

Developing a Model of Knowledge Transactions: A Critical Review of Background Theories

Ettore Bolisani¹; Tomas C. Kassaneh¹ and Anthony Wensley²

¹Department of Management and Engineering, Università degli Studi di Padova, Stradella S. Nicola, Vicenza, Italy

²Department of Management, University of Toronto Mississauga, Mississauga, Ontario, Canada.

ettore.bolisani@unipd.it

tomascherkos.kassaneh@unipd.it

anthony.wensley@utoronto.ca

Abstract: Interactions between companies, crucial for economic success and knowledge advancement, involve significant exchanges of information and knowledge beyond mere economic transactions. Understanding how businesses can leverage these knowledge transactions (KTs) with trading partners is vital for both Knowledge Management (KM) research and practice. This entails identifying the knowledge essential for fruitful trading relationships, determining how to derive value from these exchanges, deciding what knowledge should be protected or shared, and developing value-adding strategies for knowledge exchange. To address these questions, this paper critically examines possible theoretical foundations for a KT model. It reviews nine notable KM models to assess the insights they provide (or do not provide) into knowledge exchange mechanisms both within organizations and between trading partners. These models provide some fundamental insights, but also have limitations, especially in addressing the "economic value" of knowledge exchanges. The study highlights the need for a comprehensive and effective KT model that positions knowledge exchanges in trading as a core, value-adding component of economic activities and business strategies. After this preliminary review of existing KM models, it suggests a new KT model, and indicates the need for further development towards a more encompassing approach.

Keywords: Knowledge Management, Knowledge Transaction, KM Models, Prerequisites, Literature Review

1. Introduction

When engaging in trading relationships, trading partners must exchange knowledge in order to augment the economic value of these relationships. This holds significance not only for each specific transaction but also under a broader perspective.

Trading interactions inherently involve substantial exchanges of information and knowledge. Understanding these mechanisms, referred to here as "knowledge transactions" (KT), is crucial (Bolisani, 2010). In this context, fundamental questions arise: What knowledge must companies exchange to establish fruitful trading relationships? How can their value be derived from the exchanged knowledge? By whom? What knowledge should be protected and what should be shared openly? What strategies can increase the value of trading?

Our analysis considers that, in an economic transaction, many KT can occur, and they are fundamental for the effective conclusion of the economic transaction itself. Therefore, we advocate for a comprehensive and effective KT model that positions these KT as a fundamental, value-adding components of economic activities. To develop this model, it is imperative to critically analyze the potential theoretical foundations that can be drawn from the KM literature. This critical analysis lays the groundwork for a more comprehensive model that captures the mechanism and economic value of KT.

The paper proposes a preliminary review of some existing Knowledge Management (KM) models to glean insights and recommendations for the formulation of a new, more comprehensive model. Many useful models have been developed in the KM domain, each offering unique insights into the issue of how knowledge is created, shared, and used within and between organizations. In this study, nine prominent KM models have been selected and their strengths and limitations for modelling the dynamics of KT in trading relationships have been analyzed. In the last sections, the foundations for an innovative model of KT are then proposed and discussed.

2. Knowledge Transfer, Exchange, Sharing: Basic Definitions

It is firstly important to consider definitions and terms used in KM to refer to situations similar to the case analyzed here. Terms like knowledge transfer, knowledge exchange, and knowledge sharing generally refer to fundamental mechanisms through which knowledge passes between or across organizations or people. This section outlines their basic definitions and highlights differences and usefulness.

Knowledge Transfer, considering the many definitions proposed in the literature (e.g., Szulanski, 1996; Boyd et al. 2007; Avelino, 2023), can be described as “the process through which a ‘piece of knowledge’ is passed from somebody who possesses it in some form to somebody else that is expected to use it in some way” (Bolisani, 2008). This process depends on a transmission medium and occurs in a framework of rules and mechanisms that influence it. This definition stresses the main elements of this process: the transferred “knowledge item”, the knowledge sources (users/receivers), and the channel or medium and enabling framework.

Knowledge exchange refers to the reciprocal transfer of knowledge between individuals, teams, or organizations, where both parties contribute and benefit from the exchange. It involves a complex “economy” of reciprocity and obligation (Konstantinou and Fincham, 2011). Davenport and Prusak (1998) emphasize social context and trust as crucial elements for the effective knowledge exchange, suggesting that knowledge flows best where strong relational ties exist between the participants. Also, Wenger's (1998) works on communities of practice outline how social structures facilitate a deeper level of knowledge exchange through shared practices and learning.

Knowledge sharing is often seen as the act of openly distributing knowledge among members of an organization or community. Many authors (Brown and Duguid, 2000; Liu, 2008; Hargadon, 2002), argue that knowledge sharing is fundamentally a social activity, deeply embedded in the informal culture of an organization. Liu (2008, pp-3) defines knowledge sharing as “The process where individuals exchange their (tacit or explicit) knowledge and jointly create new knowledge in a knowing process under certain social contexts that are also constructed out of these activities.” This conceptualization underscores the critical role of social interactions in fostering mutual understanding.

To sum up, while these three processes are closely interlinked and these terms have been used interchangeably, each carries its own unique focus and serves distinct purposes. Knowledge transfer is predominantly unidirectional and implies the efficient passage of knowledge from one entity to another, ensuring that the recipient acquires specific insights or skills from a source. Knowledge exchange is inherently bidirectional and reciprocal, crafted around the idea that the two participants both contribute to and benefit from the process. Knowledge sharing expands beyond a dyadic relationship and includes the idea of a more open distribution of knowledge across a network or community, often without any direct expectation of reciprocity.

3. Consideration of “Economic Value” in KM Models

The nine models that we analyze in this section refer, to some extent, to situations where the notions and definitions illustrated in the previous section are relevant. We now briefly examine their core principles, strengths, and limitations to derive suggestions for a new, comprehensive, and effective model that emphasizes the mechanisms and economic value of KTs.

3.1 SECI

Nonaka and Takeuchi's (1995) “Knowledge Spiral Model” is a foundational framework in KM. This model depicts knowledge creation as a dynamic, iterative process within organizations. It categorizes knowledge as being either tacit or explicit and delineates four modes through which knowledge is created and transferred: Socialization, Externalization, Combination, and Internalization (Nonaka and Takeuchi, 1995; Dalkir, 2011, Adesina and Ocholla, 2019).

The model quickly became one of the most popular in KM, and has been applied to diverse contexts (Dalkir, 2011). A key characteristic of the model is its simplicity, facilitating easy comprehension of its core principles and application where there is a need to understand the mechanisms involved in effective exchanges of knowledge between two parties. However, while it effectively delineates the transformations between tacit and explicit knowledge, it overlooks broader considerations such as the integration of these categories of knowledge into decision-making processes. Therefore, the economic value of KM dynamics and the reasons for engagement in knowledge transfer by trading parties are not clearly addressed. Also, some scholars have identified the challenges of applying the model in a variety of situations as well as the non-linear nature of the model (Adesina and Ocholla, 2019; Oztok, 2013; Chai et al., 2011). These critiques underscore the ongoing need for further refinement and adaptation of the SECI model to depict KM implications in interorganizational relationships. Some extended versions, such as Zhang and Huang's (2020), try to incorporate inter-organizational knowledge flows and open innovation principles to better depict the opportunities of knowledge exchanges within and across organizations.

In short, while SECI provides valuable insights into the specific knowledge conversion mechanisms, its applicability as a 'KT model,' as defined in the context of this study, is limited. The model primarily focuses on internal knowledge processes and does not explicitly address the dynamics, value, and motivations of knowledge exchange between two trading partners. In particular, it lacks emphasis on the economic value of these exchanges or their strategic nature and significance.

3.2 Sense-Making

Choo's (1998) Sense-Making Model provides an integrated framework for understanding the use of information within organizations by encapsulating sense-making, knowledge creation, and decision-making. This model presents a comprehensive perspective on how information is processed and transformed into actionable knowledge, factoring in the broader organizational context in which these transformations occur.

The model's strength is its incorporation of a holistic view of information handling, emphasizing the transformational journey from raw data to knowledge and subsequent actions (Choo, 1998; Neto, 2009; Dalkir, 2011; Cristea and Capatina, 2009). However, despite its broad applicability and the insights into organizational knowledge dynamics, its main limitation is the lack of analysis of economic aspects. Its extensive scope, while valuable for understanding internal processes, may also inadvertently gloss over the specific nuances and potential economic value generated through knowledge exchanges between trading entities. This suggests that while Choo's model is instrumental in conceptualizing knowledge processes within organizations, it may require adaptation or extension in order to fully address the complexities and economic implications of inter-organizational trading relationships. Also, this model is a modified and extended Information Science approach and therefore the link to transactions is limited.

3.3 Wiig

This model (Wiig 1993) focuses on the practical aspects of KM, emphasizing knowledge use, building, and maintenance within organizations. It defines a structured approach to KM, emphasizing the systematic management of knowledge assets to improve organizational effectiveness. One of its core strengths lies in its holistic view of KM, encompassing the identification, development, and application of knowledge to support organizational objectives by using a categorization of knowledge into four types—factual, conceptual, procedural, and methodological. Managing these knowledge types can effectively lead to improved organizational performance (Wiig, 1993; Dalkir, 2011; Evans et al., 2014; Cristea and Capatina, 2009). Considered to be a very pragmatic KM model, it seamlessly integrates various KM approaches surpassing the conventional tacit/explicit classification and providing a comprehensive framework adaptable to diverse contexts.

However, while it provides a comprehensive framework for internal KM, its application to the dynamics of relationships (and knowledge interactions) between trading partners is questionable. Firstly, the model primarily addresses KM within the confines of individual organizations and does not explicitly explore the inter-organizational dimensions. Second, the Wiig Model does not explicitly consider the economic aspects of KM. Although it acknowledges the importance of knowledge for competitive advantage, it lacks a detailed exploration of how knowledge exchange between trading partners can lead to the generation of economic value.

3.4 I-Space

The I-Space (Boisot, 1998) model offers a unique framework for understanding the dissemination and utilization of knowledge and basically conceptualizes information or knowledge flow along three dimensions: codification, abstraction, and diffusion. The model is a 3-dimensional framework, which helps in mapping the state and flow of knowledge. Codification refers to the process of converting knowledge into a format that can be easily disseminated. Abstraction involves the removal of contextual details to make knowledge more universally applicable. Finally, diffusion represents the spread of knowledge across a population. The strength of the Boisot model is that it incorporates a theoretical foundation based on social learning. The Social Learning Cycle (SLC) serves to link content, information, and KM in a very effective way - the codification dimension is linked to categorization and classification; the abstraction dimension is linked to knowledge creation, and the diffusion dimension is linked to information access and transfer (Dalkir, 2011; Spinuzzi, 2023; Canals et al, 2008).

Generally, this model sheds light on the complexities of KM particularly in terms of how knowledge is processed, stored, and shared. There is a strong potential of the I-Space model for mapping and managing an organization's knowledge assets and their importance for a learning cycle, which is not directly addressed by other KM models.

One set of limitations relate to the difficulty of applying the model to empirical cases (Spinuzzi, 2023) in real-life workplace situations. First, the underlying theory does not account well for how people use representations synchronically for their mutual learning. Second, it does not adequately bind an analysis case. Thus, it can be applied analogically but not directly for mapping representations in qualitative case studies. Furthermore, similar to the case of other KM models, this model primarily focuses on the properties and flow of knowledge without directly addressing aspects of economic value. Thus, the model, while useful for understanding knowledge dissemination, may not fully capture the strategic and value-related aspects of knowledge interactions in a trading context.

3.5 Von Krogh and Roos

This model (Von Krogh and Roos, 1995) emphasizes the epistemological perspectives and organizational contexts of knowledge creation and sharing. The model distinguishes between individual knowledge and social knowledge through the adoption of an epistemological viewpoint (Dalkir, 2011; Von Krogh and Roos, 1995; Cristea and Capatina, 2009). In the model, knowledge resides in both individuals and their relations, and the human and relational aspects of KM are stressed. By highlighting the importance of social dynamics, such as trust and mutual respect, Von Krogh and Roos offer an approach to understanding how knowledge is cultivated and disseminated within organizations. This perspective is crucial for fostering a collaborative environment.

While deep insights into the internal mechanisms of knowledge creation and sharing are provided, the application of this model to inter-organizational relationships is, again, difficult, especially in trade. In fact, the model does not explicitly address the complexities of KM across organizational boundaries, including issues related to intellectual property, competitive advantage, and the economic value of shared knowledge. It lacks a clear framework for assessing the economic impact of these knowledge transactions on organizational performance and market competitiveness. Again, there is also a lack of concern for linking knowledge to action which is critical both for the knowledge to be 'meaningful' to the organization and to be valuable.

3.6 Intelligent Complex Adaptive System (ICAS)

This model (Bennet and Bennet, 2004) views organizations as complex adaptive systems. Its foundation lies in a recognition of organizations as ecosystems where knowledge flows and evolves through complex interactions among members. It stresses the importance of adaptability, suggesting that the ability to respond to changes and challenges through effective KM is crucial for organizational success (Bennet and Bennet, 2004; Dalkir 2011; Cristea and Căpațină, 2009). ICAS systems are based on cybernetics principles, which use communications and control mechanisms as a basis for understanding, describing, and predicting what makes an organization viable. Adaptive systems are comprised of independent interacting agents whose behavior leads to complex adaptation patterns. There is no superior authority controlling agents, and complex system behavior arises because of all the interactions (Cristea and Căpațină, 2009, Dalkir, 2011).

The ICAS model provides valuable insights into internal organizational dynamics, but the manner in which it may be applied to inter-organizational relationships is unclear. The model focuses primarily on internal adaptability and learning, with less emphasis on how organizations can manage knowledge exchanges with external entities in order to create economic value and enhance viability. The extension of the principles of adaptability and complex interactions to external partnerships and collaborations, where different organizational cultures, goals, and KM practices should converge, is challenging.

3.7 EFQM Excellence

EFQM Excellence was developed by the European Foundation for Quality Management (EFQM), a not-for-profit membership foundation founded in 1988 in Brussels by fourteen leading European businesses to promote business excellence across the continent. Basically, the EFQM Model is part of a broader framework designed to help organizations improve their performance through a set of principles centered around excellence, including leadership, process, and customer results. It proposes a comprehensive approach to organizational quality, embedding KM in an overall organizational excellence (Bhatt, 2000; Dalkir, 2011; Criado-García, 2020). The EFQM model (Bhatt 2000) examines how KM contributes to achieving organizational objectives. Drawing from traditional models of quality and excellence, this framework establishes robust connections between KM processes and organizational performances, emphasizing the crucial role of knowledge in organizational success. Knowledge is seen as a key strategic resource and the integration of excellence and KM constitutes a dynamic capability for organizations based on continuous improvement, innovation, and learning (Criado-García, 2020).

Whilst the EFQM model provides a robust framework for integrating KM into organizational excellence, its focus on internal processes and outcomes may limit its applicability to the dynamics of knowledge exchange and collaboration among external entities, nor does it explicitly explore the economic value generated through such exchanges or their strategic dimension.

3.8 Inukshuk

The Inukshuk KM model (Girard, 2005) was developed primarily to help Canadian government departments better manage their knowledge. It utilizes the metaphor of Inuit stone landmarks (Inukshuks). Inukshuks serve several functions, including guiding travellers, warning of danger, assisting hunters and marking places of reverence. Inukshuks are used as a metaphor for guiding organizations in knowledge creation, sharing, and utilization in organizations. The model emphasizes the strategic placement of knowledge in an organization, advocating for knowledge to be as visible and usable as are Inukshuk in the Arctic, guiding individuals, and teams effectively towards decision-making and innovation (Dalkir, 2011; Senses, 2014). Its primary strength is the simplicity of its metaphor, underscoring the importance of making knowledge accessible and actionable. This approach aids in fostering an environment where knowledge is not just stored but is actively used, an idea also recalled by Davenport and Prusak (1998) who remind us of the necessity how organizations managing what they know.

Like most of the models reviewed, the Inukshuk KM Model offers valuable insights into knowledge accessibility and usability within organizations, but its application to inter-organizational and trading dynamics has limitations. In fact, the model primarily focuses on the internal organization with less emphasis on how knowledge is exchanged, co-created, or valued in inter-organizational contexts. Additionally, the economic value generated through external KT is not explicitly addressed, leaving a gap in understanding how knowledge sharing between partners can lead to mutual benefits and value creation.

3.9 KM Cycle (KMC) (Evans et al., 2014)

This comprehensive KM life-cycle model was developed by Evans, Dalkir, and Bidian (2014) by building on previous models and on Heisig's (2009) analysis of KM frameworks. It has seven non-sequential phases (i.e., identify, store, share, use, learn, improve, and create) and provides a structured approach to understanding the stages through which knowledge is identified, captured, processed, and utilized within organizations. This model emphasizes the iterative nature of KM, where knowledge is continuously developed and refined through cycles of learning and application. The focus on these different activities or processes is important because it helps understand how the cyclical iteration 'improves' the both individual and organizational knowledge. By outlining clear stages in the KM process, the model provides organizations with a roadmap for leveraging their knowledge assets to drive innovation and, potentially, competitive advantage.

Again, the KMC Model offers a robust framework for internal KM processes or cycles, but it primarily addresses KM within the confines of a single organization and does not explicitly explore the dynamics of sharing, co-creating, or monetizing knowledge in inter-organizational contexts. Furthermore, the economic value generated through knowledge exchange between business partners and its impact on market positioning and competitiveness is not directly addressed within the model's framework.

4. Analysis

Table 1 highlights the main pros and cons of the examined models as theoretical foundations for a comprehensive model of KTs. All these models provide important insights into the mechanisms related to the KM processes that involve transfer, exchange, and sharing of knowledge. However, they also have limitations.

On the one hand, they provide useful (and, sometimes, very detailed) insights into the mechanisms which involve knowledge exchanges. Some of them also emphasize the appropriate contexts that favor a fruitful interaction between parties.

On the other hand, they all have two main limitations. The first is they have insufficient applicability to inter-organizational contexts. The second is the general underestimation or complete lack of consideration of the economic value of interactions and exchanges of knowledge. Business organizations do not exchange knowledge just to exchange knowledge but to support economic value generation and, further enhance their strategic position with respect to their competition. Those few models that address this issue do not go beyond a general consideration of the point, providing no detailed analysis.

Based on this critical review and building upon these pros and cons, we argue that a new comprehensive KM is needed to explain how companies exchange knowledge in trading and how this contributes to economic value generation and enhance their strategic positioning, by means of the appropriation, absorption or development of knowledge.

This model should incorporate some key elements.

Inter-Organizational Focus: The new model should explicitly address the mechanisms of knowledge exchange between trading partners, considering the different types of knowledge that can be shared and the platforms or media through which this exchange can occur. Here, there is a need to investigate the nature of the transaction too.

Economic Value Generation: It is essential to integrate concepts from economic theory and value creation frameworks into the model. This integration would provide a foundation for understanding how knowledge exchange contributes to economic outcomes, such as innovation, competitive advantage, and a variety of strategic objectives.

Table 1: Summary of the examined KM models

KM model	Pros	Cons
SECI	- Structured and foundational framework for understanding knowledge creation and conversion processes - Highlights the importance of tacit knowledge and social interaction - Provides simple and easily comprehensible model for practical applications	- Primarily focuses on internal knowledge processes and does not explicitly address the dynamics, value and motivations of knowledge exchange between trading partners - Lacks emphasis on the economic value of the knowledge exchange in the trading relationships and the implied strategic considerations
Sense-Making	- Offers a holistic perspective in knowledge transformation by considering collective sense-making within organizations - Ideal for Decision-Making Process - Highlights the role of information-seeking and sense-making in knowledge creation	- Lack of prescriptive guidance on how to effectively facilitate sense-making in an inter-organizational context - Limited discussion on the economic implications of the knowledge exchange in trading relationships
Wiig	- Offers a structured approach to managing knowledge assets - Designed Explicitly for Knowledge Building Scenario - Enduring relevance since its inception - remains relevant and widely used in KM practices	- Difficulty in application to dynamics of relationships between trading partners - Does not explicitly explore the economic value of knowledge exchange
I-Space	- Offers a conceptual framework for understanding the dynamics of knowledge as information flows - Emphasizes the role of codification and personalization in KM	- Limited application to inter-organizational relationships - Insufficient framework for economic evaluation of the value generated through knowledge exchange - Difficult empirical application
Von Krogh and Roos	- Emphasizes the importance of social interaction and communities of practice in KM - Emphasizes human and relational aspects of knowledge creation and sharing	- Difficult assessment of economic impact of KTs - Limited application to inter-organizational relationships
Intelligent complex adaptive system (ICAS)	- Relevant to recognize the complexity and dynamism of organizational knowledge based on advanced Intelligent Techniques - Emphasizes adaptability and learning through knowledge exchange	- Complexity in practical application within organizations - Lack specificity in addressing knowledge exchange between trading partners. - Limited discussion on the economic value of knowledge exchange
EFQM Excellence	- Best for organizational excellence and performance measurement - Emphasizes the importance of leadership, strategy, and people in KM - Robust framework for integrating KM into organizational excellence	- Primarily focused on internal knowledge processes within organizations, limiting its applicability in a trading partnership - Not directly address the economic consideration of knowledge exchange between trading partners
Inukshuk	- Offers a visual representation of knowledge management processes. - Emphasizes the importance of communication and collaboration in knowledge exchange	- does not directly address the economic value generated through external knowledge transactions - Insufficient framework for economic evaluation
KM Cycle (KMC) (Evans et al., 2014)	- Best to demonstrate the holistic view of the knowledge life cycle - Emphasizes the iterative nature of knowledge management processes	- Primarily focused on internal knowledge processes within a single organization. - Lack of exploration of economic value generated by knowledge exchange

Knowledge Disclosure vs. Protection: The model should offer strategies for balancing the disclosure of knowledge with the need to protect proprietary information. This includes mechanisms for establishing trust, negotiating knowledge-sharing agreements, and utilizing intellectual property protections. Also, depending on the nature and characteristics of the knowledge being transferred there may be other requirements.

Adaptability and Contextual Relevance: Given the dynamic nature of trading relationships and market conditions, the model should be adaptable and consider the contextual factors that influence KT. This includes industry-specific challenges, regulatory environments, and cultural differences between trading partners.

Measurement and Evaluation: Finally, the new model should incorporate methods for measuring the impact of KT on economic value and organizational performance. This could include metrics for assessing the quality, relevance, and timeliness of exchanged knowledge, as well as its contribution to achieving strategic objectives.

5. A Model of Knowledge Transaction

This section presents an argument for viewing economic activities from a micro perspective, where a company or an economic player is seen as a system of stocks (wealth such as cash, machinery, real estate, accounts receivable) and flows (expenditures or receipts). Economic value creation is tied to operative activities over time and the accumulation of value in appropriate repositories. The model of knowledge transactions emphasizes the importance of interactions between economic players (e.g., trading) and how the value of assets is influenced through trading and by external conditions, such as market dynamics and trading rules. It introduces the notion that besides the physical exchange of goods/services and money, there is a crucial flow of communications between parties, involving the exchange of messages that allow for the definition of trading conditions and the execution of transfers. This exchange of messages, imbued with valuable knowledge, is essential for trading and underpins the proposed model of KT, highlighting the economic significance of knowledge exchange in the creation of economic value.

In other words, our analysis refers to KTs where knowledge is exchanged during an economic transaction, regardless that the sold goods are products or services. In other words, we have two levels of analysis. One is the classic “economic transaction” of goods, services (or even knowledge in the special case that it is the final product that is sold, for example for a consulting company). The other level is that of “KTs”, i.e. particular exchanges of knowledge that occur during an economic transaction and that have, however, value themselves. We can say that in an economic transaction there are many KTs that occur in parallel and are a value-adding components of economic transactions and, therefore, business strategies.

To sum up, KTs are defined as exchanges of valuable knowledge between traders, occurring multiple times during an economic transaction and being crucial for its execution, to complete economic transactions efficiently and effectively. KTs are differentiated from other communication models used in KM (see above) because they emphasize the economic value of the exchanged knowledge. This approach suggests that knowledge exchange, akin to barter systems, carries inherent economic value and should be analyzed beyond a view of mere data or information transfer ancillary to trade relationships. Knowledge has a role and, therefore, a value in action oriented decision-making. We argue that understanding KTs provides insight into the nature of economic transactions from a new perspective, emphasizing, among other things the cognitive underpinnings of economic activities.

A practical example can help to illustrate the concept of KT, using a simple transaction between a seller and a buyer of a consumer product (Bolisani, 2009), e.g. an item of clothing, a device, some food, or any similar item. Breaking down the interaction into a series of KTs - such as the exchange of information about the availability of that product, then the buyer's preferences, and next the negotiation of the price, etc. - we see that each step involves the exchange of knowledge that has its own economic value, because it influences the decisions and actions of both parties in any of the transaction steps. The example demonstrates that economic transactions are not merely about the physical exchange of goods and money but involve a complex series of KTs, where each piece of exchanged knowledge adds to the overall economic value of the transaction and, in addition, has its own value *per se*, even in the case of incomplete transactions. For example, even when the buyer decides, in the end, that the price of a product is too high in a shop and will not buy it, this is useful learning for the buyers future decisions about where to buy similar products in future. To the seller such knowledge allows the seller to investigate both the impact on price in the buyers purchase decision and other knowledge that may be indirectly conveyed to the buyer through the price signal (e.g. with respect to quality, the social status of the buyers, etc.).

6. Potential Application

A possible example is the analysis of business relationships between companies, specifically within a network of client-supplier relationships. In industries where OEM companies assemble the final products (eg.: automotive, electronics, household appliances, etc.), or in cases where the product is co-designed in the interaction between a client and a supplier, the KT model can be applied to understand the intricate web of knowledge exchanges among firms, including the leading company, local dealers, and final clients, during the development of the new product, its manufacture, and sale (Bolisani, 2010).

The case study presented by Bolisani (2010) highlights the value of KT in learning from business relationships, capitalizing on exchanged knowledge, and understanding the mechanisms of knowledge exchange during different steps of business relationships and economic transactions. It also points out the challenges that companies must face due to the need for knowledge disclosure on the one hand, as is unavoidable when a component must be co-designed in collaboration between suppliers and customers, and the need for knowledge protection, to avoid leakages and misuse by competitors. The traditional focus on financial transactions is, on the one hand, not sufficient to highlight these implications, while the typical KM models of knowledge exchange, on the other hand, do not stress the value of any element of knowledge that the parties exchange.

7. Conclusion

In synthesizing the strengths and limitations of the KM models discussed in this study, it becomes evident that while each contributes valuable insights into the transformation of knowledge within organizations by means of interactions, exchanges, and sharing, there is a discernible gap in their direct applicability to the economic and strategic aspects of KMs in trading relationships. This gap highlights the need for a model that more directly ties KM practices to economic outcomes in the context of inter-organizational relationships. A new model aimed at addressing these gaps must incorporate a balanced approach to knowledge sharing and protection, facilitate inter-organizational collaboration, and emphasize the measurement and monitoring of KT outcomes to enhance economic activities and business strategies. Such a model would not only advance the theoretical foundations of KM but also offer practical guidelines for leveraging knowledge as a core value-adding component in trading relationships.

In the paper, it is suggested that KTs can play a foundational role in the creation of economic value within the knowledge economy. By focusing on the exchange of knowledge between parties, we also propose a shift in how economic activities are viewed and analyzed, emphasizing the cognitive aspects of trading and the inherent value of knowledge exchange. This perspective opens new avenues for research and analysis in economic and accounting studies, underlining the importance of KTs in understanding the dynamics of the modern economy.

The paper has some limitations. First, it includes a selection of the many models that have been developed in the KM field. Although these models have currency and relevant to the task at hand, our selection is intrinsically subjective. Second, the paper is a preliminary proposal of a new model that still requires refinement and, especially, more robust empirical validation. This can be part of a future research agenda.

References

- Adesina, A.O. and Ocholla, D.N. (2019) "The SECI Model in Knowledge Management Practices: Past, Present and Future", *Mousaion*, Vol 37, No. 3.
- Avelino, J. (2023) "Knowledge Transfer: What is it and how does it work?", [online], <https://www.edapp.com/blog/knowledge-transfer/>.
- Bennet, A. and Bennet, D. (2004) *Organizational survival in the new world: The intelligent complex adaptive system. A new theory of the firm*, Routledge, Burlington.
- Bhatt, D. (2000) *EFQM excellence model and knowledge management implications*, Published by EFQM Organization, 8.
- Boisot, M. H. (1998) *Knowledge assets: Securing competitive advantage in the information economy*, Oxford University Press, New York.
- Bolisani, E. (2008) *Understanding knowledge transfer on the Net: Useful lessons from the knowledge economy*, In E. Bolisani (Ed.), *Building the knowledge society on the Internet: Sharing and exchanging knowledge in networked environments* (pp. 110-128), Information Science Reference (an imprint of IGI Global), Hershey, New York.
- Bolisani, E. (2009, October). Modelling cognitive transactions for economic and accounting analysis. In *International Conference on Knowledge Management and Information Sharing* (Vol. 2, pp. 242-247). Madeira.
- Bolisani, E. (2010) "Capitalising knowledge exchanges: an interpretative model", In *Proceedings of the 11th European Conference on Knowledge Management*, pp 137-145.
- Boyd, J., Ragsdell, G., Oppenheim, C. and Martins, B.(2007)" Knowledge transfer mechanisms: a case study from manufacturing", In *Proceedings of the 8th European Conference on Knowledge Management*, Vol. 1, pp 139-146.
- Brown, J.S., and Duguid, P. (2000) *The Social Life of Information*, Harvard Business School Press.
- Canals, A., Boisot, M., and MacMillan, I. (2008) "The spatial dimension of knowledge flows: a simulation approach", *Cambridge Journal of Regions, Economy and Society*, Vol. 1, No. 2, pp 175-204.
- Chai, H., Liu, L., and Luo, S. (2011) "Knowledge transferring in virtual organization. In 2011 2nd International Conference on Artificial Intelligence", *Management Science and Electronic Commerce (AIMSEC)*, pp 3089-3092.
- Choo, C. (1998) *The knowing organization*, Oxford University Press, New York.

- Criado-García, F., Calvo-Mora, A., and Martelo-Landroguez, S. (2020) "Knowledge management issues in the EFQM excellence model framework", *International Journal of Quality and Reliability Management*, Vol. 37, No. 5, pp 781-800.
- Cristea, D. S., and CĂPAȚÎNĂ, A. (2009) "Perspectives on knowledge management models. The Annals of "Dunarea de Jos" University of Galati Fascicle I – 2009", *Economics and Applied Informatics*, Years XV – no 2 - ISSN 1584-0409.
- Dalkir, K. (2011) *Knowledge management in theory and practice (2nd ed.)*, Mass. MIT Press, Cambridge.
- Davenport, T.H. and Prusak, L. (1998) *Working knowledge: How organizations manage what they know*, Harvard Business Press.
- Evans, M., Dalkir, K. and Bidian, C. (2014) "A holistic view of the knowledge life cycle: the knowledge management cycle (KMC) model", *Electronic Journal of Knowledge Management*, Vol. 12, No. 2, pp 85-97.
- Girard, J. (2005) "The inukshuk: A Canadian knowledge management model", *KMPRO Journal*, Vol. 2, No. 1, pp 9 – 26.
- Hargadon, A. (2002) *How Breakthroughs Happen: The Surprising Truth About How Companies Innovate*, Harvard Business School Press.
- Heisig, P. (2009) "Harmonisation of knowledge management: Comparing 160 KM frameworks around the globe", *Journal of Knowledge Management*, vol. 13, no. 4, pp 4-31.
- Konstantinou, E. and Fincham, R. (2011) "Not sharing but trading: Applying a Maussian exchange framework to knowledge management", *Human Relations*, Vol. 64, No. 6, pp 823-842.
- Liu, S. (2008) *Knowledge sharing: Interactive processes between organizational knowledge-sharing initiative and individuals' sharing practice*, In E. Bolisani (Ed.), *Building the knowledge society on the Internet: Sharing and exchanging knowledge in networked environments (pp. 1-23)*, Information Science Reference (an imprint of IGI Global), Hershey, New York.
- Neto, R, C, D, A, Souza, R. R., Queiroz, J. G., and Chipp, H. (2009) "Knowledge Management Implementation: a Process Design Proposition at Brazil's ONS (National Operator of the Interconnected Power System)", *Electronic Journal of Knowledge Management*, Vol. 7, No. 5, pp 593-604.
- Nonaka, I., and Takeuchi, H. (1995) *The knowledge-creating company: How Japanese companies create the dynamics of innovation*, Oxford University Press, New York.
- Nonaka, I., Toyama, R., and Konno, N. (2000) "SECI, Ba and leadership: a unified model of dynamic knowledge creation", *Long range planning*, Vol. 33, No. 1, pp 5-34.
- Oztok, M. (2013) "Tacit knowledge in online learning: Community, identity, and social capital", *Technology, Pedagogy and Education*, Vol. 22, No. 1, pp 21-36.
- Sensuse, D. I., Sucahyo, Y. G., Rohajawati, S., and Anggia, P. (2014) "Models and frameworks of knowledge management: A literature review. In 2014 International Conference on Information Science", *Electronics and Electrical Engineering*, Vol. 2, pp 1166-1170.
- Spinuzzi, C. (2023) "Mapping representations in qualitative case studies: can we adapt Boisot's I-Space model?", *Journal of Workplace Learning*, Vol. 35, No. 6, pp 562-583.
- Szulanski, G. (1996) "Exploring internal stickiness: Impediments to the transfer of best practice within the firm", *Strategic Management Journal*, Vol. 17(S2), pp.27-43.
- Von Krogh, G., Roos, J., and Kleine D. (1998) *Knowing in firms: Understanding, managing and measuring knowledge*, Sage Publications, London.
- Wenger, E. (1999) *Communities of practice: Learning, meaning, and identity*, Cambridge University Press
- Wiig, K. (1993) *Knowledge management foundations: Thinking about thinking. How people and organizations create, represent and use knowledge*, Schema Press, Arlington.
- Zhang, Z., and Huang, F. (2020) "An extended SECI model to incorporate inter-organisational knowledge flows and open innovation", *International Journal of Knowledge Management Studies (IJKMS)*, Vol. 11, No. 4. <https://doi.org/10.1504/ijkms.2020.10031579>.