

Coopetitive Knowledge Sharing: An Analytical Review of Literature

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Abstract: The knowledge being shared for cooperation may also be useful for competitive purposes. Whilst this situation is acknowledged, there is no through analysis of how it has been investigated and treated in prior research studies. This paper reviews the literature on simultaneous cooperative and competitive knowledge sharing. It also contributes to this area through an analytical review that compares the literature linked to this phenomenon and identifies their strengths and limitations. The analysis of the findings suggests that efforts in this area have been undertaken independently and with little consideration of the prior studies in different but related realms. The findings suggest the benefits of integrating different bodies of literature in building on a broader platform of existing epistemological and ontological foundations.

Keywords: coopetition, knowledge sharing, coopetitive knowledge sharing, simultaneous cooperation and competition, knowledge management, co-opetition

1. Introduction

Knowledge has been viewed as a competitive advantage and a source of power for those who possess it at the right place and at the right time (Lorange, 1996, Van Der Bij et al., 2003, Yang and Wu, 2008).

The extant literature draws attention to two consequences of knowledge sharing including: cooperative and competitive benefits (Tsai, 2002). The cooperative benefits of knowledge sharing refer to the collective use of the shared knowledge in pursuing common interests, whereas the competitive benefits refer to the use of the shared knowledge to make private gains in an attempt to outperform partners (Khanna and Gulati, 1998). Therefore, those who possess specific knowledge could enjoy some benefits and unique positions, which might be lost by sharing that knowledge. Accordingly, knowledge sharing among individuals involves a social dilemma that is due to the complexity of interactions between people (Yang and Wu, 2008). These mixed characteristics indicate that knowledge is both a 'source of' and a 'barrier to' innovation (Dougherty, 1992). Specifically, knowledge can be effectively shared to facilitate innovation in collaborative contexts. At the same time, the perceived competitive value of knowledge in collaborative contexts makes individuals reserved in sharing the important knowledge, which is essential for innovation.

The ignorance or the lack of attention into the mixed characteristics of knowledge (cooperative and competitive) in constructing many knowledge management systems has resulted in their ineffectiveness (Yang and Wu, 2008). In other words, even though the best management systems are instituted and information communication techniques are put in place, the essential knowledge may still not be shared and infused into the right people (Yang and Chen, 2007, Yang and Wu, 2008).

Through an analysis of literature, prior research on Coopetitive Knowledge Sharing is classified into three groups including: (i) 'Coopetitive Knowledge Sharing' and 'Game Theory', (ii) 'Coopetitive Knowledge Sharing' and 'Knowledge Management Literature', and (iii) 'Coopetitive Knowledge Sharing' and 'organisational management literature'. Each research classification is discussed, and its major characteristics, strengths, and limitations are explained. The analysis of findings reveals that the efforts in this area have been undertaken independently and with little consideration of the prior understanding on this topic in different but related realms. The paper concludes by discussing how the extant literature can be integrated in order to build upon the strengths, and to direct future research studies on the notion of 'Coopetitive Knowledge Sharing'.

2. A background of simultaneous cooperation and competition

A research theme in organisational studies highlights the importance of incompatible structures such as cooperative and competitive structures on organisational outcomes (Beersma et al., 2003, Alavi et

al., 2006, Beersma et al., 2009, Ghobadi and Daneshgar, 2010). The major examples of the studies in this research theme are in the pursuit of Social Interdependence Theory that categorises competing goals into cooperative and competitive goals (Tjosvold, 1998, Alper et al., 2000, Deutsch, 2000, Chen et al., 2005).

The basic premise of Social Interdependence Theory lies in three variables including: (i) interdependence, (ii) interaction patterns, and (iii) outcomes (Deutsch, 1949, Johnson and Johnson, 2006). According to this theory, the structure of interdependencies among individuals determines the degree of cooperative or/and competitive interactions among them (Johnson and Johnson, 2006). More specifically, beliefs about interdependencies affect the courses and outcomes of their interaction.

On the one hand, positive levels of interdependence induce cooperative interactions in terms of higher expectations of assistance and support, greater harmony, and more trusting and friendly relationships (Jehn, 1994, Tjosvold, 1998, Lin, 2010). On the other hand, incompatible or negative interdependencies may result in competitive interactions in terms of pursuing individual goals and win-lose rewards, increasing mistrust, and restricting information and resource exchange (Dirks and Ferrin, 2001).

Many studies highlight the superiority of cooperative structures to competitive structures and their favourable impacts on organisational performance (Pinto et al., 1993, Song et al., 1997, Tjosvold, 1998, Alper et al., 2000, Deutsch, 2000, Chen et al., 2005, Medina and Munduate, 2008). Accordingly, cooperative environments are negatively associated with task and relationship conflict, whereas competition may result in the destructive conflict that is a waste of resources. In addition, competitive structures may disrupt information exchange and destabilise decision making processes.

Research does not imply, however, that cooperative structures are always superior, or that competitive structures are inevitably destructive (Tjosvold, 1998, Gordon et al., 2000, Ferrin and Dirks, 2003). Competitive structures can be effective means of stimulating innovation, increasing task focus, generating high-quality problem solving, and building group cohesion (Van Drew and Van De Vliert, 1997, Gordon et al., 2000, Beersma et al., 2003, Tjosvold et al., 2003, Beersma et al., 2009).

Many studies have compared the relationship between cooperative and/or competitive structures and group outcomes (e.g., task speed, task accuracy, social connectedness, and interpersonal trust) (Slavin, 1977, Beersma et al., 2003, Ferrin and Dirks, 2003, Johnson et al., 2006, Serrano and Pons, 2007, Beersma et al., 2009). Over the years, these studies have shown that the relationship between cooperative/competitive structures and their social outcomes is more complex than what previously thought (Gordon et al., 2000). For example, Lin et al. (2010) suggest that organisational outcomes under simultaneous cooperation and competition are the result of a complex process that owes both to the underlying nature of cooperation and competition, and to the ways in which their antecedents influence them. Accordingly, fostering positive organisational outcomes does not have only 'one size fits all' solution. For example, It has been empirically shown that intergroup competition directs individuals toward group achievement, whereas intergroup cooperation encourages interpersonal interaction and social connectedness (Bettencourt et al., 1992).

Therefore, the most appropriate choice of cooperative and competitive structures is highly dependent on the situation (Tjosvold, 1998, Chen et al., 2005). For example, competitive structures can be constructive if they can be integrated with a general cooperative context and visa versa (Gordon et al., 2000). More specifically, besides a single dominant climate, most situations are 'comprised of' and 'require a mix of' both cooperative and competitive structures at various intensities (Goldman et al., 1977, Mintzberg, 1991, Tjosvold, 1998, Jashapara, 2003).

Apart from the recent increasing research interest in the combination of cooperative and competitive structures, the extant literature points to their mixture as one important but largely unexplored area for further research (Ferrin and Dirks, 2003). This lack of research could be partly related to Deutsch (1949)'s view arguing that hybrid structures are a weaker and more unstable version of strong cooperative or competitive structures, and so do not require independent research (Gordon et al., 2000).

3. Coopetitive knowledge sharing landscape

The extant literature demonstrates a confusing profusion of overlapping terminology and meanings related to the concept of Coopetitive Knowledge Sharing. As a consequence, many referring labels can be found such as: 'knowledge sharing under coopetition' (Tsai, 2002), 'knowledge sharing under social dilemma' (Yang and Wu, 2008), 'hoarding knowledge in collaborative contexts' (Du Plessis, 2005), and 'knowledge sharing under cooperative and competitive structures' (Luo et al., 2006).

The lack of the existence of a universal definition for Coopetitive Knowledge Sharing is in part due to the way this concept has been developed. The following sections show that this concept has been studied differently (and from different points of view) in different bodies of literature. Such a multidisciplinary origin and evolution has resulted in the lack of robust conceptual frameworks for the development of theory on this concept. As a consequence, there are few and relatively limited empirical models that explain this phenomenon.

In the following sections, bodies of literature associated with Coopetitive Knowledge Sharing and different perspectives adopted by them are explained. The comparison of the reviewed literatures highlights how different literatures have contributed to this phenomenon from diverse perspectives. Three subject areas have been discussed including: (i) Coopetitive Knowledge Sharing and Game Theory, (ii) Coopetitive Knowledge Sharing and Knowledge Management Literature, and (iii) Coopetitive Knowledge Sharing and organisational management literature.

4. Coopetitive knowledge sharing and game theory

The concept of Coopetitive Knowledge Sharing was initially developed based on the insights received from the numerical Game Theory frameworks (Schrader, 1990, Loebecke et al., 1999). More specifically, these frameworks focused on the strategic costs of sharing knowledge that were derived from the work of Schrader (1990) and Von Hippel (1994). According to Schrader and Von Hippel, knowledge has two values. The first value is the basic value of knowledge (r) and the second value is value-added (v). Value-added (v) reflects the advantage of receiving the knowledge by the receiver, while the sender is not aware that it is lost by sharing (Schrader, 1990, Von Hippel, 1994). Payoff represents the desirability of an outcome and demonstrates the value people get and lose by sharing knowledge. Perceived payoffs can involve individuals in an employee's dilemma, which make people hoard their knowledge and get payoffs. The idea of Coopetitive Knowledge Sharing gradually attracted increasing academic attention (Loebecke et al., 1999, Tsai, 2002, Levy et al., 2003, Shih et al., 2006).

Loebecke et al. (1999) studied the intention to share knowledge among competitors at the inter-organisational levels, and extended the concept of Coopetitive Knowledge Sharing by adding three dimensions into the basic game theoretical model of knowledge sharing including: (i) synergy (s), (ii) leveragability (l), and (iii) negative reverse impact (n), as shown in Table 1. Synergy (s) exists when both parties share their knowledge, and it refers to a situation in which the knowledge created by different parties exceeds the knowledge that those parties create when working independently. Leveragability (l) is defined as the potential that knowledge receiver can increase his/her value by exploiting the shared knowledge independently. Negative reverse-impact (n) refers to a situation in which knowledge receiver applies the shared knowledge in a way that weakens the original value of the sender. Loebecke et al. (1999) suggested that the optimal situation is a scenario of high synergy, high leveragability, and low negative reverse-impact.

Shih et al. (2006) categorised knowledge sharing into four major groups including: (i) job-guarantee (a prisoner's dilemma with no performance appraisal and reward systems), (ii) individual performance (an employee's dilemma with performance appraisal and reward systems for individuals only), (iii) team performance (a cooperative game with performance appraisal and reward systems for team only), and (iv) team learning (a coopetitive game with performance appraisal and reward systems for both individual and team). Table 2 depicts the payoff matrix of knowledge sharing between two parties. In Table 2, r = basic value of knowledge, s = synergy, l = leveragability, n = negative reverse impact, ap = reward for sharing knowledge, bp = punishment for hoarding knowledge. If both parties share their knowledge simultaneously, their payoffs are equal to $(2r + s + l - n + ap, 2r + s + l - n + ap)$. If they both adopt a non-cooperative strategy, their payoffs are $(r + v - bp, r + v - bp)$. From the perspective of Coopetitive Knowledge Sharing, value of $(2r + s + l - n + ap)$ should be greater than $(r + v - bp)$ for knowledge sharing to occur. If one party shares his/her knowledge and the other one does

not, sender gets $(r - n+ap)$ and receiver gets $(2r + v + l- bp)$. In this situation, sender perceives that the value of $(r - n+ ap)$ is far less than $(2r + v + l- bp)$, so s/he will not share her/his knowledge. Both Table 1 and Table 2 are under this assumption that $r, s, v, l, n, ap,$ and bp have same values for both players of A and B.

Table 1: Payoff matrix for knowledge sharing between two players

		Player B	
		Share knowledge	Not share knowledge
Player A	Share knowledge	$2r + s + l - n, 2r + s + l - n$	$r - n, 2r + v + l$
	Not share knowledge	$2r + v + l, r - n$	$r+v, r+v$

r = basic value of knowledge ; v = value-added ; s = synergy ; l = leveragability ; n = negative reverse impact

Table 2: The extended matrix for knowledge sharing between two players

		Player B	
		Share knowledge	Not share knowledge
Player A	Share knowledge	$2r + s + l - n + ap, 2r+s+l-n+ap$	$r-n+ap, 2r + v + l - bp$
	Not share knowledge	$2r + v + l - bp, r - n + ap$	$r + v - bp, r + v - bp$

r = basic value of knowledge ; v = value-added ; s = synergy ; l = leveragability ; n = negative reverse impact ; ap = reward for sharking knowledge ; bp = punishment for hoarding knowledge

The Game Theory recognition of cooperative and competitive interests has had a productive impact on studying Coopetitive Knowledge Sharing. However, a number of factors may inhibit the applicability of Game Theory in such contexts (Zeng and Chen, 2003, Aitken-Turff and Jackson 2006). Aitken-Turff and Jackson (2006) suggest that descriptive aspects of Game Theory such as its conceptual framework may be effective at modelling cooperation and competition. However, the numerical Game Theory matrix might be of limited use (Aitken-Turff and Jackson 2006). In addition, a vast proportion of existing research on Game Theory has focused on computer-based laboratory experiments that analyse participants' favoured strategies (Aitken-Turff and Jackson 2006). This body of research may reinforce the notion that Game Theory does not apply to the complex realities of social situations. According to Aitken-Turff and Jackson, Game Theory does not account for personal relationships, which are believed to significantly affect collaborative behaviours (Luo, 2005). This fact is believed to restrict the applicability of Game Theory in predicting cooperative and competitive patterns (Aitken-Turff and Jackson 2006). For example, Gächter et al. (2010) used Game Theory to predict knowledge sharing behaviours in open source software development context. The results showed that knowledge sharing is a coordination game with multiple equilibriums, which is not only affected by material incentives, but also by social preferences such as fairness.

5. Coopetition knowledge sharing in knowledge management literature

Knowledge sharing is considered as a set of behaviours regarding knowledge transfer, which involve actors, knowledge characteristics, knowledge transfer channel, organisational concerns, and environmental climate (Lee and Al-Hawamdeh, 2002, Yang and Chen, 2007).

Knowledge Management Literature has investigated the impact of factors such as organisational culture, management support, interpersonal relationships, IT infrastructure, motivation, prior experience, and knowledge ambiguity on knowledge sharing behaviours (Hendriks, 1999, Lee and Al-Hawamdeh, 2002, Bock et al., 2005). However, investigation on knowledge sharing under simultaneous cooperative and competitive situations is limited to socio-economic theories of knowledge (e.g., resource-based theory, altruism, and agency based theory) (Davenport and Prusak, 1998, Bock et al., 2005, Yang and Chen, 2007, Yang and Wu, 2008).

According to the economic theory of knowledge, scarcity of knowledge is the main determinant of knowledge sharing. In other words, knowledge sharing is dependent on the economic value of knowledge, which is perceived to be lost by sharing. There are, however, three economic

perspectives toward knowledge sharing that expand on this idea: (i) Resource-based Theory, (ii) Transaction Cost Theory, and (iii) Agency Perspective (Shin, 2004).

Resource-based Theory (Grant, 1996) views both knowledge and resource interchangeably. According to this theory, distinctive organisational resources lead to different outcomes, and consequently, to gaining scarcity rents (Shin, 2004). Resource-based Theory helps identify circumstances that are necessary for obtaining benefits from knowledge sharing.

Transaction Cost Theory (Davenport and Prusak, 1998) views knowledge sharing in line with three major characteristics that make knowledge supplier & demander agree on the exchange of information (Lin, 2008). According to this theory, one of these three characteristics is required for the knowledge sharing to occur. First, knowledge supplier share knowledge if s/he perceives s/h can obtain tangible benefits from sharing knowledge (Shih et al., 2006). Second, knowledge supplier might decide to share knowledge if s/he could gain higher reputation from the other party (Wasko, 2005). Third, knowledge supplier might decide to share knowledge if s/he could gain social benefits of sharing knowledge (Piliavin and Charng, 1990). Transaction Costs Theory focuses on the associated costs of knowledge sharing. However, Agency Perspective focuses on the individuals' opportunistic behaviours. When agencies have incongruent goals and different risk preferences (e.g., regarding the implementation of information systems for automation), an agency problem arises. Agency Perspective helps find methods of organizing knowledge sharing in order to reduce the costs associated with the opportunistic behaviour of agents.

Taken together the discussed three economic perspective, hoarding knowledge among individuals is natural, especially under conditions of economic competition where knowledge has a competitive advantage (Wah, 2000). In order to facilitate knowledge sharing in simultaneous cooperative and competitive situations, the extant research suggests employing different strategies such as creating long-term commitments, developing trust, increasing reciprocity and longevity in relationships, employing incentives and reward structures, and increasing gratifying relationships among individuals (Shih et al., 2006).

Knowledge Management Literature has a number of limitations in studying Cooperative Knowledge Sharing. First, it has much focused on organisational and individual factors that contribute to knowledge sharing. Yang and Chen (2007) posit that few studies have investigated the impact of the economic value and scarcity of knowledge on knowledge sharing process, which is the subject of studies based on Game Theory. Second, it appears that Knowledge Management Literature investigates the impact of factors such as individual, personal, organisational, cultural, and knowledge-related factors on knowledge sharing, rather than studying the direct impact of cooperation and competition that was the subject of Game Theory. Third, Knowledge Management Literature has mainly focused on the occurrence of knowledge sharing, rather than the transfer of the required and useful knowledge. Recent research in Knowledge Management Literature has questioned the simple notion that knowledge sharing is good for organisations (Argote and Ingram, 2000, Carlile, 2004, Kane et al., 2005, Kane, 2010). It has been widely highlighted that knowledge-intensive processes could be plagued by information quality problems, such as incorrect information and irrelevant information (Gorla et al., 2010, Steinel et al., 2010). Therefore, a mere consideration of the extent of knowledge sharing without considering whether the shared knowledge was useful or applicable might bias the realistic results.

6. Coopetitive knowledge sharing in organisational management literature

The limited Organisational Management Literature has studied the phenomenon of Cooperative Knowledge Sharing through the conceptualisation of simultaneous cooperation and competition, and investigating their impacts on knowledge sharing behaviours (Tsai, 2002, Lin et al., 2010).

This body of literature treats coopetition with two separate constructs including: (i) cooperation and (ii) competition (Tsai, 2002, Luo et al., 2006, Lin, 2007, Lin et al., 2010). This research stream suggests a more complex situation, compared to the other two streams, in which a synergy between cooperation and competition might occur. For example, Tsai (2002) investigated the existence of simultaneous social interaction (a facet of cooperation) and competition on market share across functional units' representatives. The empirical results of Tsai revealed the synergic impact of cooperation and competition for driving knowledge sharing behaviours. Tsai argued that this finding is because members of functional units often have a strong incentive to understand their competitors and

discover what other parties think & know, so that they can benchmark themselves. Accordingly, competition is not always unfavourable, and it can generate positive outcomes (Anderson and Narus, 1990, Lado et al., 1997, Goncalo et al., 2010).

Lin (2007), sought to understand the relationship between cooperation across functional units and New Product Development (NPD) performance. Lin conceptualised cross-functional cooperation with two constructs including: (i) cross-functional cooperation and (ii) cross-functional competition. The results of Lin confirmed a significant positive relationship between cooperation and NPD performance, which is mediated by knowledge management processes. The findings also showed the significant positive impact of competition on NPD performance; however, the mediating role of knowledge management processes in the relationship between competition and NPD performance was not confirmed. Lin argued that the positive impact of competition on performance might be due to two reasons. Firstly, the lengths of the NPD processes in the sample were approximately short- less than 12 months. Secondly, the Chinese collectivist culture of the sample might have resulted in positive outcomes.

Lin et al. (2010) established a model to explain the formation of perceived job effectiveness in virtual team collaboration. Lin et al. proposed that perceived job effectiveness is directly influenced by knowledge sharing behaviours. Knowledge sharing is then influenced by cooperative behaviours. Cooperation was conceptualised with two constructs including: (i) cooperative attitudes and (ii) competitive conflict. Lin et al. measured 'cooperative attitude' and 'competitive conflict' with three separate reflective indicators. Cooperative attitude was measured with the following three items: (i) team members encourage a 'we are in it together' attitude, (ii) team members do their best to work collaboratively, and (iii) team members combine the best of positions to obtain the goal of our collaboration. Competitive conflict was measured with the following three items: (i) team members want others to make concessions but do not want to make concessions themselves", (ii) team members treat conflict as a win-lose contest, and (iii) team members state their position strongly to dominate our teamwork. These three indicators point to the existence of overall competitive feelings and attitudes among team members.

In summary, the three studies of Tsai (2002), Lin (2007), and Lin et al. (2010) have conceptualised Cooperative Knowledge Sharing with three separate components including: (i) cooperation (ii) competition, and (iii) knowledge sharing. There are, however, two major differences in these studies that constitute the limitations of this body of literature in studying Cooperative Knowledge Sharing.

First, cooperation and competition in each study convey different meanings and have different indicators. In other words, research in this area is hamstrung by the inconsistent treatment and conceptualisation of the related constructs of cooperation and competition. For example, cooperation in Tsai (2002) was about social interaction among people, whereas Lin (2007) measured cooperation with coordination and integrated activities among individuals. Competition in Tsai was about competition for internal resources and market share, whereas competition in Lin was about competition for both tangible and intangible resources. Tsai conceptualised competition as having a moderating impact on the relationship between cooperation and knowledge sharing, whereas Lin and Lin et al. (2010) studies the separate impacts of cooperation and competition on knowledge sharing behaviours.

Second, simplistic measurement methods have been applied to conceptualise both cooperation and competition, and so there is a potential of statistical bias in terms of misspecifying formative measures in studies such as Luo et al. (2006) and Lin (2007). Petter et al. (2007) argue that formative constructs basically occur when the items describe and define the construct rather than vice versa. For example, the two dimensions of competition for tangible & intangible resources form the competition rather than reflecting it. Having a closer look at Lin (2007), it can be realised that competition for tangible and intangible resources were conceptualized with reflective indicators. This implies a statistical bias that refers to misspecifying formative measures as reflective ones, and it is considered as a common source of statistical bias in the interpretation of results (Petter et al., 2007, Cenfetelli and Bassellier, 2009).

The third limitation of this body of literature in studying Cooperative Knowledge Sharing is similar to the previous discussion on the Knowledge Management Literature. Specifically, the notion of knowledge sharing under cooperation is limited to investigating the extent and/or frequency of knowledge sharing or transfer, rather than the effectiveness of the knowledge being shared.

7. Integration of the literature (game theory, knowledge management, organisational management)

In the previous sections, three bodies of literature associated with Coopetitive Knowledge Sharing were studied. In this section, these three bodies of literature are integrated through an analysis of their strengths and limitations. In the following, a high-level model for future research on Coopetitive Knowledge Sharing is presented.

Table 3 demonstrates an overview of the three discussed bodies of literature, their major characteristics (C), strengths (+), and limitations (-).

Table 3: Overview of literature

Literature	Characteristics (C)	Strengths (+)	Limitations (-)
Game Theory	Focus on the perceived payoff associated with knowledge sharing (economic value of knowledge)	Promising conceptual framework (rather than numerical framework) <i>(covered in OM literature)</i> Attention to the strategic costs of sharing knowledge (payoffs).	The ignorance of attention to organisational & personal factors <i>(covered in KM Literature)</i> . The predominance of laboratory experiments. The ignorance of the importance of the effectiveness of knowledge sharing.
Knowledge Management (KM) Literature	Focus on the organisational & individual & knowledge factors.	Attention to the organisational & personal & knowledge factors affecting knowledge sharing	Lack of attention to the strategic costs of sharing knowledge <i>(covered by Game Theory)</i> . Treatment of coopetitive knowledge sharing with the personal and organisational factors that affect knowledge sharing behaviours, rather than cooperation and competition <i>(covered by OM Literature)</i> . The ignorance of the importance of the effectiveness of knowledge sharing
Organisational Management (OM) Literature	Focus on the separate conceptualisation of cooperation, competition, and knowledge sharing-with different constructs	More systematic conceptualisation of coopetitive knowledge sharing compared to the other two bodies of literature. Attention to the personal and organisational factors affecting knowledge sharing <i>(overlap with the strength of KM Literature)</i> . Attention to the strategic costs of sharing knowledge (competition for intangible and tangible resources) <i>(overlap with the strength of Game Theory)</i> .	Inconsistent treatment of cooperation and competition. Simplistic measurements for cooperation and competition. The synergic impact of coopetition is not well-supported. The ignorance of the importance of the effectiveness of knowledge sharing

The next step is then to integrate the discussed perspectives, and to build on a broader platform of existing epistemological and ontological foundations. For this, this study first draws upon the somewhat systematic conceptualisation of coopetition in the Organisational Management Literature. The separation of cooperation and competition seems as an appropriate way of modelling coopetition, which is consistent with the previous studies in this area. More specifically, the extant literature indicates several pieces of evidence that emphasise the distinct nature of two constructs of cooperation and competition. For example, Molleman (2009) argues that people might develop simultaneous positive and negative attitudes at their works. For example, a person may like to help a heavily loaded colleague while, at the same time, feel territorial competitive attitudes (Molleman, 2009). Such pieces of evidence draw attention into the distinctive differences between the two constructs of cooperation and competition.

Second, this study incorporates the strengths of the conceptual framework of Game Theory & Organisational Management Literature, as they consider the impact of the strategic costs of knowledge sharing behaviours (perceived payoffs & competition for tangible and intangible resources).

Third, this study draws upon the strengths of the Knowledge Management Literature & Organisational Management Literature, as they suggest the impact of organisational, individual, and knowledge-related factors on predicting cooperative and competitive knowledge sharing patterns.

Fourth, this study suggests considering the importance of the effective knowledge sharing, rather than the mere transfer of knowledge in studying Coopetitive Knowledge Sharing. This targets covering the last limitation of each of the three bodies of literature.

The first three limitations of the Organisational Management Literature are left for future theoretical and empirical studies. Based on this discussion, Figure 1 presents the proposed high-level conceptualisation for modeling Coopetitive Knowledge Sharing.

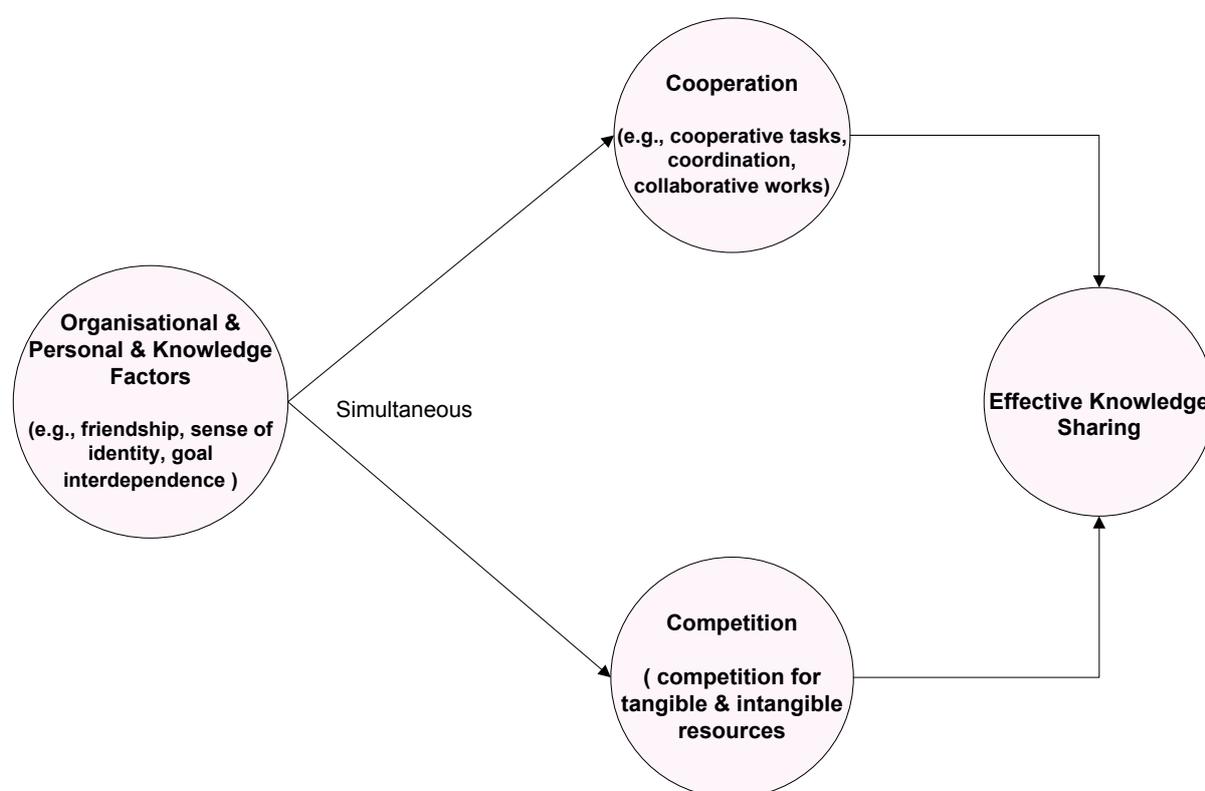


Figure 1: Proposed model of coopetitive knowledge sharing

8. Conclusion

This paper sets out to provide a review of literature on the concept of Coopetitive Knowledge Sharing, in order to (i) classify and analyse the research in the field & (ii) and provide a framework that integrates the identified research streams and builds upon their strengths and limitations.

This study explored the development of the phenomenon of Coopetitive Knowledge Sharing in three bodies of literature. The literature review demonstrated the relative lack of integrative work in different fields related to Coopetitive Knowledge Sharing. In the following, a high-level conceptualisation was proposed. The proposed model combined the discussed three complementary perspectives. Therefore, this study recognises that developments in our understanding of Coopetitive Knowledge Sharing require multi-disciplinary areas (e.g., knowledge management, organisational management, game theory) that address different viewpoints. Of significance, there is a need for researchers to be aware of the complementary studies outside of the discussed literature in order to build on our

understanding, especially in terms of theory building and conceptualisation of cooperation and competition.

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