

A Conceptual Framework of Antecedents and Impacts of Knowledge Quality on SMEs' Competitiveness

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Abstract: Knowledge quality is a new concept. It refers to the extent to which individuals' awareness and understanding towards ideas, logics, relationships, and circumstances are fit for use, relevant and valuable to context, and easy to adapt. The paper proposes that knowledge quality constitutes intrinsic knowledge quality, contextual knowledge quality, actionable knowledge quality, and accessibility knowledge. Knowledge quality requires an organization's absorptive capacity, functional diversity, openness, lean organizational structure, friendly organizational culture, and technology utilization capabilities. The impacts of knowledge quality are improvisational and compositional creativity, which are enablers of innovation. This as a whole makes up competitiveness. This paper conceptualizes a model of competitiveness for small and medium-sized enterprises (SMEs) and develops 13 propositions based on the theories of sense making, knowledge management, and creativity.

Key-Words:

Knowledge quality; sense-making theory; SMEs

1 Introduction

SMEs are the engine of growth all around the world [50]. Their agile and flexible capabilities are the key to their industry growth. As small companies, their competitiveness is critical in survival and sustaining the business. The need to innovate new products and services so as to not lag behind larger enterprises becomes a pressing agenda.

Different definitions have been coined for competitiveness in SMEs. This includes the extent of innovation processes [49], effective knowledge management (KM) practices [20], degree of strategy formulation [50], and applying cluster-based policy approach [31]. This paper proposes an approach for competitiveness in SMEs. It suggests that obtaining a sustainable competitive advantage requires a setting that is based on knowledge quality (KQ). Further, competitiveness in SMEs is gauged through the extent of creativity (improvisational and compositional) and innovation.

A recent research has recognized the importance of KQ [57]. KQ was initially defined as the usefulness and innovativeness of acquired knowledge [51]. In addition, Yoo et al. [56] consider KQ as "the extent to which the awareness and understanding of ideas, logics, relationships, and circumstances are fit for use, relevant and valuable to context, and easy to adapt".

The recent years witness the concept of knowledge quality synthesized along with data and information. The literature has shown the influencing role of data quality and information quality on overall performance and throughput of organizations [55, 24]. It has been argued that the mere utilization of KM and its systems is not sufficient for being creative and prosperous in this turbulent market [44]. However, it comes to the quality or high standard of knowledge that is essential for the survival of businesses.

KQ is a new concept. There are few researches on KQ in the context of SMEs. Previous researches focused on data quality and information quality. The benefits that can be obtained by virtue of KQ are apparent in SMEs. SMEs as enablers of innovation can benefit from a high standard of KQ due to their agility and flexibility, which give them an advantage over big enterprises. Durst & Edvardsson [19] argue that research on KM and its quality is overemphasized on large enterprises and researchers neglect SMEs.

Since the concept of KQ is multidisciplinary, all organizational and behavioral factors should be examined in detail. Little attention has been devoted to KQ and this paper aims to investigate the dimensions, antecedents, and impacts of KQ. In

doing so, it develops a conceptual framework to aid future research and practice.

2 Research Design

This research is based on a review of literature. Therefore, the research questions are set out as follows:

RQ1: What are the dimensions of KQ?

RQ2: What are the antecedents of KQ?

RQ3: What are the impacts of KQ?

Our starting point to answer the research questions was the online databases. In particular, we used Science Direct, Emerald, Ebscohost, Springer, and Proquest as a means to search for related articles.

The main keywords used for this research are data quality, information quality, knowledge quality, absorptive capacity, functional diversity, openness, organizational structure, organizational culture, technology, sense making, knowledge management, organizational creativity, improvisational creativity, compositional creativity, and innovation. Following an extensive review of the literature, we then developed a set of propositions, which resulted into a conceptual framework.

3 Problem Solution

In this paper, the competitiveness of SMEs is characterized by creativity and innovation. This is influenced by KQ. In gaining insights into KQ in SMEs, its antecedents and substructures [57] will be examined.

3.1 Related theories

According to Dervin [16, 17], sense making takes place when “a person embedded in a particular context and moving through time-space, experiences a gap in reality”. To encounter this gap, the person forms ideas, thoughts, emotions, feelings, and memories.

Besides, sense making concerns knowledge management [15]. In this regard, sense making is the process of transformation of information to knowledge product [47]. According to Dervin [15], the basic concepts related to sense making methodology are “time, space, movement, gap, step-taking, action, situation, bridge, and outcome”. Further, three prominent elements in sense making are generic understanding, specific situation, and action [16].

Chan and Chao [10] develop a model of KM for SMEs and they theorize that structure, culture, and

technology are the main factors in obtaining high standard of knowledge activities. Yoo et al. [56] develops a model of KQ within which functional diversity, absorptive capacity, and openness are considered as main determinants to KQ. Amabile [1, 2] theorized on creativity and examined factors participating in improvisational creativity include culture, structure, and expertise (functional diversity). In addition, sense-making theory [16] provides a framework for understanding perceived KQ and its substructures.

3.1.1 Sense making theory and KQ

Duffy [18] defined sense making as “the way people make sense out of their experience in the world”. At the individual level, sense making is about how a person understands a situation in a given context [45].

According to Yoo [57], employees in an organization realize the intrinsic value of knowledge (generic understanding) and come out with a new meaning in their context (specific situation) and based on that they take actions. And they make the knowledge available for further sense making processes. Therefore, there are four substructures of KQ i.e. intrinsic KQ, contextual KQ, actionable KQ, and accessibility KQ.

3.2 Dimensions of KQ

Considering that data quality shares similar dimensions with information quality [55, 26, 24], however, it is believed that some of characteristics of information quality are similar to KQ as well [56]. Previous researches examined intrinsic KQ, contextual KQ, and actionable KQ as dimensions or substructures of KQ [56, 90]. In this paper it is speculated that accessibility KQ is another significant dimension of KQ that needs to be elaborated.

3.2.1 Intrinsic KQ

Intrinsic KQ implies that knowledge has quality by virtue of itself. A foundation of KQ [56], intrinsic KQ relates to accuracy, timeliness, and reliability [22] of knowledge. Yoo [56] identifies perceived intrinsic KQ as a substructure of perceived KQ and he declares that this dimension is mainly affected by knowledge sharing behavior of social actors.

3.2.3 Contextual KQ

Contextual KQ considers the knowledge that is associated with the context of the task at hand. Relevance, value-added, and appropriateness are the attributes of contextual KQ. The intrinsic value of knowledge brings an understanding to individuals to

come out with cues and new understanding based on a specific situation or circumstances (perceived contextual KQ).

3.2.4 Actionable KQ

Actionable KQ refers to the knowledge that brings progress and it is the practical perspective [57] of knowledge. According to Yoo et al [56], actionable KQ refers to the extent to which knowledge is expandable, adaptable, or simply applied to tasks. Based on the sense making theory, after individuals come to an understanding based on the intrinsic value of knowledge in a particular situation, they take actions (actionable KQ) to apply the knowledge.

3.1.5 Accessibility KQ

Accessibility KQ refers to the degree of system availability, degree of flexibility, ease of use, and ease of access. These characteristics of accessibility KQ are adopted from information quality and in terms of KQ the concept of accessibility refers to both tacit and explicit availability of knowledge. Lee et al [36] consider these attributes as usability of information. To rationalize accessibility KQ, after the knowledge is applied it has to be accessible to be continuously in use both through explicit and implicit way.

It can also be speculated that accessibility of knowledge can be another step in the determination of perceived KQ. While the knowledge is applied (in both tacit and explicit phase), it has to be accessible for further sense making processes. Sense making does not have a clear beginning and ending point [33] and it is a waterfall model of cognition. Therefore, accessibility KQ is another phase of perceived KQ that can be speculated by virtue of sense making theory. Finally, it is proposed that:

P1: KQ is a second order factor model of intrinsic KQ, contextual KQ, actionable KQ, and accessibility KQ.

3.3 Antecedents of KQ

This paper proposes antecedents of KQ as absorptive capacity, functional diversity, openness, organizational structure, organizational culture, and technology. Each of them is discussed in the following sub-sections.

3.3.1 Functional diversity

Functional diversity refers to the degree of hiring employees with different skills and expertise who are adept with business processes [9]. It is argued that SMEs with employees with different

professional backgrounds and skills will be more innovative than those with similar knowledge pool. A functionally diverse company brings differing perspectives [46] and divergence of views on issues and tasks at hand. Divergence of views amongst employees will create multiple perspectives that will be imperative for innovative processes [6]. Finally, it is proposed that:

P2: There is a positive relationship between functional diversity and KQ in SMEs.

3.3.2 Absorptive capacity

Absorptive capacity refers to the learning capability of the company and it has been found as a requirement of KQ in project teams [56]. By virtue of learning economy, the traditional paradigm of innovation (closed innovation) has shifted to the effective paradigm of innovation (open innovation).

Kazanjian & Drazin [32] state the role of individuals' learning on creative processes. They indicate that different learning strategies (explorative learning strategy and exploitative learning strategy) will have a significant role in exploiting existing knowledge and importing new knowledge to the company, thereby facilitating the innovative capability of employees. It can be concluded that advanced learning have a direct effect on high standard of KQ. Therefore, it is proposed that:

P3: There is a positive relationship between absorptive capacity and KQ in SMEs.

3.3.3 Openness

Openness refers to the capability to take advantage of external knowledge (from external environment such as customers, competitors, suppliers and government agencies) and integrate it with internal knowledge. Soo et al. [51] consider openness as a significant determinant of KQ. Yoo et al. [56] consider this organizational characteristic as knowledge network and they suggest that a high level of knowledge network in project teams results in a high level of KQ. Recent researches have combined the concept of KM and complex networks [8] and researchers consider knowledge network as knowledge transfer between individuals or enterprises [12], knowledge cooperation, and knowledge innovation [29, 38].

Prior research suggests that complimentary knowledge resources are made available through knowledge networks [29, 30]. In a networked economy, each node stands for a special repository of knowledge (SMEs and external environment) and each link stands for economic and strategic ties

between the nodes that enable knowledge flow between them. Therefore, it is proposed that:

P4: There is a positive relationship between openness and KQ in SMEs.

3.3.4 Structure

Organizational structure is considered as an antecedent in knowledge and creativity processes [40, 28]. An organization with leaner structure is likely to have KQ. According to Ekvall [21], different structures foster or hinder creativity processes (i.e. improvisational and compositional creativity). This suggests that the leaner an organization or company is, the greater the degree of prosperity and the higher potential it has for being creative.

Further, an organization with a lean structure (ambidextrous) enables both explorative (new knowledge absorption) and exploitative (utilization of existing knowledge) capabilities. This can be argued to facilitate sense making processes and new understandings. This in turn contributes to higher KQ that affect improvisational and compositional creativity and innovativeness. Therefore, it is proposed that:

P5: There is a positive relationship between structure and KQ in SMEs.

3.3.5 Culture

An organization with high KQ is characterized by risk taking, shared responsibility, employees' participation, and innovation organization culture [34]. Ekvall [21] suggests that strict and structured culture impedes radical creativity. Prior research has examined the role of organizational culture on KM activities [10, 35, 52].

Organizational culture is known to influence KM effectiveness and an enabler in competitive advantage [5]. Ferris et al. [23] suggested the role of organizational culture as an antecedent of employees' behavior and attitude. A friendly organizational culture will have a significant effect on the sense making processes of employees from which a high standard of KQ will be achieved.

Lemon and Sabota [37] regard organizational culture as a primary determinant of innovative capabilities. They defined culture as "the way we do things around here". Culture contributes to collective understandings of work. It helps employees apply current and new understandings to different contexts and take actions and make the knowledge available for further sense making activities. Therefore, innovation culture [27] enables higher level of KQ through sense making resulting

in creativity and innovation. Finally, it is proposed that:

P6: There is a positive relationship between culture and KQ in SMEs.

3.3.6 Technology

Another building block of KQ is technology. It is considered as a support mechanism of KM activities [14]. Technology utilization directly and indirectly contributes to the achievement of KQ. Technology facilitates knowledge sharing and it helps sense making activities from which new understanding about product, service, or a problem can be achieved and applied in a particular context. It makes the knowledge accessible for further sense making processes. Further, for the sake of generating creative ideas, the available knowledge has to become accessible (accessibility KQ) and this process may be eased by technology utilization.

Therefore, it is proposed that:

P7: There is a positive relationship between technology utilization and KQ in SMEs.

3.4 Impacts of KQ

Previous researches demonstrated the significant role of KQ on firm performance and innovation [51, 56]. In this paper it is posited that KQ has a direct relationship with creativity. The term *creativity* has been referred to as the production of ideas for novel and appropriate products, services, processes, or strategies [2, 25, 48]. There are two types of creativity: compositional and improvisational which are distinguished based on the degree of novelty and the role of time [3, 41, 54].

Organizational theorists have been examining the role of improvisation within organizations [54]. A high degree of improvisation takes place in SMEs because of their agile and flexible capabilities. Indeed, both compositional and improvisational creativity can generate novel products and outcomes [2]. In improvisational creativity, response generation and execution (toward product, service, or design) is simultaneous and convergent in time but in compositional creativity, there is a temporal separation between when a response is generated and when it is executed [13]. Therefore, it is proposed that:

P8: There is a positive relationship between KQ and improvisational creativity.

P9: There is a positive relationship between KQ and compositional creativity.

P10: There is a positive relationship between KQ and innovation.

In addition, innovation originates from creativity [58] and it takes place when creative acts are

executed. The links between improvisational creativity, compositional creativity, and innovation [3,11, 13] are as shown in Fig. 1 and are based on the theory of music [4] and art that may be applied to organizations as well. On the other hand, Vera and Crossan [54] argue that all improvisational creativity processes do not lead to innovation and it is likely that a high degree of novelty (different from prior actions and plans) diverges from the objectives and missions of businesses and it can lead to failure.

Amabile [1, 2] proposed a model of improvisational creativity within which she identified elements that contribute to organizational improvisational creativity. She considered experimental culture, minimal structure, expertise, intrinsic motivation, and creativity relevant processes as elements that precede improvisational creativity processes. Many compositional creativity processes come from moments of improvisational creativity [53] and both of these capabilities are conducive to innovation. Therefore, it is proposed that:

P11: Improvisational creativity and compositional creativity are positively correlated.

P12: There is a positive correlation between compositional creativity and innovation.

P13: There is a positive correlation between improvisational creativity and innovation.

4 Conclusion

Based on the discussion, a conceptual framework (Fig. 1) is proposed.

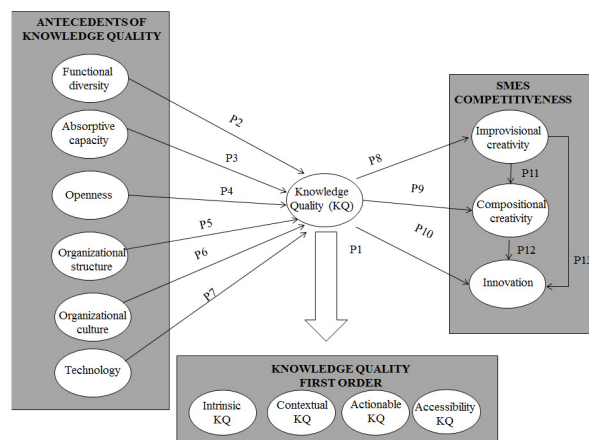


Fig. 1: Conceptual framework

High level of KQ leads to a competitive SME. The framework suggests that SMEs with high KQ are characterized by functional diversity, absorptive

capacity, openness/knowledge network, culture, structure, and technology.

4.1 Theoretical and Practical Contributions

From a theoretical point of view, this paper has proposed an enhanced definition of SMEs' competitiveness. This covers improvisational and compositional creativity and innovation.

Further, KQ is proposed to contribute to competitiveness. KQ comprises intrinsic, contextual, actionable and accessibility KQ. While prior researches have given significant attention to intrinsic, contextual and actionable knowledge, this research has added another dimension of KQ (accessibility KQ).

This research is different from other researches on KQ in that it has examined potential antecedents of KQ. Functional diversity, absorptive capacity, openness, lean structure, friendly organizational culture, and technology utilization are proposed as antecedents of KQ. This brought about a conceptual framework of KQ, its antecedents and impacts.

From a practical stand-point, entrepreneurs and SMEs business owners may use this framework to relate their competitiveness to KQ and its antecedents. The framework may provide a starting point to explain the characteristics of competitiveness, reflect on KQ and clarify antecedents of KQ.

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