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Assistant Prof. Tuğba TUNACAN

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Knowledge Management and Digital Transformation Power

Editor Orhan TORKUL ORCID (0000-0003-2690-7228)	Editor Tuğba TUNACAN ORCID (0000-0002-3207-8932)
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FOREWORD

The book “Knowledge management and digital transformation power”, by bringing together the works of academics and researchers working in the area of information technology, engineering and administrative sciences from several universities, aims to reveal digital transformation power in consideration of knowledge management. It includes in Industry 4.0 dynamics just as block chain, artificial intelligence, machine learning etc. concerning education, business, agriculture and economics. This book provides information lecturers, researchers and students studied in these fields.

This book consists of ten valuable book chapters consisting of theoretical and empirical studies. All publishing rights of the published book chapters belong to the publisher, and the content responsibility of the published articles belongs to the author. The opinions in the book chapters are the personal opinions of the authors; it is not an official opinion of any institution or organization.

Prof. Dr. Orhan TORKUL

Assistant Prof. Dr. Tuğba TUNACAN

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**THE ROLE OF CUSTOMER KNOWLEDGE
IN DIGITAL TRANSFORMATION:
CUSTOMER KNOWLEDGE
MANAGEMENT AS A COMPETITIVE
ADVANTAGE THROUGH SOCIAL MEDIA
PLATFORMS**

LEVENT ÇALLI

- ❖ Department of Information Systems Engineering, Faculty of Computer and Information Sciences, Sakarya University, Turkey
- ❖ ORCID: 0000-0003-2221-1469
- ❖ Mail: lcalli@sakarya.edu.tr

Introduction

Today companies need to digitalize their traditional processes to understand the behavior of consumers, who can also be present in the digital world due to advances in social media applications and technologies for accessing them, to react quickly to needs and expectations. The digital transformation process in organizations has three critical areas, according to Westerman et al.(2014); these are business models (changing the way of doing business), operational processes (increasing performance by digitizing processes), and customer experience (understanding the customer). Based on this approach, this section focuses on customer experience and explains how enterprises can integrate customer knowledge management in their digital transformation processes with social media applications. According to Nguyen *et al.*(2015), continuous social media knowledge acquisition may improve a company's ability to spot opportunities, impact brand innovation, and act as a moderator between knowledge acquisition, market orientation, and brand innovation. It is a strategic approach that increases efficiency in the decision-making process in terms of discovering customer needs, developing new products and services, and making knowledge flow more compelling for customers by obtaining knowledge from customer experience, preferences, and behaviors by analyzing the content provided by users on social media. In this context, analyzing the contents on social media shared by users is an approach in the new era that increases efficiency in the decision-making process in terms of discovering customer needs, developing new products and services, and making knowledge flow more compelling for customers by obtaining knowledge from customer experience, preferences and behaviors (Del Vecchio *et al.*, 2020).

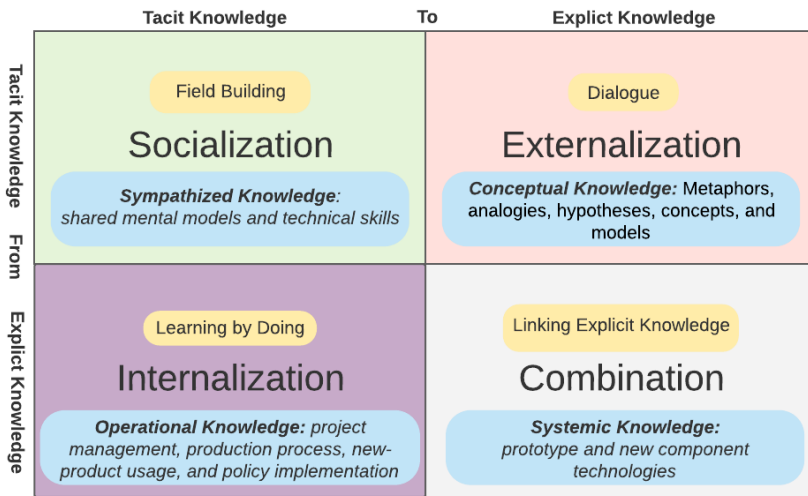
Customer Knowledge Management

Today, knowledge has become one of a company's most valuable assets to gain a competitive edge and continual improvement. Davenport, De Long, & Beers (1998) defines knowledge as the transformation of information through experience, interpretation, reflection, and context for the decisions and actions of organization executives. According to the cognitive approach, the knowledge is explicit and can be encoded, stored, and shared easily as a universal phenomenon. On the other hand, constructionists argue that some knowledge is tacit, highly personal, difficult to express, and therefore difficult to share with others due to involve physical or perceptual skills (Von Krogh,

1998). Polanyi (1962) describes this situation as the inability of a person who knows how to swim to explain how he/she stays on the water; in other words, tacit knowledge is a phenomenon that we know but cannot say.

Nonaka and Takeuchi (1995) indicate that organizational knowledge creation is four modes of knowledge conversion concept through the interaction between tacit and explicit knowledge as a continuous and dynamic interaction for innovation. These are; socialization, externalization, combination and internalization. Socialization is related to the theories of group processes and organizational culture. The main objective is to transform tacit knowledge into new tacit knowledge from shared experiences within the organization members or customers by social interaction to create technical skills and mental models. Externalization is the key to creating knowledge in order to create explicit knowledge from tacit knowledge. Metaphors, analogies, hypotheses, concepts, and models are methods for transforming tacit knowledge to the explicit. Nonaka and Takeuchi (1995) explains this concept with the example of Honda City. During the development of the Honda City, the "automobile evolution" metaphor was used to see the automobile as an organism, and the question was asked in which form its final shape would evolve. The answer to this question is conceptualized through an analogy between "man-maximum, machine-minimum," and it is expressed that the ideal car should be in the form of long and short, which calls "The Tall Boy Honda City". The combination includes adding, sorting, combining, and classifying explicit knowledge from different sources as information processing for systematization into a system of knowledge. Creating knowledge through education and training activities, particularly MBA education, is one example of this conversion. Internalization is the final stage, closely related to the concepts of "organizational learning" and "learning by doing." It is defined as the transformation of explicit knowledge into tacit knowledge.

Figure 1 : SECI Model



Adapted from (Nonaka and Takeuchi, 1995)

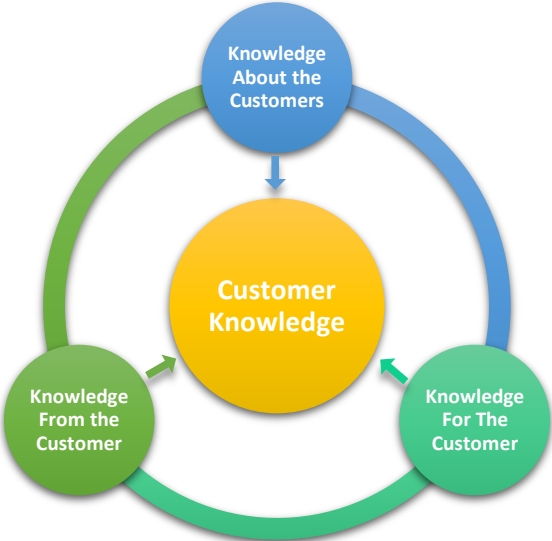
According to Nonaka and Takeuchi (1995), socialization will begin by building an interaction "field" for sharing members' experiences. Second, the appropriate metaphor and analogy in expressing tacit knowledge will be realized by triggering a dialogue or collective reflection. New and existing knowledge can be used in new product service development with the combination. Finally, knowledge will be internalized in an organization with "learning by doing". At each stage, Nonaka and Takeuchi (1995) mention the existence of four types of knowledge: sympathized knowledge, conceptual knowledge, systemic knowledge, and operational knowledge. Figure 1 illustrates this framework, known as the SECI model.

In this sense, knowledge management (KM) is described as identifying and leveraging all knowledge resources that are effective in the performance of an organization into value-creating activities and consists of the processes of knowledge creation, retention, and transfer (Alegre *et al.*, 2013; Von Krogh, 1998). According to Gibbert *et al.*(2002), KM uses employees and companies within the network as the primary source of knowledge to ensure customer satisfaction and aims cost savings and efficiency gains for the organization based on budget. The customer takes a passive role in the KM process.

At the strategic management level, companies must consider not only explicit knowledge such as research reports, employee knowledge or efficient

processes, but also tacit knowledge such as customer knowledge or knowledge from channels and stakeholders (Davenport *et al.*, 1998; Wilhelm *et al.*, 2013). Gibbert, Leibold, & Probst, (2002) states that most companies that define themselves as market-oriented or customer-oriented do not actually benefit from customer knowledge which is their most valuable resource, and suggests the concept of Customer Knowledge Management (CKM), which ensures the knowledge residing in the customer is gained, shared, and expanded in a way that will benefit both customer and the corporate. Customer knowledge, which focuses on customer ideas and opinions rather than transactional data, creates synergy with customers, gets better and more timely results in product innovation, and gives companies a significant competitive advantage in ensuring customer satisfaction and loyalty (Srikantaiah *et al.*, 2000). CKM includes three different types of knowledge (for, from and about the customer), which are theoretically defined as customer knowledge flows and differing from Customer Relationship Management (CRM) by focusing on knowledge from the customer rather than knowledge about the customer (Gebert *et al.*, 2003; Gibbert *et al.*, 2002; Salomann *et al.*, 2005; Wilhelm *et al.*, 2013).

Figure 2 : Knowledge Flows



Adapted from (Wilhelm et al., 2013)

Salomann *et al.*(2005) define *knowledge for the customer* as the flow of knowledge directed from the company to the customers to achieve customers' buying cycle. It contains knowledge about the products, markets, and suppliers and impacts the customer's perception of service quality. *Knowledge from customer* refers to the flow of customer knowledge for product and service innovation, the generation of ideas, and ongoing product and service improvement (Salomann *et al.*, 2005). As a result of this knowledge flow, the customer, who is traditionally thought of as a passive buyer, becomes a participant in the innovation process and contributes to the value creation process by contributing with complaints or desires (Wilhelm *et al.*, 2013). As one of the oldest knowledge flow in the CRM, *knowledge about customers* is utilizing for the prediction of customers' needs, desires, and purchasing activity with customer's master data and past transactions (Salomann *et al.*, 2005). Knowledge about customers is used primarily to create customer-centric sales strategies and identify firms' strategically important customers with demographic customer data and previous customer transactions (Wilhelm *et al.*, 2013).

Difference From CRM

Knowledge for customers and knowledge from customers are two important knowledge flows that provide a competitive advantage to the firm and the most difficult challenges for CRM to manage. (Gebert *et al.*, 2003). García-Murillo and Annabi (2002) state that CRM aims to learn about the customer by customizing each interaction, whereas CKM aims to learn from customers and understand their knowledge needs. In Table 1, García-Murillo and Annabi (2002) define the main differences between the two approaches, considering direction, medium, information, objective, and employee role as differentiating factors.

Table 1: CRM and CKM

Factors	CRM	CKM
<i>Direction</i>	“One-Way”	“Two-Way”
<i>Medium</i>	“Technology”	“Personal”
<i>Information</i>	“Data”	“Customer Experience”
<i>Objective</i>	“Discover Profitable Customers” “Identify Customized Marketing”	“Collect Customer Ideas” “Identify Service Improvements Area and New Product Development”
<i>Role of the Employee</i>	“Little if it Merely Involves a Website Catalogue Customer Requests in a Database”	“Gather Knowledge from Conversations with Customers”

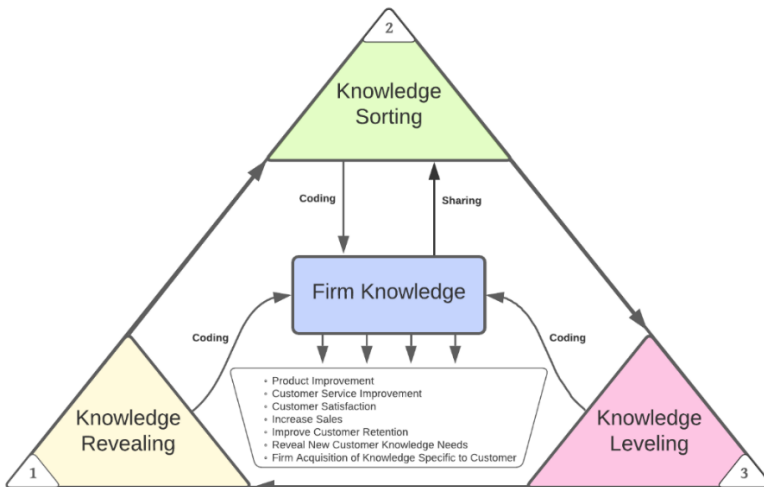
Adapted from García-Murillo and Annabi (2002:878)

As stated by Gibbert *et al.* (2002), CRM relies on the customer database as a source of knowledge. In contrast, CKM relies on the customer's experience, creativity, product, and service dissatisfaction complaints. In other words, directly to the customer. In CKM, the customer is a part of the value creation process. Unlike the classical CRM approach, the customer takes an active role in CKM rather than a captive role within loyalty schemes. The customer cooperates with the firm in the CKM and contributes to organizational learning. While customer satisfaction and loyalty are considered performance metrics for CRM, a firm's performance against competitors in innovation and generating growth through acquiring new customers are performance metrics for CKM. In this respect, CKM uses the axiom "If only we knew what our customers know" while CRM uses "Retention is cheaper than acquisition" (Gibbert *et al.*, 2002:461).

Although CRM and KM are different disciplines and perspectives, combining the two in CKM has the potential to provide significant synergy for organizations (Kaoud, 2017). According to Kaoud (2017) knowledge flows contribute to the effectiveness of customer relationships in terms of brand awareness and a positive brand image, new product development and service improvement, customer satisfaction, and increased sales. García-Murillo and Annabi (2002) suggested the CKM process model with a salesperson's example seen in figure 3; the conceptual approach begins with the *knowledge revealing*. At this level, the firm must understand customer needs while providing basic knowledge about its products and services. Customer feedback on product features, attractive aspects of competitor products, and

industry trends are all examples of knowledge obtained. The second stage of the model, also defined as the education process, is *knowledge sorting*. It includes identifying the knowledge based on each customer's needs to help them decide as a genuine effort rather than a pressure for a sale, such as product characteristics and functional attributes, common problems, substitute or competitive products, and after-sale service. This stage, also called the "*exchange of comments*" is of key importance. The customer's needs and expectations become clear at this stage, and the goal is to enable the customer to make an educated decision. In the model, the first and second stages may bring new knowledge gains due to mutual interaction, and the third stage calls *knowledge leveling*, which includes understanding both parties' needs. In this stage, the customer has general knowledge of the products and services, while the business understands the customer's needs.

Figure 3 : Customer Knowledge Stages and Outcomes



Adapted from García-Murillo and Annabi (2002:883)

García-Murillo and Annabi (2002) state, coding the collected knowledge from various sources for all stakeholders to benefit is seen as the most challenging part of the model. It is necessary to decide at the strategic management level what information needs to be obtained from the perspective of customers, the company, and employees. Today, García-Murillo and Annabi (2002) 's customer knowledge process model has progressed from a salesperson-centric approach in 2002 to a new level with the advent of social media. Social media has been the perfect channel in recent years for companies to reach their target audiences, as well as for consumers to easily share and get information, and

this interaction offers a strong competitive advantage on firms that can adapt to the new environment (Çallı, 2016; Çallı and Clark, 2015).

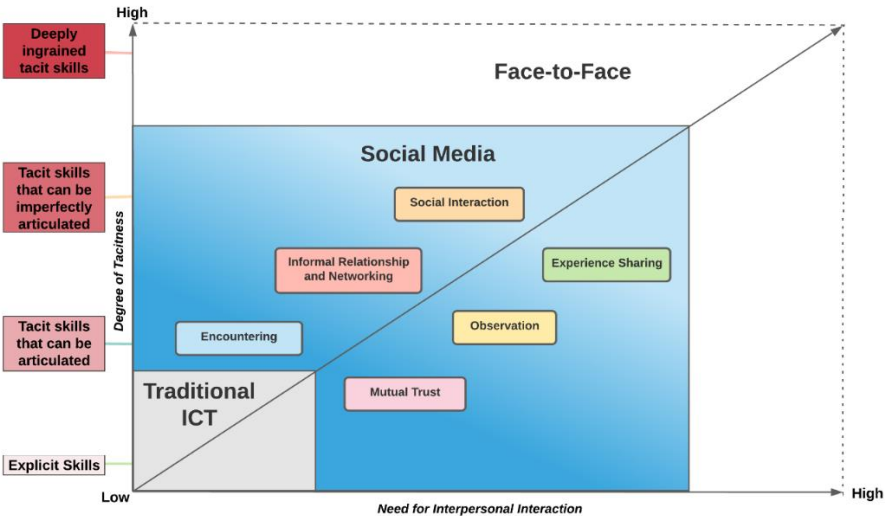
Social Media-Based Customer Knowledge Management

Today, social media has evolved into a structure that is becoming integrated into people's daily lives. It provides a significant advantage for organizations' marketing, advertising, and branding activities to increase sales, customer involvement, and communication (Alalwan *et al.*, 2017; Papa *et al.*, 2018). In this context, gathering knowledge from customers by analyzing the information coming through social media platforms is vital for firms to stay ahead of the competition and respond to customers' needs more quickly (He *et al.*, 2019). According to Lopez-Nicolas and Soto-Acosta (2010), information communication technology (ICT) involving information presentation, communication, information exchange, and the automation of internal business processes is directly related to knowledge creation phases in the SECI model. It was discovered that ICT had a positive influence on each phase of the SECI model in SMEs. In addition, Papa *et al.* (2018) found that social media usage positively influences the knowledge creation processes in the SECI model, excluding internalization in SMEs. The primary objective of KM is to manage tacit knowledge rather than explicit knowledge, as documented explicit knowledge is relatively easy to manage and share within an organization. At this point, social media applications provide a great advantage in revealing tacit knowledge (Panahi *et al.*, 2012). According to Panahi *et al.*, (2012), social media can help meet several requirements for tacit knowledge, including providing a more beneficial platform for social interaction, experience sharing, informal relationship building, observation, and establishing trust among users. The factors that trigger the sharing of tacit knowledge are explained as follows in this conceptual model;

Social Interaction; face-to-face communication, conversation, discussion, and dialogue are the primary triggering factors for the sharing of tacit knowledge. In this context, considering social media's primary role is to facilitate *social* interaction, it will be an excellent platform for sharing tacit knowledge (Panahi *et al.*, 2012). **Experience Sharing;** According to the SECI model, it is not possible to share tacit knowledge without sharing experience. In this sense, the social media ecosystem, which allows people to share their own experiences as a digital storytelling tool with multimedia content, would facilitate sharing of tacit knowledge (Panahi *et al.*, 2012). **Informal**

Relationship and Networking; Developing informal relationships and networking is an effective strategy for increasing tacit knowledge sharing among people. Social media's informal relationships and networking capabilities make it an excellent tool for sharing tacit knowledge among users (Panahi *et al.*, 2012). **Observation;** Another essential element of sharing and acquisition tacit knowledge is observation, watching, and interactive listening. It is stated that sharing multimedia content such as video, sound, picture, drawing through social media will provide an excellent environment for the sharing tacit knowledge between users (Panahi *et al.*, 2012). **Mutual Trust;** Sharing tacit knowledge is triggered when there is mutual trust among the people. People can share explicit and implicit knowledge on social media and continue this sharing due to perceived trust in this regard (Panahi *et al.*, 2012). Furthermore, the concept of **encountering**, defined as finding exciting and valuable information while seeking some other information, will undoubtedly create new tacit knowledge while accessing and internalizing existing information via social media (Panahi *et al.*, 2016). In other words, as more knowledge becomes visible to knowledge seekers, more tacit knowledge is created and shared (Panahi, 2014).

Figure 4 : Tacit Knowledge Sharing

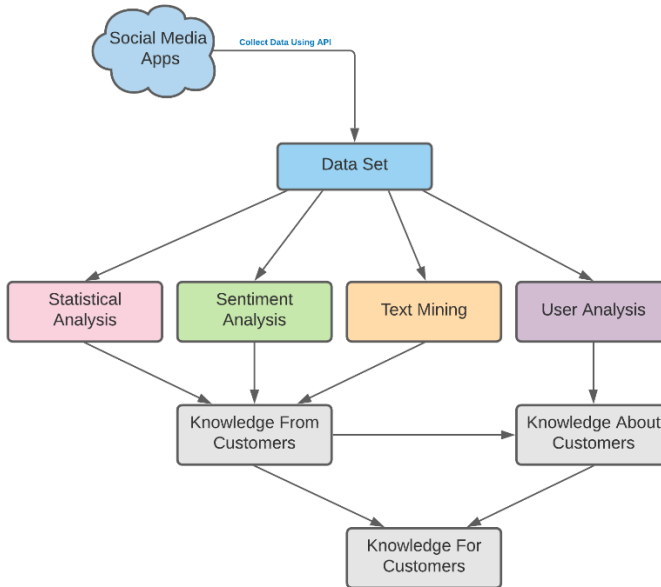


Adapted from Ambrosini and Bowman (2001); Panahi et al. (2012); Panahi et al. (2016)

Within the scope of the degree of tacitness suggested by Ambrosini and Bowman (2001) and interpersonal interaction, the factors facilitating the sharing of tacit knowledge (Panahi *et al.*, 2012, 2016) through social media are seen in figure 4. According to Buunk *et al.* (2019), social media facilitates sharing tacit knowledge in learning, expertise sharing, problem-solving, and innovation. Encouraging discussion among experts, fostering collective intelligence, making tacit knowledge accessible and visible should be supported by reducing the time and effort required.

Because of its nature, knowledge from customers and knowledge for the customers are considered tacit knowledge in the knowledge flow approach. The common feature of this two knowledge is that it emerges from customer experiences and expectations. It is not enough for customers to transfer knowledge to the organization for a customer-centric approach. The organization should share necessary knowledge according to customer needs with a two-way learning process (Zhenzhong and Liyun, 2009). He *et al.* (2019) state that a company can access the knowledge from the customer, which is an important source of tacit knowledge by analyzing tweets shared by customers. Statistical analysis, text mining, and sentiment analysis are considered methods for revealing knowledge from customers with the Twitter analytics approach. In addition, since Twitter provides users' locations and demographic information, businesses can reach knowledge about customers easily. Consequently, both knowledge sources will create more relevant product and service knowledge for the customer. For example, research on Starbucks' Twitter messages found that three basic content types were conveyed to customers. The first is the sharing of knowledge such as intro/promo of products, stores, or promotions to the followers. The second is sharing content that evokes positive emotions, such as poetry, storytelling, imagery, humorous or inspirational quotation. The third is the messages sent to motivate followers to purchase, participate or register (Taecharungroj, 2017). Considering the Facebook posts of global brands, Kim *et al.* (2015) is stated that three different message types are shared in the form of task-oriented content containing advertising messages aimed at increasing sales, interaction-oriented content aimed at establishing a relationship between consumers and the brand, and finally, self-oriented content containing corporate news about the company or an event. Figure 5 shows this scenario via any social media apps.

Figure 5 : Social Media Apps as a Source for Knowledge Flow



Adapted from He et al. (2019)

He *et al.* (2019) also state that the knowledge from the customers may be a source of knowledge about the customer, especially for frequent social media users. These resources can be customers' hobbies, access times, past transactions, or expectations. Today, businesses of all sizes can use open source or commercial software to swiftly analyze the message content, including comments, likes, reviews, and sharing from different social media platforms in sentiment analysis or topic modeling using text mining algorithms (T.k. *et al.*, 2021).

Conclusion

In this section, the concept of customer knowledge management is summarized in light of the literature. The rise of knowledge as a key competitive advantage for businesses clearly shows that the information generated by social media applications cannot be ignored by companies of all sizes and sectors. Understanding customer needs and expectations, particularly revealing tacit knowledge and sharing appropriate knowledge to customers, is a simple activity that will provide a significant competitive advantage with today's technological opportunities. It is thought that SMEs with limited resources can benefit from these advantages in order to compete

with large-scale enterprises, and the attempt to adopt this approach to the organization within the scope of digital transformation is a priority situation that should be considered.

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