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Hidden Currents: Social Network Dynamics and Tacit Knowledge Transfer in Organizations

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Abstract

Tacit knowledge—information that resides within an individual or organization that has not been physically recorded—is the key to business continuity and retaining core knowledge during organizational change. Organizations have recognized its importance and implemented knowledge management strategies to ensure valuable knowledge is preserved. While much academic research has been done into the nature of tacit knowledge, the role of social networks in maintaining tacit knowledge has been largely unexplored. Social networks, both formal and informal, serve as the invisible infrastructure through which tacit knowledge flows. The strength of interpersonal relationships, trust, and repeated interaction within these networks determines how knowledge is shared. Utilizing academic literature, the following paper seeks to link existing tacit knowledge theory with social network theory through theoretical analysis and literature review.

Keywords: tacit knowledge, social networks, knowledge management strategies, knowledge transfer, knowledge codification

1. An Unexplored Intersection

Although the challenges associated with communicating tacit knowledge have been extensively examined in academic literature, the role that social networks play in facilitating such communication remains comparatively underexplored. Transmitting tacit knowledge from experienced workers to new workers is widely recognized to be a difficult challenge for most organizations, and the formal and informal social networks that constitute an organization play a large role in how effective such knowledge is communicated.

Tacit knowledge is information and patterns contained in the minds of experienced workers, which is difficult to communicate to newer workers because of specific, complex nature. Most literature describes tacit knowledge as being difficult to both communicate to others and directly teach others due to its highly personalized nature (Reed & Defillippi, 1990; Nonaka, 1994). Over the course of a career, workers build up knowledge of both process and content related to their jobs which is not codified anywhere—it is resident in their heads, and they do not have to communicate it on a regular basis (even though they may use it every day). Thus, when it comes time to pass on knowledge to new workers, tacit knowledge can pose a problem for firms unless an effective communication mechanism is worked out.

Social network theory deals with the structure, strength, and symmetry of relationships within an organization. Outside of the "formal" reporting structure, employees have complex social relationships in their daily interactions—these interactions have huge impacts on how tacit knowledge is transmitted between those employees. Social networks have a number of variables that can effect the relationship between experienced and newer workers—for example, if one person is more powerful than another (symmetry) and the emotional closeness of the relationship (strength).

The complex interaction of types of communication of tacit knowledge and the types of social networks is the focus of the following paper. Many combinations are possible, but only a few will result in the most effective transmission of tacit knowledge within a social network. To build a basis for these complex interactions, the paper will lay out the theory of both tacit knowledge and social networks before exploring their interactions. The paper will both lay out the inherent problems tacit knowledge creates for organizations and the four communication methods typically utilized to transmit tacit knowledge to new generations of workers. The theory of social networks seeks to define the variables (structure, strength, and symmetry) that define different types of relationships.

2. The Problem of Tacit Knowledge

2.1 Tacit Knowledge Defined

Knowledge, the understanding through individual learning and perception, can be divided into two types: tacit knowledge and explicit knowledge (Polanyi, 1966; Grant, 1996). Tacit knowledge can be defined multiple ways. Michael Polanyi believes tacit knowledge is the understanding that is developed through observations and practice which cannot be clearly codified and communicated. Everyone provides their own distinct meaning based on his/her collection of tacit knowledge when articulating knowledge (Polanyi 1966). Thus, tacit

knowledge is inherently built up in a persons' mind and is difficult (though not impossible) to codify.

Another view is from Martin Davies, who utilizes a linguistic approach to define tacit knowledge as a "certain kind of causal-explanatory structure which underlies, or is antecedent to, the pieces of knowledge that the speaker has concerning complete sentences" (1989: 542). Davies sees tacit knowledge as a way to explain structure without the need to be explicitly stated.

Tacit knowledge is not written down anywhere—although there is some disagreement as to whether it could be. Some authors feel that tacit knowledge can never be written down. Tacit knowledge for some people is the "knowing how" instead of "knowing about" where it can only be shown through application and practice, not through codification (Grant, 1996; Kogut and Zander, 1992). Moreover, codifying tacit knowledge may redirect the focus to the particulars instead of the entity. As a result, the focus change may cause people to lose sight of the entity and the related tacit knowledge all together (Polanyi, 1966). Other authors believe that tacit knowledge can be written down but is not because of the sheer volume of knowledge (Selamat and Choudrie, 2004). Once knowledge is written down or otherwise codified, it is generally accepted to be explicit knowledge (Grant, 1996; Selamat and Choudrie, 2004).

In contrast, explicit knowledge is knowledge that can be communicated and shared through language and writings that can be expressed through writing and language. Explicit knowledge can be standardized and reproduced easily for other people (Liao 2005; Polanyi, 1967).

2.1 Opportunities and Challenges of Tacit Knowledge

Tacit knowledge presents interesting opportunities and challenges for firms (Săndulescu & Maican, 2023; Thomas & Gupta, 2022; van Hooft, 2023). Tacit knowledge can provide a real competitive advantage for firms because it is hard to replicate by its very nature. Knowledge that is in employees' brains is difficult to replicate in other firms, because it is based on a unique set of experiences (Bhatt, 2001; Grant, 1996; Haldin-Herrgard, 2000; Reed & Defillippi, 1990). Tacit knowledge around process often comes together to form a strong foundation of culture. Examples such as General Electric (GE), which is known to have a culture of excellence in management, is based on inherent knowledge of the "GE Way" to operate businesses—much of which is not codified, but is built into the "DNA" of GE managers (Ghoshal and Bartlett, 2000; Hurley, 2002; Kucharska & Rebelo, 2022; Lawler, 2004; Săndulescu & Maican, 2023).

However, tacit knowledge also presents an inherent problem—how to replicate such knowledge to newer workers. Gertler (2003) understands the properties of tacit knowledge by discussing its three inherit and perpetual issues. The first issue is how tacit knowledge is produced. It is difficult for firms and its managers to understand how tacit knowledge is created and how to make investments that will facilitate its creation. The second issue is how can firms find tacit knowledge from their individual employees and correctly utilize it

for the bettering of the firm. The third issue is how can firms reproduce tacit knowledge and share it with others within itself (Gertler, 2003).

All of the problems with tacit knowledge come down to the single fact that it cannot be easily conveyed since it has not been stated in a clear and precise way (e.g. subjective insights, intuitions, and hunches). Moreover, the transfer of tacit knowledge is sensitive to both social and situation context which can be difficult to replicate for educational purposes. Unlike explicit knowledge, tacit knowledge has to be internalized by the individual within a social context in order to be appropriately understood. Thus, the methods of communication of tacit knowledge become of paramount importance for organizations seeking to use tacit knowledge to build competitive advantage.

2.2 Communicating Tacit Knowledge

Many studies have been done analyzing the effectiveness of "systems" (information technology or management systems) in capturing tacit knowledge (Desouza, 2003; Malhotra, 2002; Selamat and Choudrie, 2004; van Hooft, 2023). Most find that "one-size-fits-all" solutions are not effective at capturing and communicating tacit knowledge—that a more nuanced view is necessary in order to better determine how to best transfer tacit knowledge.

Many firms implement learning management systems (software) to capture and distribute tacit knowledge, however they fall short by coming across as "a one size fits all" solution (Desouza, 2003). Knowledge management systems are unsuccessful due to their inherent design which unravels and becomes a constraint in adapting and changing to an environment that is dynamic and uncertain. These failures are the results of gaps between within the value the firms create and the value demanded by market conditions. As a result, the task of tacit knowledge capture gets pushed aside in order to resolve the inefficiencies of the firms' knowledge management systems (Malhotra, 2002; Săndulescu & Maican, 2023; Selamat and Choudrie, 2004; Săndulescu & Maican, 2023; van Hooft, 2023).

Moreover, firms are unsure that the benefits of capturing tacit knowledge will sufficiently justify the costs. Selamat and Choudrie (2004) argue how individuals can externalize and document their tacit knowledge in order for firms to use that knowledge as a basis to maintain information systems up to date with pertinent best practices. However, the costs for firms to document individuals' knowledge can be costly and time consuming. Additionally, its transfer between individuals is slow and uncertain (Grant, 1996; Kogut and Zander, 1992). Firms, particularly those in fast paced and dynamic environments, may not have the patience or budget to pursue such a program. The literature does not sufficiently explore the importance of informal relationships and the importance of social networks in regard to tacit knowledge. By understanding these issues, firms will be in a better position to justify the need of capturing tacit knowledge and determining the method to capture and distribute that knowledge throughout the firm.

3. Theory of Communication Tacit Knowledge

The intersection of tacit knowledge and social networks is how knowledge is communicated between individuals in a network. Communication between workers enables knowledge

that is in employee's heads to be transmitted to others. The effectiveness of such communication is essential to an organization's success, because as employees leave a firm their tacit knowledge will disappear unless communicated. The "one-sized-fits-all" approaches have been proven to be ineffective, so the question becomes what variables lead to different communication approaches for tacit knowledge? To fully understand the link between tacit knowledge and social networks, one must determine the variables which indicate the communication methods would be most effective in specific types of social networks.

3.1 Predictive Variables

Two variables are likely to be very predictive of how to match communication method with social network: the nature of the tacit knowledge (content vs. process) and whether the knowledge can be codified. The nature of tacit knowledge involves whether the knowledge is related to job content (e.g., technical details of a product, information about customer accounts) or the process of working within the particular firm (e.g., how to get a sales discount approved for a customer, the realities of annual budgeting). Whether knowledge can be codified or not related to whether the information could ever be written down (e.g., creating a process chart for annual budgeting) or could only be communicated orally or through observation (e.g., what informal social interactions work best with certain clients).

However, before analyzing these two variables for their predictive nature, several caveats need to be discussed. First, a wider set of variables could be utilized to describe how tacit knowledge is communicated (e.g., complexity of knowledge, degree of specialization). Several researchers have developed their own knowledge creation models, such as Nonaka and Konno (1998) who developed a model with four modes of knowledge creation (socialization, externalization, combination, and internalization) that includes the transfer of tacit knowledge.

Codification and nature of knowledge were chosen because of the clear relationship with discrete communication methodologies (see matrix below). Thus, while the following theory is likely to generally be correct, it is not exhaustive. Second, there is a large academic debate around whether tacit knowledge can be codified. Several authors believe that tacit knowledge ceases to be tacit if it can written down; other authors believe that tacit knowledge is more descriptive of knowledge that cannot be transmitted in a clear and concise way (Davies, 1989; Liao, 2005; Grant, 1996; Polanyi, 1966). While tacit knowledge ceases to be tacit when it is written down, it remains tacit if it could be written down but remains unwritten. This more accurately reflects the reality of most corporations today, so the more permissive definition of tacit knowledge as knowledge not currently written down is stronger.

Given these caveats, the theory behind the two variables is strong. Taken together, they create a matrix of four methods of communicating tacit knowledge (shown below in Table 1):

Table 1. Methods of Communication Matrix

Nature of knowledge	**Content** (Role-specific knowledge)	*Mentoring*	*Training and Education* (e.g. real-time or classroom)
	Process (How things are done)	*Organizational learning* (e.g. informal passing on of insights)	*Manuals*
		No	**Yes**
		Can it be codified?	

3.2 Four Methods of Communication

Social networks will be more or less effective in transmitting tacit knowledge depending on which of the four methods of communications is appropriate in a given situation. The four methods are: *mentoring*, *training*, *organizational learning*, and *manuals*. Before comparing the interaction of social networks with each method of communication, it is important to understand how these methods differ from each other. The following provides definitions and distinctions for each.

Mentoring can be a formal or informal communication method, where content-based tacit knowledge is shared in a one-on-one setting. Mentoring is done around a specific role or position in a firm (e.g., financial analyst), not just between any employees. Thus, the knowledge transmitted tends to be content-based and specific to the knowledge built up by an employee in a particular role over many years. Furthermore, knowledge communicated by mentoring usually cannot be codified, because if it could, mentoring would be an inefficient way of communicating it relative to alternatives—mentoring is one-on-one, while training is one-on-many (Higgins and Kram, 2001).

Training involving tacit knowledge is defined as taking content-based knowledge that can be codified and communicate on a one-to-many basis. The main difference between mentoring and training is that the knowledge can be structured and codified. For example, knowledge of how to select what analysis might be appropriate for a given situation has a few guidelines, but no hard-and-fast rules; such tacit knowledge is more appropriate for mentoring. By contrast, showing employees how to do different types of analysis is knowledge that can be communicated on a repetitive basis in a structured manner (that could be written down if necessary)—tacit knowledge amenable to training (Liau, 2005).

Organizational learning is firm-specific knowledge of process that is contained in the "DNA" of an organization. Such knowledge is usually not apparent to outsiders, as how things are done at an organization tends to be more tacit than any other type of knowledge (e.g., how to get a purchase order approved, the internal politics of the budgeting process). Unlike mentorship, organizational learning almost always takes place in informal settings and

outside the official sanction of the firm (Liu, 2005). Because such knowledge can only be built through experience at the firm, communication also tends to be "action-oriented" rather than merely talking. Newer employees learn by walking through the process with experienced workers.

Manuals are the ultimate in codifying tacit knowledge—indeed, once the tacit knowledge is put into manual form it is no longer tacit. Manuals enable the capture of tacit knowledge around processes and content which can be communicated without the presence of a "teacher". Tacit knowledge amenable to this codification is either process-related (e.g., writing down the process map of the budgeting process) or basic, entry-level content.

4. The Theory of Social Networks

Social networks can be defined as "a specific set of linkages among a defined set of persons, with the additional property that the characteristics of these linkages as a whole may be used to interpret the social behavior of the persons involved" (Mitchell, 1969: 2). Essentially, the focus is centered on the relationships between the actors and the effects those relationships have. In communicating tacit knowledge, the nature of the relationship will have a significant impact in how effectively the tacit knowledge can be communicated. Fortunately, much work has been completed around the important dimensions of the relationships in social networks: strength, status, symmetry, multiplexity, and structure (Brass and Burkhardt, 1993; Brass, Butterfield, and Skaggs, 1998; Mead, 2001).

4.1 Strength

According to Granovetter, the strength of a tie is a "combination of the amount of time, the emotional intensity, the intimacy (mutual confiding), and the reciprocal services which characterize the tie" (Granovetter, 1973: 1361; Granovetter, 1983). Strong relationships are those close circles of friends and work associates with a certain minimum of interaction and trust. Weak relationships are casual acquaintances with no need for deep trust.

Two key questions arise around tacit knowledge and relationship strength: first, are strong relationships necessarily better at transmitting tacit knowledge; second, is tacit knowledge typically transmitted through stronger or weaker relationships? Ties that are weak often involve common, everyday contact that might be conducive to communicating certain types of tacit knowledge.

4.2 Status

Status refers to the relative power of the players in the relationship. Power may be defined as positional power (e.g., a boss and his direct report) or as influential power (e.g., a person is seen as a "mover-and-shaker" in the firm) (Brass and Burkhardt, 1993). While an absolutely crucial variable in analyzing social networks, status is not as interesting in the transfer of tacit knowledge. Because the holders of tacit knowledge are almost always more experienced than those to which they hope to transfer the knowledge, the status relationship is almost always unequal. The experienced employee will have more power than the newer employee—probably in general, but definitely within the scope of tacit knowledge. Thus,

there is an inherent "teacher-student" relationship in any of the tacit knowledge communication methods.

4.3 Symmetry

Symmetry refers to degree to which trust is balanced in a relationship. Asymmetric relationships where the "trust and emotional involvement of one actor are not reciprocated by the other" (Brass and Burkhardt, 1993; Brass, Butterfield, and Skaggs, 1998: 19; Carley and Krackhandt, 1990). While symmetric relationships tend to result in stronger relationships in the long term, asymmetric relationships often result in skewed incentives for the parties involved in the relationship. In tacit knowledge transfer, an asymmetric relationship may result in too much or too little knowledge being transferred. For example, the "teacher" may not want to transmit knowledge if they perceive that the "student" is a younger worker who could supplant them in their job. Asymmetrical relationships could reduce the effectiveness of tacit knowledge communication.

4.4 Multiplexity

Multiplexity refers to the number of types of relationships that two people share (e.g., co-employees, friends, neighbors) (Brass, Butterfield, and Skaggs, 1998). Multiplexity can generally be reduced to strength—the more types of connections two people share, the more emotionally close they are likely to be (Mead, 2001; Staber and Sydow, 2002). Multiplexity has also been shown to play a significant role in the development of trust and cooperation within networks. When individuals share multiple types of relationships, they are exposed to a broader range of interactions, which increases the likelihood of reciprocal exchange and mutual obligation (Uzzi, 1997).

This overlap of relational roles creates a form of social embeddedness that reinforces normative behavior (Granovetter, 1985). Furthermore, multiplex ties have been associated with greater information redundancy, as individuals connected through multiple channels tend to share more knowledge and values (Burt, 2004). As a result, this strengthens coordination and cohesion within close-knit groups (Coleman, 1988). As such, multiplexity is considered a key structural feature in understanding how social capital is built and maintained across both personal and organizational networks (Nahapiet and Ghoshal, 1998).

4.5 Structure

Unlike the other characteristics, which refer to relationships between two people, structure refers to the overall structure of relationships between a large number of people. Structure is the overall context in which an individual relationship takes place (Mead, 2001). Place a relationship in a broader context brings a new set of forces to bear on individual's behavior—peer pressure, reputations, interdependencies. The underlying structure of relationships is not likely to affect most methods of communication for transmitting tacit knowledge. Non-codifiable methods (i.e., mentoring, organizational learning) are typically one-on-one, and would only be affected by structure if there were outside expectations or political pressure. Codifiable methods (i.e., training and manuals) usually are not affected by the complex structure of social networks because of the formalized nature of the

communication.

Thus, not all the elements of social networks are of equal interest when looking at the communication of tacit knowledge. Strength and symmetry likely have the largest influence on how effective each of the four methods of communication of tacit knowledge will be.

5. Tacit Knowledge and Social Networks

5.1 Social Networks and Communication Methodology

How do different types of social networks interact with the four communication methods for tacit knowledge? Three out of the four communication methods (i.e., mentoring, training, and organizational learning) involve social interaction between an experienced employee and a newer employee. Two of the five key variables (i.e., strength and symmetry) are likely to have major effects on the effectiveness of these communication methods. Thus, interactive effects of multiple permutations of communication methods and social network variables can be considered.

To structure these permutations, two fundamental questions can be considered: first, for which communication methods do social networks matter more? Second, how do relationship strength and symmetry affect the effectiveness of the various communication methods? Note that the following conversation considers theory and a review of academic literature—it is not the rigorous analytical study to prove or disprove the propositions.

5.2 When Do Social Networks Matter?

The first proposition deals with when social networks actually matter more or less in communicating tacit knowledge. Tacit knowledge is not a uniform type—the knowledge can be about process or about content; can be written down someday or be impossible to codify; can be complex or simple; can be idiosyncratic to an organization or general knowledge. Social networks will matter more for communicating certain types of tacit knowledge. Therefore, this paper proposes:

> *Proposition 1: Social networks will influence the effectiveness of tacit knowledge transfer when that knowledge cannot be codified.*

The second major issue is where social networks matter for each four major communications of tacit knowledge. The two variables that formulate the tacit knowledge communication matrix—whether the knowledge can be codified and the nature of the knowledge (process vs. content)—are the logical two axes on which to consider where social networks matter.

The first variable in the communication matrix is around whether knowledge can be codified. Note that the knowledge is not actually codified (in which case it would no longer be tacit), but rather has to do with potential to be codified. Social networks are likely to matter more when knowledge cannot be codified, as the only way they can be communicated is orally (Droege and Hoobler, 2003). Social interaction is inherently necessary when knowledge cannot be codified.

Social networks will thus play a greater role in mentoring or organizational learning

communication, and a lesser role in training or manuals. The effectiveness of mentoring will be heavily influenced by the strength of the relationship, where a trusting relationship could significantly increase the "teacher's" willingness to pass information onto the "student" (Liau, 2005). Organizational learning, with its more informal nature, is likely even more dependent on a strong, trusting relationship to relay information on idiosyncratic people and processes within the firm (Liu, 2005). Similarly, both mentoring and organizational learning could be made less effective by asymmetrical relationships, where one person has an incentive to not share information.

By contrast, training and manuals will likely be less affected by social networks. Manuals are inherently not affected by social networks, as writing and reading a manual are usually each solitary pursuits. Training and education are typically seen as a social process but is often one-on-many rather than one-on-one. For example, employees who go back to take MBA courses at a university or go to technical skills workshops, where there are other students present.

Social networks may play a role in training, but in very subtle and indirect ways. A teacher may favor students with whom they have strong relationships, or the complex structure of relationships may lead to skewed incentives for teacher or student. However, the fact that training is inherently structured and public (relative to mentoring or organizational learning) creates peer pressure and monitoring effects that reduce the impact of social network on the efficacy of tacit knowledge communication. This paper proposes:

> *Proposition 2: Social networks will influence the effectiveness of tacit knowledge transfer when that knowledge is more related to process (rather than content).*

The second variable is whether the knowledge is process or content based. Focusing on knowledge that cannot be codified (and thus Hypothesis 1 is more likely to be influenced by social networks), the question is whether mentoring (content-based) or organizational learning (process-based) will be more influenced by social networks. Both are one-on-one social interactions, but mentoring can be more formalized and is typically more structured (Higgins and Kram, 2001). Organizational learning around firm-specific process tends to be more informal because the tacit knowledge tends to be more sensitive—knowledge about specific people or the "unofficial" way to do things (Bouty, 2000; Droege and Hoobler, 2003). The fact that organizational learning tends to be more informal increases the importance of social networks.

Informality of knowledge transfer increases the role of social networks because factors other than the tacit knowledge increase in significance. More formal mentoring typically involves content-based knowledge that is compelling outside the social context of the organization—the intricacies of programming code or how to make a compelling automotive parts sales call (Higgins and Kram, 2001). Such tacit knowledge is what it is outside the social context of the organization. On the other hand, informal organizational learning is inherently about processes that are specific to the context of the firm—how to get a PO approved by the tight-fisted purchasing agent, how to build a coalition to get a proposal

approved by the CEO. Because this informal knowledge transfer is more context-specific, social network factors such as the strength of the relationship or asymmetry in the relationship will have a greater impact on the transfer of knowledge (Bouty, 2000; Droege and Hoobler, 2003; Gubbins and Dooley, 2021).

However, the opposite appears to be true when considering knowledge that can be codified. Social networks inherently have a greater role in training/education than in manuals because of the solitary nature of writing and reading manuals. Thus, Hypothesis 2 appears to need modification in order to be true—specifically, if limited to non-codifiable knowledge, social networks impact process tacit knowledge transfer more than content tacit knowledge.

5.3 How Do Strength and Symmetry Matter?

The third proposition deals with the types of social networks that are more or less effective in communicating tacit knowledge. Social networks contain numerous relationships with different characteristics—and effectiveness in communicating tacit knowledge will vary based on these characteristics. The propositions are around the two social network characteristics most likely to impact tacit knowledge transfer—relationship strength and symmetry. Are strong or weak relationships more effective in tacit knowledge transfer? Are symmetrical or asymmetrical relationships more effective? Specifically, this paper proposes:

> *Proposition 3: Strong relationships are more effective at transferring tacit knowledge, although weak relationships are the most typical mode of knowledge transfer.*

Strong relationships would generally be expected to be more effective than weak relationships. Close emotional ties and trust-based relationships are more amenable to sharing tacit knowledge openly and fluidly. "Students" will be more willing to ask questions and "teachers" more willing to correct errors to ensure the knowledge is transferred properly. In weaker relationships, knowledge that is difficult to communicate, complex, or politically sensitive might not be transmitted to the student because of a lack of trust.

However, tacit knowledge is more likely to be spread through weak relationships (Droege and Hoobler, 2003; Granovetter, 1973). The majority of relationships are weak, as all employees have more informal contacts they work with during the day than close, trusting relationships. Tacit knowledge takes many forms, and is often transferred informally between dissimilar individuals with weak relationships to each other (e.g. engineer from one firm talking to a computer programmer in another firm). The sheer number of weak relationships and everyday interactions involving communication of tacit knowledge makes it the more common transmission. Granovetter (1973) argues that weak ties can play an important role in the flow of information through a study of job mobility. In his labor market study, he showed how individuals were able to locate prospective job opportunities more often through ties that were weak than those that were strong (Granovetter, 1973). However, strong relationships (usually taking the form of strong mentoring relationships) tend to be more effective in ensuring that the maximum amount of knowledge is actually

transferred.

Proposition 4: Symmetrical relationships tend to be more effective at transmitting tacit knowledge than asymmetrical relationships.

Asymmetry in relationships will tend to create barriers to effective communication of tacit knowledge because of skewed incentives of the parties involved. If one party trusts the other, but that trust is not reciprocated, there will be incentives to aggressively take knowledge or hold it back—either way reducing the effectiveness of knowledge transfer. "Teachers" who believe that the student is trying to take advantage of their tacit knowledge will likely not communicate everything they know; "students" who aggressively pressure their teachers for knowledge are likely to create awkwardness that disrupts the normal flow of information.

6. Discussion

This paper aims to examine the characteristics of tacit knowledge and to explore the role that social networks play in its maintenance and continued dissemination. This paper discusses the concept of tacit knowledge, its opportunities and challenges for firms, and explores methods of communicating tacit knowledge, especially through social networks. The theory of communicating tacit knowledge is developed, considering the nature of knowledge (content vs. process) and whether it can be codified, leading to a matrix of four methods: mentoring, training and education, organizational learning, and manuals.

The theory then intersects with the theory of social networks, introducing predictive variables such as strength, status, symmetry, multiplexity, and structure. These variables are analyzed in the context of tacit knowledge transfer, providing a framework for understanding how social networks influence the effectiveness of different communication methods.

By reviewing the literature and utilizing research around tacit knowledge theory and social network theory, this paper looks at the role of social networks in maintaining tacit knowledge. First, social networks are more important when tacit knowledge cannot be codified and when the nature of that knowledge is process-based. Second, while the strength of relationships tends to increase the effectiveness of tacit knowledge transfer, weaker relationships tend to dominate the actual transfer of knowledge. Third, asymmetry in relationships tends to decrease effectiveness of tacit knowledge transfer.

Social networks and tacit knowledge is a largely unexplored arena that deserves more rigorous analytical treatment than given in this paper. This paper laid out several propositions for future research to explore and test empirically. While intangible ideas like social networks and tacit knowledge are difficult to quantify, such an attempt would be the next logical step in proving or disproving the propositions contained in this paper.

Additional dimensions of the interaction of social networks and tacit knowledge should also be explored. This paper explicitly limited the variables around tacit knowledge to the two most important (nature of knowledge and whether it can be codified), but there are a large number of other variables that could be considered. Complexity of knowledge and

specificity of knowledge are two variables which could affect the effectiveness of varying communication methods. At the same time, social networks have many characteristics beyond strength and symmetry which could affect tacit knowledge. For example, the complexity of relationship structure (e.g., peer pressure, monitoring, and interdependent relationships) likely has an impact on how effective tacit knowledge transfer is.

Finally, there are other topics in tacit knowledge that should be researched. The communication methods of tacit knowledge are likely to have interactive effects with other factors besides social networks. Small firms are likely to communicate tacit knowledge in a different manner than in resource-rich large firms. Different industries or functions could have different emphasis in communication methods. Additionally, the influence of cultural and institutional contexts on the communication of tacit knowledge warrants further investigation, as national or organizational cultures may shape the extent to which individuals are willing to share knowledge through informal relational ties (Hofstede, 1991). The continual advancement of digital technologies and virtual work environments also presents an emerging area of interest, as it remains unclear whether traditional mechanisms of tacit knowledge transfer are equally effective when interpersonal interactions are mediated by technology (Leonardi, 2014).

The subsequent step is to test these propositions as part of an overall research agenda on social networks and tacit knowledge. By transforming the propositions suggested in this paper into testable hypotheses, the hope is to initiate a robust discussion concerning the successful role of social networks in maintaining tacit knowledge. Understanding this connection can help organizations build resilient knowledge ecosystems that can withstand workforce turnover, restructuring, and rapid change. If organizations can strategically leverage their social networks to preserve and transfer tacit knowledge, they will be better positioned to sustain competitive advantage in an increasingly knowledge-driven economy (Nonaka & Takeuchi, 1995). Gaining empirical validation of these propositions across different organizational settings would help develop a comprehensive theoretical framework linking social network structures to knowledge management outcomes (Inkpen & Tsang, 2005).

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