KNOWLEDGE TRANSFER IN MULTI-ORGANIZATIONAL NETWORKS: INFLUENCE OF CAusal AND OUTCOME AMBIGUITIES

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ABSTRACT

Organizations join multi-organizational networks, in part, to increase their access to both new and existing knowledge. This paper investigates the two knowledge transfer ambiguities in multi-organizational networks. Empirical results from two multi-organizational networks demonstrate that the influence of these two ambiguities varied based upon the network type in question. Specifically, causal ambiguity (well established in intra-organizational context) was found to be less relevant in a multi-organizational network, while outcome ambiguity was found to be highly relevant.

Keywords: Knowledge Management, Inter-Organizational Network, Causal Ambiguity, Outcome Ambiguity, Partial Least Squares (PLS)
Socially embedded multi-organizational networks represent a critical source of knowledge external to a participating firm [22]. Such alliances are expected to benefit from network-wide knowledge transfer and sharing that may not be available to a non-networked firm engaged exclusively in market-based exchanges. However, effective knowledge transfer can be contingent on member organizations’ ability to remove or abate systemic constraints. One of these constraints could be due to ambiguities or uncertainties that can be present when multiple organizations become involved in transferring knowledge. Ambiguities can make knowledge transfer difficult. The implications of these difficulties may threaten a firm’s long-term competitiveness [47]. Therefore, a theoretical guidance for understanding the ambiguity factors that impede or enhance inter-organizational knowledge transfer, and how the type of network in question affects these factors, can be critical to enhance a firm’s competitiveness. This theoretical guidance is currently absent.

Informed by the general concept of ambiguity related to knowledge transfer, we first identify and develop the concept of outcome ambiguity as to explain the ambiguity related to inter-organizational knowledge transfer among network firms, which, we argue, is not addressed by the well-established concept of causal ambiguity [34] [46]. Based upon this discussion, we develop the first two of our six hypotheses. Subsequently, we discuss two types of inter-organizational networks and how causal ambiguity and outcome ambiguity would be expected to behave within these network types. This discussion will form the basis for the remaining four of our six hypotheses. We will then present our research model and discuss our findings, based upon empirical results from two large scale multi-organizational networks in the financial services industry.

**AMBIGUITY AND KNOWLEDGE TRANSFER**

There is a lot that is unknown regarding what makes inter-organizational knowledge transfer difficult or “sticky” [53] [46]. What is known, however, is that this process is most generally constrained by ambiguities. When the degree of ambiguity is high, the difficulties associated with “repatriating and absorbing competencies” are limited [44]. However, most studies have addressed ambiguity in its most general form and have not differentiated among different types of ambiguity and whether these ambiguities affect inter-organizational knowledge transfer differently [44] [53] [46]. As will be demonstrated later in this paper, two specific forms of ambiguity can be isolated and better understood within the context of inter-organizational knowledge transfer, thereby adding further understanding and focus to the general treatment of knowledge transfer ambiguity in the extant literature.

**Causal Ambiguity**

The conclusion that a firm cannot transfer knowledge of ambiguous inputs or factors that generate a known outcome is well established in an intra-organizational context [34] [46]. At the network level when causes of an outcome are not clear but the outcome itself is repeatable (i.e., knowledge is causally ambiguous) by the (source) firm(s) the situation is akin to what is known as asset specificity in Transaction Costs Economics (TCE). Asset specificity refers to the relative lack of transferability of assets intended for use in a given transaction to other uses. Knowledge, when causally ambiguous but already known to be useful to the source, will tend to be highly specified to the source (a member firm in a given alliance network). Since the knowledge outcome is known to be useful, the Knowledge Based View of The Firm (KBV) would expect that the other members of the alliance would be interested in transferring this knowledge. This is so because these firms are expected to generate efficient rent from the same knowledge by using it (i.e., by replicating the same desirable outcome) on their own. Based on TCE however, since such knowledge is
specified to the source, the costs of transferring such knowledge would be expensive and thus may not be easily done. Thus it will be difficult to transfer inter-organizationally in a network.

**H1:** Where network causal ambiguity is high, inter-organizational network knowledge transfer difficulty will also be high.

**Outcome Ambiguity**

The deliberations on causal ambiguity focus on uncertainty about the *causal factors* or *inputs* that generate *outcome(s)* and assume that the outcome(s) is (are) known and not in question. However, scenarios where the outcome(s) is (are) unknown or unknowable to the knowledge source (and the causal factors or inputs are considered to be known) have not been addressed. At the conclusion of her work on causal ambiguity, Mosakowski asks, rhetorically, if decision makers differentiate outcome predictability from causal ambiguity [34]. As will be demonstrated, we posit that they do.

The specific existing gap relevant to our work here is characterized by a lack of understanding of the uncertainties regarding how behavior of one organization will affect the perspectives of other organizations, which are all members of the same multi-organizational network, and are engaged in knowledge transfer. We have attempted to isolate the specific uncertainty that can be present in multi-organizational knowledge transfer. We will refer to this uncertainty as “outcome ambiguity”. It is important to note that because the knowledge of the factors or inputs is considered to be known, the degree to which this knowledge is observable (i.e., tacit or explicit) is less relevant. Our focus is on the difficulty associated with the transfer of knowledge, rather than on the knowledge itself, as a function of the ambiguity associated with the unknown (or unknowable) outcome as a result of the transfer. That is we are not interested in the outcomes not assignable to the transfer of knowledge, although we acknowledge that ambiguous outcomes not related to inter-organizational knowledge transfer would exist. We distinguish between two sources of outcome ambiguity, which may exist separately or in combination. The first source of outcome ambiguity is the lack of “knownness” of the source of the use of knowledge in question by the receiver. Szulanski [46] develops the concept of “unprovenness” or unknowness in his work examining the factors related to intra-organizational knowledge transfer difficulty. Unprovenness is explained to be present when the knowledge in question has no previous record of past usefulness (i.e., the outcomes are unknowable). For example, knowledge of a well-established operational best practice, would be considered to be proven, with a finite or bounded set of possible applications referred to as the “Knowledge Usage Set”; [KU₁, KU₂, KU₃]. Alternatively, the discovery of a new chemical compound would be considered to be unproven knowledge, with an infinite or unbounded Knowledge Usage Set; [KU₁, KU₂, KU₃,…∞]. When knowledge is unproven and the Knowledge Usage Set is unbounded, a higher degree of outcome ambiguity and knowledge transfer difficulty would be expected.

The second source of outcome ambiguity is the uncertainty embedded within the relationship between the source organization and the recipient organization(s), and is particularly relevant in the multi-organizational context. The basic premise here is that the recipient organization(s) can put the received knowledge to more than one use intended and known by the source. That is, it (they) can choose from multiple possible actions referred to as the “Recipient Action Set”; [RA₁, RA₂, RA₃]. There are two primary concepts that contribute to the manifestation of uncertainty in this relationship – partner protectiveness, and trust. **Partner protectiveness**, is the degree of protectiveness a knowledge source assigns to its knowledge base [44]. Some partners in alliances (and networks) make their knowledge less transparent than others, creating situations dominated by asymmetry [21]. Where competition, or potential for competition may exist, a similar lack of enthusiasm for knowledge transfer may exist for a fear of opportunistic behavior. Where the possibility of opportunistic behavior exists, the number of elements in the Recipient Action Set increases and potentially becomes unbounded. This is because, unlike a situation defined by no competition or a
limited probability of opportunism, the knowledge source cannot limit the possible outcomes associated with knowledge transfer—contributing to increased outcome ambiguity. Trust is a functional prerequisite for knowledge exchange [28] [3] and thus represents an important component of the relationship between the knowledge source and the recipient. It deals with the source’s present beliefs about the recipient(s) upon which it will then base its future actions with the recipient [23]. And, relative to price and authority, it is the most effective mechanism to facilitate the transfer of knowledge resources within and between organizations, in part because the presence of trust decreases situational uncertainty [1]. However, cooperation can (and does) occur without trust—provided that the risk of an undesirable outcome is low [14]. Facing opportunistic threats, which contribute to an unbounded Recipient Action Set, firms will prefer to retain their knowledge at the expense of the network, rather than risk engagement in unknown scenarios where their shared knowledge could be used to their detriment [54].

Figure 1 provides a framework based on the two sources of outcome ambiguity discussed above—the proveness of the knowledge in question and the certainty with which the knowledge source understands the actions of the knowledge recipient.

**H2:** Where network outcome ambiguity is high, inter-organizational network knowledge transfer difficulty will also be high.

**INTER-ORGANIZATIONAL NETWORK TYPES**

Transaction Cost Economics recognizes that in a world of minimizing transaction costs, exchange agreements must be governed and, contingent on the transactions to be organized, some forms of governance are better than others [56]. Specifically, this includes examination of centralized and decentralized governance. The KBV perceives the firm as a bundle of idiosyncratic resources and capabilities where the primary task of management is to maximize value through the optimal deployment of existing resources and capabilities, where knowledge is recognized as the most strategically important of these resources [19]. The firm or network of firms will organize in such a way as to maximize the efficiencies associated with the development, transfer, and application of knowledge. Finally, Social Network Theory examines the individual “nodes” and “linkages” within a network to explain how organizations (or individuals) will interact [18]. Using these well-established perspectives as a basis, we
differentiate network types using two primary characteristics of an inter-organizational network – Governance Structure and Intensity of Competition.

**Governance Structure**
Williamson [56] explained that the choice of governance structure in an intra-organizational context was guided by the need to minimize transaction costs through consideration of issues related to bounded rationality, the risks associated with opportunistic behavior, information impactedness and general uncertainty. The inter-organizational network is viewed as an organizing principle residing between pure market transactions and complete organizational self-sufficiency. However, once within the network, the question of governance structure remains...specifically to what extent network governance is structured as *centralized* or *decentralized* [1] [51] [52].

Williamson describes a hierarchical governance structure as providing the authority to address issues related to opportunistic behavior, information impactedness and bounded rationality. A (formal or informal) hierarchical authority would also have the ability to mandate standardization of operations, language, policies, etc. Alternatively, a decentralized governance structure is described as one of peer group associations, without subordination, involving collective and usually co-operative activities. Williamson highlights that this governance structure is deficient in its ability to address opportunism and free rider abuses, which are particularly relevant in the multi-organizational domain. However, a decentralized structure has recently been found to be particularly well-adapted to facilitate innovation and new knowledge creation (where centralized structure has been found to better facilitate the diffusion and implementation of existing knowledge) [1] [51] [52].

**Intensity of Competition**
Within the context of Social Network Theory, an important component of network structure that has been found to have significant impact on the transfer of knowledge is the ties or linkages among network entities [50] [9] [18]. The linkages that exist among network entities have been described as being ‘embedded’ (integrated) or at ‘arm’s length’ [9]. Integrated ties *...are considered to create behavioral expectations that...shift the logic of opportunism to a logic of trustful co-operative behavior in a way that creates a...basis for knowledge transfer...* [50, p.384]. By contrast, linkages at ‘arm’s length’ are *
...cool, impersonal, atomistic...motivated by instrumental profit seeking* [50, p.384].

Although it may initially appear counterintuitive that organizations voluntarily join networks while maintaining ‘arm’s length’ ties, consider the VISA network. Individual banks are fierce competitors, yet collectively benefit from the functionality of global credit card acceptance afforded by the VISA network – their relationships are “cool and impersonal”, with linkages created for the purposes of decreased transaction costs. In addition, as the technological sophistication of an industry increases, the intensity and number of competitive alliances also increases – although relationships are again, “cool and impersonal”, they come together to reduce the costs and mitigate the risks associated with R&D [37]. We will refer to this network characteristic as “intensity of competition” among the network members, with low intensity of competition equating to integrated linkages and high intensity of competition equating to arm’s length linkages. We focused our study on two distinct network types – the franchise network (a hierarchy of fully embedded firms) and the co-operative network (a mix of embedded and arms-length relations) because of their presence in practice. A theory that links these two types of organizational networks with their respective inherent conditioning of causal ambiguity and outcome ambiguity is critical for researchers and managers, and is currently absent. It can explain strategic leveraging of knowledge-based relational rent [13] among differently networked firms, and thus make way for normative prescriptions for preferential choice of some network type over no network, given a strategic goal. An assessment of how these two network types differ on the network characteristics of governance structure and intensity of competition is
summarized in Figure 2, and discussed below along with the types of ambiguities that are likely to manifest in them.

![Figure 2: Two Network Forms](image)

**Causal Ambiguity and The Franchise Network Type**

The general concept of a “franchise” network is well-accepted and understood in research with common examples in practice (e.g., McDonalds and Holiday Inns). A franchise network is generally considered to have a strong centralized governance structure. This is attributable to the presence of a “head office” that would have some degree of authority, including the ability to punish for non-compliance, establish branding usage policies, enforce image and quality controls, standardize the customer experience, etc. Competition is generally low among members of franchise networks, because of collective brand identity and economic interdependence [52]. Where organizations are engaged in similar processes, such as would be the case in a franchise network, they would be expected to have a common understanding of the inputs and causal factors contributing to particular outcomes. The common processes which exist in a franchise network would be expected to support a common knowledge of inputs and causal factors, both before and after outcomes associated with their use are known – thereby creating a low state of causal ambiguity. A related characteristic of causal ambiguity is task complexity - the more complex tasks become, the more difficult it becomes to identify the specific cause and effect that each input or factor has on related outcomes [34]. Where this complexity can be mitigated, causal ambiguity is reduced. A strong, centralized/hierarchical governance structure can mitigate task complexity through specialization of labor and standardization [43]. Given the expected hierarchical central governance structure of the franchise network, complexity of task is expected to be low.

**Causal Ambiguity and The Co-opetive Network Type**

The term “co-opetive” has been used to describe a situation where traditional competitors have agreed to cooperate to achieve a common objective [6] [41]. Using this accepted notion of “co-opetive”, we extend this concept to define a co-opetive network as some formalized arrangement of N competitors, collaborating to achieve some common objective. One example of a well-known co-opetive network is VISA International. Highly competitive banks, engaged in very similar operations, join the VISA payment network, because it is economically infeasible for any single bank to develop a global transaction processing system that would facilitate credit card transactions at any of 22 million merchant locations around the world. And although VISA provides forums for discussion and facilitates discounts
for members through the aggregation of orders to suppliers, ultimately VISA is a weak organization with limited authority to punish members for opportunistic behavior. Organizations are motivated to participate in networks of competitors, like VISA, to access existing and/or newly created knowledge, which may vary based upon industry, pace of technological change, regulatory environment, etc.

Although the presence of common operations in this network would be expected to reduce the causal ambiguity associated with inputs and causal factors and converge to low causal ambiguity, as was the case with the franchise network type, the significant risk of opportunism, as a function of intense competition, may override this. Specifically, causal ambiguity represents an interesting paradox for organizations. On the one hand, as mentioned above, causal ambiguity can impede a firm’s (or network’s) ability to imitate valuable resources (knowledge) within its boundaries, limiting the ability to leverage resources to create a competitive advantage [40]. We will refer to this as the “intra” aspect of causal ambiguity. On the other hand, causal ambiguity within a firm or a network may represent an opportunity for the organization, because it inhibits replications of competencies by other firms and therefore protects competitive advantage [55]. We will refer to this as the “inter” aspect of causal ambiguity. Mosakowski [34] also observed this paradox and similarly determined that although increased causal ambiguity has the impact of decreasing knowledge transferability within the firm, and by association its application, it also has the potential to increase competitive advantage by increasing the difficulties associated with imitation by competitors. A high state of causal ambiguity therefore may be the goal that each entity in a multi-organizational network strives to achieve.

**H3:** The co-opetive network will demonstrate a higher level of causal ambiguity than will the franchise network.

**H3a:** Both the co-opetive network and the franchise network will be associated a lower level of causal ambiguity than will a group of market-based organizations.

**Outcome Ambiguity and The Franchise Network Type**

A general characteristic of a franchise network is low intensity of competition amongst the network members. Franchisees are generally stakeholders within a larger entity – they are economically interdependent. Adler and Kogut and Zander both refer to this interdependence as “shared destiny” [1] [25]. Shared destiny would help to mitigate actions related to opportunistic behavior, and contribute to a bounded Recipient Action Set. Another characteristic of a franchise network is common operational processes, again, decreasing the uncertainty related to the knowledge in question, and contributing to a bounded Knowledge Usage Set. The franchise network is also characterized by a strong central governance structure. A hierarchical governance structure would include an authority for punishment associated with opportunistic behavior amongst the franchises. Assuming this threat of punishment is severe enough to prevent defection, trust (or at least trust-like behaviors) could be mandated. As a result, the Recipient Action Set would again, be considered to be bounded. Where the knowledge in question is proven, and the actions of the recipients can be anticipated, the Knowledge Usage Set and the Recipient Action Sets, respectively, can be bounded. And, where these element sets are bounded, the Outcome Set is bounded, leading to a low state of outcome ambiguity.

**Outcome Ambiguity and The Co-opetive Network Type**

We described the co-opetive network type above as characterized by a decentralized governance structure and high intensity of competition. However, the knowledge in question for this network type may be proven or unproven depending upon the objectives of the network. Continuing with the VISA network as an example, member banks may be engaged in a research initiative regarding security of transactions on the Internet. In this scenario, the knowledge in question is “unproven” – as findings are made known, no bank would have had previous experience with the new knowledge. Alternatively, banks within VISA provide knowledge on a regular basis regarding fraud activity and fraud reduction practices – “proven
knowledge” with which most banks would have had previous experience. As a result, the Knowledge Usage Set for this network type cannot be determined as bounded or unbounded. Given that a co-opetitive network is comprised of competitive members, the intensity of competition is considered to be high. In addition, the network type is generally a configuration of “peers”, with no subordination or hierarchical structure. As a result, the expected Recipient Action Sets would be unbounded, due to the high risk of opportunistic behavior, making the expected outcome ambiguity for this network would either be Type 3 or Type 4 (Figure 1).

**H4:** The co-opetitive network will demonstrate a higher level of outcome ambiguity than will the franchise network.

**H4a:** Both the co-opetitive network and the franchise network will demonstrate a lower level of causal ambiguity than will a group of market-based organizations.

The complete research model can be seen in Figure 3.

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**EMPIRICAL RESULTS AND DISCUSSION**

Examining both the “intra” and the “inter” aspects of causal ambiguity, the factor did have a positive relationship with knowledge transfer difficulty; the path coefficient of .225 was significant (t=2.82, p<.01). However when the two factors were introduced together, the path coefficient for outcome ambiguity was highly significant at .377 (t=4.13, p<.01), as predicted in H2, but the path coefficient for causal ambiguity was insignificant at .057 (t=.81), indicating that H1 was not supported. Similarly, when the two factors were tested within the context of the co-opetitive network, again, only outcome ambiguity was found to be significant, with a path coefficient of .467 (t=2.78, p<.01). And, similar results were found within the context of the franchise network, with the causal ambiguity path insignificant (path = .147, t=.67) and the outcome ambiguity path highly significant (path =.563, t=3.77, p<.01) These PLS results are summarized in Table 1.
Table 1. PLS Model Results

<table>
<thead>
<tr>
<th>Network</th>
<th>Ambiguity Factor(s)</th>
<th>Path Coefficient (Model R²)</th>
<th>t-value</th>
<th>Hypothesis Supported?</th>
</tr>
</thead>
<tbody>
<tr>
<td>All (n=171)</td>
<td>Causal Ambiguity</td>
<td>.057</td>
<td>t=.814</td>
<td>Hypothesis 2 supported, but</td>
</tr>
<tr>
<td></td>
<td>Outcome Ambiguity</td>
<td>.377</td>
<td></td>
<td>Hypothesis 1 not supported.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(.164)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Co-opetive (n=68)</td>
<td>Causal Ambiguity</td>
<td>.029</td>
<td>t=.713</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Outcome Ambiguity</td>
<td>.467</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(.203)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Franchise (n=70)</td>
<td>Causal Ambiguity</td>
<td>.147</td>
<td>t=.676</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Outcome Ambiguity</td>
<td>.563</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(.395)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*significant at p<.01

The remaining hypotheses developed in this study were evaluated through numerous ANOVAs, using Tukey’s post hoc pair-wise comparison test [36], and are summarized in Table 4. Hypothesis 3 addressed the relationship of each of the two network types and causal ambiguity. The co-opetive network type was predicted to be associated with a higher state of causal ambiguity than was the franchise network type. The construct level results did not support this hypothesis. The co-opetive network type generated a causal ambiguity score, which was not significantly different from the score generated by the franchise network type. However, the causal ambiguity for the franchise network was significantly lower than for the market-based group (p<.01), providing partial support for H3a. The comparative results for the individual sub constructs were examined to better understand these results.

Table 2. Hypothesis Testing Results (Using PLS-Weighted Scores)

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Franchise Score</th>
<th>Co-opetive Score</th>
<th>Control Score</th>
<th>Supported?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypothesis 3 – The co-opetive network will demonstrate a higher level of causal ambiguity than will the franchise network</td>
<td>3.55</td>
<td>3.95</td>
<td></td>
<td>N</td>
</tr>
<tr>
<td>Hypothesis 3a – Both the co-opetive network and the franchise network will demonstrate a lower level of causal ambiguity than will a market-based group of organizations.</td>
<td></td>
<td></td>
<td>4.48</td>
<td>N</td>
</tr>
<tr>
<td>Hypothesis 4 – The co-opetive network will demonstrate a higher level of outcome ambiguity than will the franchise network</td>
<td>2.81</td>
<td>3.56</td>
<td></td>
<td>Y**</td>
</tr>
<tr>
<td>Hypothesis 4a – Both the co-opetive network and the franchise network will demonstrate a lower level of outcome ambiguity than will a market-based group of organizations</td>
<td></td>
<td></td>
<td>4.39</td>
<td>Y***/Y*</td>
</tr>
</tbody>
</table>

*significant at p<.1 ** significant at p<.05 *** significant at p<.01

Hypothesis 4 addressed the relationship of outcome ambiguity and the two network types. Again, the co-opetive network type was predicted to be associated with a higher state of outcome ambiguity relative to the franchise network type. Results supported this hypothesis. The score for the franchise network was lower than the score for the co-opetive network, significant at p<.05.
In addition, because both network types are expected to be superior to the control group for each factor and, like causal ambiguity, outcome ambiguity has a positive relationship with knowledge transfer difficulty, both network types would be expected to generate scores lower than the control group. And this is in fact what occurred (p<.01 for the franchise network and p<.10 for the co-opetive network).

DISCUSSION
This study sought to more specifically define and further develop the ambiguities that contribute to knowledge transfer difficulty and then determine how these ambiguities differ when studied in different large scale multi-organizational network contexts. We found that causal ambiguity alone does not fully address the unique uncertainties related to outcomes when N-firms interact. In response to this gap, we developed the concept of outcome ambiguity and found initial empirical evidence for its existence in networks. Based upon the research of [46] [34] and others, the factor of outcome ambiguity was operationalized and the measurement items were validated through the PLS measurement model. This construct was then tested and found to be a significant explanatory variable of knowledge transfer difficulty in the franchise network – the most frequently studied network type in knowledge management literature. In addition, the state of outcome ambiguity was found to vary with network type – highly significant for the franchise network and not significant for the co-opetive network.

That the elements of ambiguity associated with knowledge transfer difficulty vary with inter-organizational network type now provides initial and important evidence that how a firm organizes outside of its own boundaries can influence the elements of knowledge transfer, sometimes not in a similar way or not for the same reason. The KBV perceives the existence of the firm as a knowledge integrator in terms of its superior efficiency in the transference of knowledge relative to market-based interactions. Extending this view, we sought to explain the role of the network in terms of transference of knowledge relative to both the network (embedded) and market-based (arms-length) interactions. Firms experience bounded rationality [43] [56] regarding knowledge – no firm can know all that is knowable economically. As was evidenced through the works of [22] [31] [20] and others, firms join networks in part because networks represent a significant conduit for incremental knowledge. Previous studies have demonstrated that networks are superior to market-based firms for the purposes of knowledge transfer [4] [10] [37]. The role of strategic alliances in the KBV, from the perspective of knowledge acquisition and utilization efficiencies within the boundaries of the firm versus outside of the firm – analogous to the foundations of TCE [19]. The main logic behind the superior performance of an inter-organizational network arrangement, according to KBV, is that “second-hand” knowledge can be obtained faster and more cheaply than “first-hand” knowledge [21] [24]. Our study puts this logic under sharper focus by investigating knowledge transfer difficulty in different types of inter-organizational networks. That is, we find the conditions, as expressed by assessing the levels of causal ambiguity and outcome ambiguity (discussed separately below), when this logic is valid or invalid. Since different network types were found to experience these ambiguities differently, and thus knowledge transfer difficulty, the universal applicability of the above logic to any type of network comes under scrutiny. The KBV is currently void of any specificity regarding the different types that network alliances can assume and how these types affect knowledge transfer. Our study provides one basis to frame this specificity through the differences that were found to exist between the ambiguities experienced by two network types studied.

Causal Ambiguity
When the level of causal ambiguity was compared between the two networks, there was no difference found between the networks for the inter or competitive advantage aspect of causal ambiguity. This was unexpected. In previously studied settings, the alliance members (or intra-organizational
departments) were “voluntarily” interacting. As a result, their barriers, or partner protectiveness policies [44] were reduced or eliminated, resulting in a decreased need to create competitive advantages. In the co-opetitive network it was expected that these barriers would be “up” and therefore a perceived need to create competitive advantage would exist, in large part because of the presence of competition. However, this would not have been expected in the franchise network, which is characterized by limited competition. A follow up interview with a regional Vice President at SunTrust provided insight into this finding. Specifically, it was determined that although SunTrust exhibits all of the characteristics of a franchise network, the regional management purposefully creates an “artificial” level of competition among the branches as a strategy to improve overall branch network sales performance. Because SunTrust bank branch managers are effectively put into competition with each other, branches may experience the causal ambiguity described by [29] – bank branch managers may attempt to prevent imitation of their capabilities by their perceived competitors (other bank branch managers) by purposefully making outputs causally ambiguous. In short, “artificial” competition may be the source of “artificial” causal ambiguity, which may lead to real knowledge transfer difficulty within the network.

Outcome Ambiguity

Unlike causal ambiguity, outcome ambiguity was identified as an ambiguity factor of knowledge transfer difficulty for network firms – and a major contribution of this study. [34] effectively speculates that the concept of causal ambiguity does not address the ambiguity related to the actions of other firms. By developing the concept and construct of knowledge transfer outcome ambiguity that considers outcome based on others’ actions, and then obtaining empirical evidence of its presence network firms we not only answer such speculation in concrete terms but also provide a foundation for understanding ambiguities faced by network firms as opposed to market firms. This can also open an interesting discussion for the theory of uncertainty since the latter, in general, treats environmental uncertainty of a firm by considering the firm to be a market-based one and critically assumes that the firm has no control or influence of any of the actors in its environment. It also views this environment as unspecified. However, when firms form socially embedded network alliances they, in essence, create and operate in an additional environment for themselves, which is different from that of a market firm. The theory of uncertainty does not provide (nor was intended to provide) a sufficient amount of specificity in defining the perceived uncertainty related to inter-organizational interactions that occur among network firms [34]. Our result is important for the primary reason that it identifies the uncertainty represented by outcome ambiguity to be significant for network environment.

Outcome ambiguity was found to be highly significant for the franchise network and insignificant for the co-opetitive network. Since the concept of outcome ambiguity was developed as a measure of the knowledge source-recipient relationship, an explanation can be put forth for this result based on the acceptance of competition within the two networks and the extent to which self-censoring occurs. In the franchise network, since competition is not expected to exist, censoring of what is shared is not expected to exist. However, because censoring does not take place, the concepts of partner protectiveness and trust become more important to the transfer of knowledge, especially when some competition is present, as was evidenced in this study. Therefore, for managers operating within a franchise network, developing trust and decreasing the presence of “partner protectiveness” among entities is critical for knowledge transfer. This might be achieved through the centralized authority increasing punishment for opportunistic or “non-partner”-oriented behaviors.

[References available upon request from J. Priestley at jpriestl@kennesaw.edu]