such acceptance and various performance outcomes at the subsidiary level, rather than on the views of individual employees. Here, knowledge transfer is investigated as an intended and planned activity from corporate head office to the subsidiary. We test a number of hypotheses using data collected through a survey completed by the most senior individual responsible for ICT in 86 Canadian subsidiaries of foreign owned MNEs. Our findings suggest, in accordance with our hypotheses, that especially in a situation of substantial knowledge tacitness, high levels of procedural justice are indeed critical to effective ICT transfer and adoption.

Theory and Hypotheses

Absorptive Capacity, Procedural Justice, and Knowledge Tacitness

The concepts of absorptive capacity, procedural justice and knowledge tacitness have been discussed extensively in the extant literature. Each of these concepts has been identified as instrumental to the effectiveness of intra-firm knowledge transfers in the MNE.

Absorptive capacity is the ability of the firm to recognize the value of outside knowledge sources, to assimilate this knowledge into the organization, and to exploit it for commercial gain (Cohen and Levinthal 1990). However, in complex organizations, different units may have a different level of absorptive capacity, both for knowledge sourced externally and for knowledge transferred internally. Kostova (1999) and Szulanski (1996) have described absorptive capacity as perhaps the most critical determinant of effective international knowledge transfer and adoption. The level of a recipient's absorptive capacity depends on prior knowledge, on shared technical language supported by the inter- and intra-group organizational communication system, and on easy access to useful complementary expertise through some form of knowledge network. Lane and Lubatkin (1998) have clarified that in situations of group organizational learning, measuring *relative* absorptive capacity is actually more important than *absolute* absorptive capacity. Here, the absolute level may vary across organizational units, and therefore what matters is a specific unit's capacityto absorb knowledgebundles, *relative to other organizational units*; such relative capacity can often best be measured through assessing managerial perceptions.

The concept of *procedural justice* grew out of work in law and judicial affairs, where the concern is not only that a just decision be reached, but also that those who observe or participate in the system believe that the decision was reached in a fair manner. Leventhal's (1980) early insight was that the procedural justice concept could also be applied in non-legal settings. Indeed, the term refers to "the social psychological consequences

of procedural variation, with particular emphasis given to the procedural effects of fairness judgments" (Lind and Tyler 1988, p. 7, cited in Kim and Mauborgne 1991, p. 126). Here, "procedural justice is fostered through voice during a decision-making process or influence over the outcome (Thibaut and Walker 1975) or by adherence to fair process criteria, such as consistency, lack of bias, correctability, representation, accuracy, and ethicality (Leventhal 1980; Leventhal et al. 1980)" (Colquitt 2001, p. 386). The importance attached to the decision-making process results from the observation that an individual's reactions to decisions reached depend on his/her assessment of the methods by which those decisions are made, i.e., the fairness (or lack thereof) prevailing in the procedures used (Kim and Mauborgne 1991).

In practical terms, procedural justice is important because those who must implement a decision may not necessarily agree with the decision. Research suggests that in such cases, if the procedures by which the decision were reached are perceived to have been fair, commitment to—and success in—implementation are greater than if the procedures are perceived to have been arbitrary or to have taken insufficient account of the interests of some parties.

Kim and Mauborgne (1993, 1996) found that inspired managers go beyond what is expected of them, and engage in creative, innovative, and cooperative behaviour when implementing corporate head office decisions, even if disagreeing with the direction selected. Kim and Mauborgne (1996) and Sapienza and Korsgaard (1996) studied a set of performance outcomes that could be affected by procedural justice, namely the extent of extra-role behaviour (voluntary participation beyond job fulfillment expectations), in-role behaviour (fulfilling job expectations), outcome satisfaction with the transfer (agreement with the transfer process), and commitment to supportthe transfer (active involvement beyond token acceptance). In our context of ICT knowledge transfers, measuring the perceived performance outcomes is also particularly important.

Knowledge tacitness has been described by Kogut and Zander (1993) in terms of three attributes. First, (absence of) codifiability, i.e., "…the extent to which knowledge has been articulated in documents" (p. 632). Second, (absence of) teachability, i.e., "…the ease by which know-how can be taught to new workers" (p. 633). Third, complexity, i.e., "…the number of critical and interacting elements embraced by an entity or activity" (p. 633). Birkinshaw et al. (2002) added other attributes, most notably the (absence of) observability, i.e., the ease of understanding an activity by examining different aspects of the final product or process, and system embeddedness, i.e., the extent to which the knowledge utilization depends upon of the system or the context within which that knowledge is implemented. Birkinshaw et al. (2002) suggested that future research take into account these factors when investigating knowledge characteristics underlying transfer processes. The elements of codifiability, teachability, complexity, observability and system embeddedness are combined in our paper to create a multidimensional perspective on knowledge tacitness.

Hypothesis Development

Influential prior research (e.g., Kostova 1999; Szulanski 1996) suggests that when faced with a mandatory knowledge transfer from the parent company, a greater ability to recog-

nize, assimilate and exploit knowledge should lead to higher performance outcomes, in terms of effectiveness of knowledge utilization. However, we assume this will not be the case here, because ICT transfers, if hindered by lack of recipient knowledge, can be facilitated through the use of internal experts from the head office in the case of self-developed ICT systems, or outside suppliers in the case of externally developed ICT systems. In addition, the ICT users in MNE subsidiaries usually command standard knowledge taught across borders in information technology and engineering schools, in specialized MBA programs, and in commercial certification courses, as a precondition to learn from consultants. Therefore, a concern over complementary resources availability at the subsidiary level is unlikely to cause ongoing problems in affecting ICT knowledge transfers. Minimum threshold levels of absorptive capacity are likely necessary to allow subsidiary learning from third parties on how to integrate and use effectively the transferred knowledge, but increasing levels of internally available absorptive capacity are likely to have diminishing returns, and prior research has even shown that absorptive capacity's impact on new product development can take the form of an inverted U-curve (Stock et al. 2001). The above leads to the following hypothesis, in line with prevailing international business theory:

Hypothesis 1: Higher absorptive capacity of the MNE subsidiary will not lead to more effective ICT knowledge transfer and adoption.

As noted above, Kim and Mauborgne (1993, 1996) found that head office decisions viewed as unfavourable by a subsidiary would still be supported, provided that subsidiary managers perceive the decision-making process as fair. The international standardization of ICT systems often results in the parent company imposing the adoption of ICT systems at the subsidiary level and mandating their subsequent use (Gallivan 2001). A subsidiary manager may well perceive the mandatory use of such ICT systems as reflecting a lack of local sensitivity by the parent. However, the subsidiary manager may still react positively to the mandated ICT transfer, provided the decision-making process is perceived as fair. The subsidiary manager's reaction to a decision, as predicted by procedural justice principles, will be partially dependent on the procedures used to arrive at that decision. The results of the classic work on procedural justice by Kim and Mauborgne (1991) in organizations whose members were subject to hierarchical decision-making processes have shown positive effects on higher-order attitudes of commitment, trust, and social harmony, and lower-order attitudes of outcome satisfaction. However, increasing the effectiveness of knowledge transfer simply through increasing procedural justice is not self-evident, since performing responsibilities in line with pre-set rules and organizational standards so that formal role requirements are met, constitutes the expected behavioural norm. However, the more individuals feel they are a part of the process, the more they can be expected to cooperate voluntarily and to accept sharing knowledge or the teaching thereof. For example, more transparency in the decision-making process potentially results in reducing uncertainty and anxiety over the situation. Conversely, if a lack of transparency leads individuals to conclude the process is unfair, they will have a tendency to procrastinate and to refuse to cooperate (e.g., by hoarding knowledge or hiding ignorance) to maintain, from their perspective, a sense of power and control over the situation.

Perceptions of procedural justice create an environment conducive to knowledge sharing and learning that increases the likelihood of a successful outcome. Thus, higher levels of procedural justice as perceived by the subsidiary are likely to have a significant positive impact on ICT knowledge transfer and adoption effectiveness. This leads to the following hypothesis:

Hypothesis 2: Higher procedural justice will lead to more effective ICT knowledge transfer and adoption.

Higher levels of knowledge tacitness, in terms of absence of codifiability, teachability, and observability, and in the presence of more complexity and system embeddedness, may exacerbate the challenges of achieving effective ICT knowledge transfer and adoption, thereby amplifying the (expected positive) impact of procedural justice. When knowledge tacitness increases, the value of that knowledge, as perceived *ex ante*, becomes more uncertain and ambiguous. As a result, the knowledge transfer process will need to rely increasingly on relational elements embedded in procedural justice, rather than on more technical absorptive capacity levels to be successful (Kim and Mauborgne 1998).

Our above analysis in the context of Hypothesis 1 suggested that low absorptive capacity levels for ICT knowledge can likely be augmented through purchasing the requisite knowledge adoption skills in externalmarkets, so that ultimately, extant subsidiary absorptive capacity matters little. Hypothesis 3 below complements this point by suggesting that with increased tacitness of knowledge transfers, the technical component of knowledge absorption—as measured by the extant level of absorptive capacity—does not matter as much as compared to the relational component—as measured by the level of procedural justice. The argument here, as compared with Hypothesis 1, is therefore not that skills in tacit knowledge adoption can be purchased in external markets (though this might be the case), but rather that tacit knowledge transfers involve a process whereby the quality of relationships matters, see Poppo and Zenger (2002).

Hypothesis 3: The positive effects of procedural justice on effective ICT transfer and adoption are greater if knowledge tacitness is higher.

Methods

The above hypotheses are tested using a two-stage approach. In the first stage, the data were collected through an on-line survey completed by Canadian subsidiary managers of foreign owned MNEs. In the second stage, the empirical results were confronted with in-depth interviews of a smaller number of respondents. A key motivation in selecting the sample population from Canada is that Canada hosts a significant number of MNEs from a variety of countries, with the lead researcher benefiting from contacts with some of these companies. Canada thus provides a culturally diverse and well-established institutional setting on the receiving end of the knowledge transfers studied here (Ensign et al. 2000).

The most senior individual responsible for ICT was selected in each firm, as this person was expected to be the most knowledgeable manager in the subsidiary about the

effectiveness of ICT knowledge transfers from the parent company and to have both the information and capacity to answer the survey questions (Fowler 1995). This systematic targeting (and reaching) senior managers as the single most knowledgeable individual on the substantive issues associated with ICT knowledge transfer effectiveness helped to minimize the potential impact from single informant response bias where such responses may not necessarily cover the entire spectrum of employee views within the subsidiary.

Sample Selection

The sampling frame for the questionnaire survey was the population of Canadian subsidiaries of foreign owned MNEs.[1] A full subsidiary database was created consisting of 746 firms, building upon information from public sources.[2] For each of the resulting 746 identified Canadian subsidiaries, the most senior ICT executive was contacted by phone to determine whether the subsidiary had recently experienced a project in the realm of strategic ICT knowledge implementation that was mandated by the parent company and involved significant knowledge transfers from abroad. An ICT system was considered strategic to the firm if the purpose was to achieve the standardization needed for economies of scale and scope in operations or monitoring. Each executive was asked to select a single strategic ICT system about which he/she was fully informed. Here, the absolute size of the system and the specific technology being implemented is less important than the expected impact on the firm's ICT functioning.

The criteria for an acceptable strategic ICT transfer are that: (1) system implementation needed to have been completed more than 1 year ago, but no longer than 5 years ago, prior to the survey, so that there would have been sufficient time for the system to become routinized and the memory of the entire implementation process would have remained intact (though the project's starting date could have been much earlier); and (2) the project budget of the ICT transfer had to exceed (or be close to) C$100,000 to increase the probability that the system was indeed of strategic importance to the company.

All qualified respondents who had expressed their willingness to participate in the study were sent a summary of the survey's purpose and instructions to complete the survey. The above process led to 86 usable responses.

Questionnaire Development and Construct Operationalization

The questionnaire was developed using a combination of scales and existing construct measures for individual variables that had been validated in prior studies.[3,4] The questionnaire was developed through a three-stage process (Fowler 1995) consistent with the Total Design Method (Dillman 2000). The questionnaire was reviewed for face validity, first by several academics with expertise in this area of study and then by three ICT managers from major MNEs. The process resulted in several changes to the presentation format and sequencing of the questionnaire as well as question selection changes. The wording of the questions was adjusted to the specific research context with the constructs measured utilizing a 5-point Likert scale from 1 (completely disagree) to 5 (completely agree).

Independent Variables

Absorptive Capacity

Szulanski (1996) developed an instrument based on Cohen and Levinthal's (1990) approach to measuring the level of absorptive capacity. The nine-item questionnaire inquired about: (1) use of a common language; (2) use of a common vision; (3) the amount of information available about the technology; (4) a defined set of roles and responsibilities to implement the technology; (5) the skills required to implement the technology; (6) the technical competence to absorb the practice; (7) the managerial competence to absorb the practice; (8) the recipient's knowledge of who has information; and (9) the recipient's capacity to help with problem solving. In the ICT context, Boynton et al. (1994) suggested measures of absorptive capacity specific to IT usage, namely "IT use", addressing the distinct type of IT application, and "managerial IT knowledge". The questions included to measure absorptive capacity, are based on the questions developed by Szulanski (1996) and modified to reflect ICT (Boynton et al. 1994). A total of twelve questions are used for this construct. Absorptive capacity is dynamic in nature and therefore potentially subject to temporal impacts. Our approach is based on the informant's recall of events that occurred during the specific period of time of the ICT knowledge transfer.

Procedural Justice

Kim and Mauborgne's (1991) research findings on international management decision-making suggest there are five components of procedural justice, namely the extent to which: (1) corporate headquarters are informed and familiar with the local situation of the subsidiary; (2) bilateral communication occurs between corporate headquarters and subsidiaries in international decision-making; (3) corporate headquarters apply fairly consistent, non-discriminatory decision-making procedures across subsidiaries; (4) subsidiary units can legitimately challenge and refute corporate headquarters' views; and (5) subsidiary units are provided with a full accounting of final decisions by corporate headquarters. These components of procedural justice are the basis for the five questions on perceived procedural justice and was formulated to address specifically perceived procedural justice in the context of the ICT transfer being considered. The measure is from the subsidiary's perspective, i.e., how did subsidiary managers, as representatives of the subsidiary unit,view their involvement in the decision making process.

Tacit Knowledge

Tacit knowledge questions are based on the work of Kogut and Zander (1992) and Birkinshaw et al. (2002). Here, *codifiability* was based on four questions addressing documentation, standard components, and usage by other parts of the company. *Teachability* received five questions asking about ease of learning and education levels for new personnel. *Complexity* was measured with four questions looking at the importance of the ICT system's physical characteristics, functionality, data content, and integration with other datasets. *Observability* had three questions about competitors' ability to determine how

the system operates by watching employees at work. *System embeddedness* was based on integration across business units and data quality with six questions.

Dependent Variables

The performance outcomes, as proxies for effectiveness in ICT transfer and adoption are measured in terms of four variables building upon Kim and Mauborgne's (1996) and Sapienza and Korsgaard's (1996) definition. Effectiveness is defined as greater levels of commitment to the decision (of ICT knowledge transfer), outcome satisfaction, in-role behaviour, and extra-role behaviour. *Commitment* to the decisionwas measured using four questions asking about acceptance and support. *Outcome satisfaction* with the decision was measured based upon two questions focused on the choice of technology. To measure *extra-role behaviour*, two questions are used asking about voluntary effort during the implementation, and to measure *in-role behaviour* three questions are asked about alignment with described job responsibilities.

Control Variables

Technology Dependency

The level of dependency of the subsidiary on the parent organization for technology support in general (i.e., regardless of the specific ICT project considered, but also regardless of the broader, systemic approach to centralization/decentralization prevailing in the MNE) had six questions that requested information about who sets the ICT budget, who decides on new initiatives, the level of local adaptation and documentation flexibility, and the frequency of reporting required. The scale has a range from 1 (decided independently) by subsidiary to 5 (decided by parent company).

Cultural Distance

Since the focus of this empirical study was on MNEs with operating subsidiaries in Canada, the country of origin of the parent organization could potentially have a significant effect on the proposed measurement relationships. We adopted the approach used by Jensen and Szulanski (2004) to measure cultural distance. Instead of introducing country dummies, we utilized the Kogut and Singh (1988) measure of cultural distance between the home country and Canada, as derived from Hofstede's (1983) indices of cultural dimensions (i.e., power distance, individualism, uncertainty avoidance, and masculinity/femininity), while remaining cognizant of Hofstede's index substantive limitations (Tung and Verbeke 2010).

Analysis and Results

Out of the 746 companies (and thus executives) contacted directly by the lead researcher, 510 executives self-identified their subsidiary as having knowledge of a strategic ICT

Table 1: Respondents' reported ICT project budget

Number of projects	ICT project budget
10	< $100,000
10	$100,001–250,000
6	$250,001–500,000
5	$500,001–1,000,000
8	$1,000,001–5,000,000
1	$5,000,001–10,000,000
5	> $10,000,000

project along the lines described above. A total of 86 respondents, i.e., 16.9 %, subsequently agreed to complete the survey and did so. The actual response rate is not particularly critical in this case, as we are trying to gain insights into the process and barriers to implementing single, strategic ICT projects, rather than evaluating subsidiary—head office interactions for ICT projects in general and attempting to draw far-reaching conclusions on such a broad spectrum of interactions. In other words, this research is of an exploratory nature in spite of adopting well-known constructs from the extant literature.

Forty-five respondents provided a monetary estimate of the ICT project they selected, with budgets ranging from (slightly) less than $100,000 to over $10,000,000, see Table 1. A pre-condition for participation was that each respondent had to be the senior person responsible for ICT in the subsidiary. These respondents held varying titles that reflected their senior roles and represented 11 countries.[5]

The hypotheses are tested using regression analysis to estimate the variance explained by the independent variables over and above that explained by the controls. The variables are entered into the model in steps: Controls and individual main effects with each independent variable in Model 1, knowledge tacitness and absorptive capacity in Model 2, and knowledge tacitness and procedural justice in Model 3 (Hair et al. 1998). The models used the indicators of performance outcome in usage as the dependent variable.

Factor Analysis

Factor analysis was performed on each of the variables.[6,7] The factor loading cut-off point for items to be included for each measure was conservatively set at 0.4, rather than the normally accepted 0.3 (Hair et al. 1998, p. 111), so as to allow an improved measure of inter-item reliability with a Cronbach's alpha established standard cut-off value of 0.7 (Hair et al. 1998, p. 118). Overall, most of the items substantially contributed to the variables in question.[8]

The correlation matrix and descriptive statistics for all the constructs in our model are presented in Table 2. To check for potential multi-collinearity problems, each variable intersecting value above 0.3 was evaluated (Hair et al. 1998). The main concern was with the independent variables procedural justice and absorptive capacity. However, the observed association between both was not considered problematic as these two independent variables were never included in a regression at the same time and there was no interaction term included.

Table 2: Descriptive statistics and Pearson correlation coefficients for all constructs

	Mean	S.D.	N	1	2	3	4	5	6
Control variables									
Cultural distance	0.44	0.71	82	1					
Technology dependency	2.46	1	84	−0.143	1				
Independent Variables									
Knowledge tacitness	3.25	0.71	54	0.043	−0.025	1			
Absorptive capacity	3.91	0.63	54	−0.358[a]	−0.16	−0.017	1		
Procedural justice	3.5	0.95	51	−0.014	−0.083	−0.129	0.423[a]	1	
Dependent variable									
Performance outcomes	4.08	0.69	52	−0.007	0.209	−0.209	0.102	0.495[a]	1

[a]Correlation is significant at the 0.01 level (2-tailed)

Table 3: Results of regression analysis

	Model 1			Model 2	Model 3
Variable	Block 1	Block 2	Block 3	Block 4	Block 5
Control variables					
Cultural distance	0.053	0.126	0.071	0.122	0.022
Technology dependency	0.208	0.272+	0.275*	0.171	0.164
Main effects					
Knowledge tacitness	−0.216			−0.238	−0.138
Absorptive capacity		0.187		0.290+	
Procedural justice			0.519***		0.580***
R^2	0.093	0.074	0.31	0.152	0.405
Adj. R^2	0.033	0.014	0.264	0.049	0.33
F	1.564	1.232	6.744**	1.475	5.439**
Change in F	2.35	1.4	17.344***	2.03	8.458***
D.F.	3.46	3.46	3.45	5.41	5.40

Standardized Beta values reported; N varies slightly in each model from incomplete data

*$p<0.05$; **$p<0.01$; ***$p<0.001$; +$p<0.10$

Table 3 reports the results of the regressions. *Hypothesis 1* was supported, i.e., the presence of absorptive capacity did not have a significant association with performance outcomes (the effectiveness of ICT knowledge transfer and adoption). *Hypothesis 2* was supported, i.e., procedural justice did have a positive and significant association ($p<0.001$) with performance outcome parameters, whereby procedural justice accounted for 31% of the variance ($R^2=0.31$). *Hypothesis 3* was supported: Higher knowledge tacitness does indeed amplify the importance of procedural justice ($p<0.001$). The addition of knowledge tacitness and procedural justice was positive and significant ($F(5,40)=5.439$ $p<0.01$) with 40.5% of the variance explained in the performance outcome measure ($R^2=0.405$). Interestingly, neither cultural distance, nor technology dependency appeared statistically significant in any of the regressions (see also the discussion below).

Each hypothesis was also checked for industry effects. The regressions used the resource sector as the base case. The effect of the industry sector was not found to be significant for either absorptive capacity or procedural justice.

Discussion, Limitations and Conclusions

Discussion

Our findings may be *inconsistent* with the conventional prediction that higher levels of absorptive capacity would be associated with more effective ICT transfer and adoption in MNEs (Minbaeva et al. 2003), but they are *consistent* with mainstream international business theory, which predicts that any lack of extant absorptive capacity inside the firm will likely be remediated by sourcing the required complementary knowledge from elsewhere.There are two main reasons why this reasoning is likely to hold that was borne out by the interviews with ten executives, conducted as the second stage of this empirical work.

The *first reason* is that any absence of adequate absorptive capacity will be mitigated by the subsidiary or parent, particularly when both are based in an advanced economy where any lack of necessary ICT expertise can be compensated by acquiring the requisite knowledge from outside suppliers in the host country or by exploiting internal resources, such as through expatriate secondment. In this particular case, Canada, the host environment, has a well-developed institutional and technical infrastructure and is fully capable of supplying the necessary skilled labor. A *second reason* is the similarity of the educational base for ICT among advanced economies. The relevant external market typically takes the form of an oligopoly, consisting of only a few multinational technology companies providing products and services internationally, and as such the corresponding education systems are mainly focused on those market leaders, hence leading to a *de facto* standard for technical learning, as an expression of normative and mimetic isomorphism (DiMaggio and Powell 1983). These results illustrate the boundaries of applicability of the absorptive capacity concept.

However, the procedural justice concept does greatly assist in increasing voluntary cooperation by the subsidiary.[9] Many of today's MNEs organize their operations as a differentiated network, relying on the subsidiary to engage in local responsiveness. Information systems provide MNEs with increased flexibility to enhance competitive advantage from improved internal knowledge flows and improved opportunities to develop coordinated and integrated networks (Ensign 1999). When subsidiary management has more autonomy, then its cooperation becomes even more critical to successful internal knowledge transfers. This is true especially in the case of ICT knowledge transfers, whereby ICT implementation almost invariably results in some perceived or real loss of autonomy vis-à-vis the head office. Hence, measuring procedural justice from the subsidiary's perspective becomes paramount, particularly when the outcome (again whether perceived or real) of the decision is unfavorable to the recipient (Folgers and Kanovsky 1989).

Potential conflict could arise if parent company management thinks the corporate head office has invested sufficient resources to achieve procedural justice, but this is still con-

sidered insufficient by subsidiary management. Higher subsidiary autonomy in situations of low levels of perceived procedural justice could result in minimal or ceremonial adoption (Kostova and Roth 2002; Taggart 1997), thus limiting actual knowledge transfer and adoption. Studying the impact of intra-organizational knowledge transfer in MNEs helps understanding the wider applicability of the procedural justice concept, beyond Kim and Mauborgne's applications to MNE resource allocation processes. Procedural justice, as perceived by subsidiary management, depends on how close the head office's preferences for a particular level of subordinate involvement in decisions made at higher levels in the organization match subsidiary expectations. Such preferences are likely closely related to scores on Hofstede's power distance dimension. If a subsidiary is from a lower power distance culture than the head office, the subsidiary may have higher expectations regarding involvement in decision-making and hence higher expectations as to what constitutes adequate procedural justice. The lack of significance of cultural distance in our tests reflects the fact that almost all parent company countries had power distance scores similar to—or lower than—Canada's, so the most salient cultural factor simply did not demonstrate sufficient variation.[10]

The ICT systems considered were strategic to the firm in the sense that such systems are used to achieve the standardization needed for economies of scale and scope. Paradoxically, success depended to a large extent on respecting procedural justice parameters. Procedural justice appeared to represent an alternative (in terms of behavior desired from MNE managers) to the conventionally recognized need for national responsiveness (with head office managers fostering nationally responsive behavior at the subsidiary level, and subsidiary managers acting upon this). This observation is consistent with Meyer et al.'s (2011) call for serious analysis on how MNEs adapt to local contexts, beyond the use of the conventional integration—national responsiveness framework.

Limitations

In terms of limitations, the survey findings are based on self-reporting by the subsidiary's most senior manager responsible for ICT decision-making. These executives are expected to be the best informed and thus in a position to speak for the subsidiary. Using a single key informant does obviously raise the prospect of common method bias (Podsakoff et al. 2003). However, the effects of such bias were mitigated, if not totally avoided, by (a) the neutrality of the questions, thereby minimizing social desirability effects; (b) the assurances of confidentiality, thus minimizing issues of reflexivity; and, (c) each informant's senior position in the company (Fowler 1995). In addition, we are actually only interested in the perceptions of knowledgeable, senior subsidiary managers, meaning that validation from other sources is not critical and thus a single source is appropriate to this research. Perhaps even more important was the post-hoc control for common method bias, through the in-depth, face-to-face interviews conducted after the quantitative data analysis with ten of the respondents who had expressed an interest in discussing ICT technology transfer challenges with the researchers. As already noted above, during multi-hour sessions with several open-ended questions and related discussion, none of the respondents ever indicated that absorptive capacity (as a potential technical barrier to transfer effectiveness) actually hindered ICT knowledge transfers, while several respondents did refer explicitly

to lack of procedural justice as a relational constraint to transfer effectiveness. Appendix A provides some examples of the quotes that were obtained from these interviews.

In this study, the subsidiary manager's view was put forward as the equivalent of the 'subsidiary's view', which should ideally include all employees in the subsidiary organization or at least employees functioning in various functions within the subsidiary. However, the selection of knowledgeable respondents, who are supposed to be closely linked to the ICT knowledge transfers at hand and thus able to provide a relatively unbiased view on what really happened, alleviates the above problem in a substantive fashion.

Another possible limitation is the potential of non-response bias, whereby those firms that responded would differ in a significant way on some characteristic from those firms that did not respond. However, the distribution of the respondents on the country of the MNE headquarters and on the industry code is consistent with the broader population of 746 foreign-owned subsidiaries contacted.[5] In addition the survey design included elements to minimize non-response bias, including a straightforward, effective cover letter; clear instructions on how to complete the survey; reminders via e-mail and over the phone; emphasis on the confidentiality of the materials provided; and statements on when and how the results will be used, stored and destroyed (Dillman 2000; Fowler 1995).

Lastly, this study focuses solely on knowledge transfer as an intended and planned activity from the corporate head office to the subsidiary. Further research could include intra-organizational knowledge transfer diffusion of knowledge from the corporate head office to the subsidiary, from subsidiary to subsidiary, and from subsidiary to head office. Also to consider is that knowledge transfer can be intended and planned, or unintended but as an anticipated side effect of other activities, or unintended as a serendipitous event.

Conclusions

The above results credibly suggest that the effectiveness of ICT knowledge transfer and adoption is determined primarily by perceptions of procedural justice. The procedural justice concept, popularized in strategic and international management studies by Kim and Mauborgne (1991, 1996, 1998) would therefore appear important for future work on international knowledge transfers. Our view is that issues of procedural justice should be systematically included to assess knowledge transfer and adoption effectiveness. The need to include procedural justice implies that addressing only 'technical' issues in transfer processes is insufficient. The MNE is a social community, and especially in differentiated network MNEs, subsidiaries demand respect even when—and perhaps especially when—head office ICT systems, meant to confer non-location bound FSAs to the MNE (Rugman 1996), are imposed on them. Moreover, procedural justice is most critical when the head office mandates changes that result in outcomes involving an increase in accountability on the part of the subsidiary. Here, the (enthusiastic) acceptance of the knowledge transfer by the subsidiary's senior management should be considered as part of the transfer process.

These results have important implications for the approach chosen by the parent company to diffuse and implement standardized ICT systems throughout the MNE's internal network. When ICT transfers involve more substantial bundles of tacit knowledge, the parent company must invest more in the various components of procedural justice to

increase the subsidiary's level of commitment to performance, i.e., (a) more investment in parent company managers familiarizing themselves with the subsidiaries' local situation; (b) more two-way communication with subsidiaries; (c) more attention devoted to consistent and non-discriminatory decision-making procedures across subsidiaries; (d) more possibilities given to subsidiaries to voice concerns about parent company views, and (e) more explanation provided to subsidiaries on parent company decisions.

Increasing perceptions of procedural justice act as an effective moderator of local resistance and hostility when the ICT implementation makes little allowance for local adaptation requirements. Paradoxically, though national responsiveness may be lacking completely on the technical side, efforts to increase perceptions of procedural justice may act as a valid and effective substitute for such national responsiveness. Here, the key message to MNE management is: '*Think Global, Respect Local*'.

Endnotes

1 Birkinshaw (1996) already noted more than 15 years ago that no definitive list exists of foreign subsidiaries in Canada, and this was still the case in 2008.

2 The website addresses with linkages for each of the mentioned lists are:

- FP 500 (2008). 'Canada's Largest Corporations'. *FP Business Magazine*, Toronto: Financial Post, http://www.financialpost.com/magazine/fp500/charts/data2.html (accessed 28 May 2008).
- Report on Business 350 (2007). 'Top 350 Private Companies'. *Globe and Mail Report on Business,* Toronto: Globe and Mail, http://www.reportonbusiness.com/v5/content/tp1000-2007/index.php?view=top_350_private (accessed 28 May 2008).
- Report on Business 1000 (2007). 'Top 1000 Publicly Traded Companies'. *Globe and Mail Report on Business*, Toronto: Globe and Mail, http://www.reportonbusiness.com/v5/content/tp1000-2007/index.php# (accessed 28 May 2008).
- CanCorp Financial Business Directory and LexisNexis Corporate database.

3 Items used in our questionnaire are available upon request.

4 For brevity, the measure of organizational factors and conditions '*organizational structure*' (*formalization-centralization*) was omitted, as this measure had no significant direct or interaction effects.

5 Titles of positions with the number of respondents having that title in parentheses include President (3), CIO (8), Vice President (5), Director (12), General Manager (4), Manager (34), other (11), and not identified (9). The parent companies involved, represented eleven home countries: US (53), Germany (6), Japan (6), UK (6), Switzerland (3), Hong Kong (2), France (2), Australia (1), Netherlands (1), Spain (1), Norway (1) and not reported (4). This resulting distribution is largely consistent with the regional distribution of foreign direct investment stocks in Canada, with the United States still largely dominating these stocks, and the various European countries together representing a distant, second investment region. We also coded each company's main industry (two-digit SIC) where available: Resources (13), manufacturing (36), services (32), or unknown (5). This distribution is also largely consistent with the broader population of 746 foreign-owned subsidiaries in Canada.

6 The factor analysis for the *absorptive capacity* variable identified one element that did not contribute. This element was omitted from the final absorptive capacity variable, with eleven elements remaining, resulting in a Cronbach's alpha of 0.847. The factor analysis for the *procedural justice* variable indicates that all five elements contributed, with a Cronbach's alpha of 0.83. The factor loading for one element was slightly below the established cut-off value but its continued inclusion was considered to be necessary for consistency with the foundational theoretical concepts. The factor analysis for the *knowledge tacitness* variable identified eight elements that did not contribute and four elements below the factor loading cut-off value. The resultant knowledge tacitness variable was reduced to the ten remaining items with a resulting Cronbach's alpha of 0.766. The factor analysis for the *performance outcome* variable identified one element that did not contribute. The resulting performance outcome variable was reduced by this element with ten remaining elements and a Cronbach's alpha of 0.874.

7 Mean-centering of all variables was considered as the literature shows that mean-centering can reduce the covariance between the linear and the interaction terms, thereby suggesting that applying such a statistical technique reduces collinearity. However, Echambadi and Hess (2007) analytically demonstrate that mean-centering neither changes the computational precision of parameters, the sampling accuracy of main effects, simple effects, interaction effects, nor the R^2. Therefore mean-centering was not applied.

8 The factor loadings of each scale item from the factor analysis are available upon request.

9 The correlation analysis did reveal a significant Pearson correlation coefficient ($p < 0.01$) between the independent variables procedural justice and absorptive capacity. The significant correlation suggests a dynamic interaction between absorptive capacity and procedural justice. Procedural justice's creation of transparency and involvement in the decision-making process has a positive effect on absorptive capacity characteristics in terms of developing a common set of language and symbols and expanding the subsidiary's internal contact network. Further studies could re-examine the integrative model to determine the implications of such an interaction and develop supporting propositions.

10 Only 11 of the respondents were from countries with a Hofstede power distance score more than one point higher than Canada's.

Appendix A: Sample Quotes from Interviews

Procedural justice	*Company 1:* On local adaptation requests: "So the ultimate decision maker looks at revenue… and that's what determines what will get in and out… The organization is structured such that IT and all initiatives are driven by revenue"
	Company 2: On decision making input: "What I do in Canada… I would be in an influencing role only. So I can give my opinion. I can't give directionally what I think… Beyond that, no… there's nothing… very little… very little (local adaptation)"
	Company 3: On local adaptation requests: "If we can really justify it yeah… For everything else, no. Usually it's the Big Brother mentality. Thou shall do this"
	On standardization: "They're trying to centralize one stop shopping… No (input). This is one of these… this is mandated from up top"

	Company 4: On decision making input: "Very little… it's usually from president to president of IT department… we don't find out about the change until the user calls us up. The communication side from Houston to us is not there at all"
Absorptive capacity	*Company 4:* On knowledge sharing: "We have… if there's certain training that is needed, we bring trainers in and from the central location and bring them here. So if we have enough people that need training we will do that… we have quite an extensive intranet for the employees"
	Company 7: On knowledge sharing: "I usually call someone up and say, hey, how do I do this? And if they don't know they'll find out from someone. There's people whose job down there is just to work with Microsoft"
	Company 8: On knowledge sharing: "So in terms of kind of knowledge sharing is it relies heavily on the fact that there's people still that have a history of being in roles for longer period of time or perhaps people remaining in the country who can transfer that knowledge… then you go to so and so who's still here in Canada and they'll give you the information. … It's not that it's just stored in people's head. There is some kind of documentation to it. But it's not necessarily stored on what we would call a team space or even some kind of a systemic system"

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