Towards a Multi-Dimensional Model of Digital Competence in Small- and Medium-Sized Enterprises

Dragos Vieru
Distance Learning University of Quebec (TELUQ), Canada

INTRODUCTION

To be competitive, small and medium-sized enterprises (SMEs) need to develop new business strategies involving the utilization of e-business enabling information technologies (IT) (Ferrari, 2012). It has been shown that the ability of small businesses to innovate will depend heavily on investments made in IT platforms, the success of which, in turn, depends on workers having the appropriate skills (Ifinedo, 2011). Investments in IT are particularly crucial for an SME owner, partly because of their scale and duration but also because of their potentially important impacts on firm competitiveness. It would therefore appear that such competetiveness could help the SMEs to successfully compete against larger firms and raise the potential of e-business.

While some SMEs have effectively engaged in Internet-based business (Dibrell et al., 2008), others have been not that keen to integrate e-business enabling technologies in their organizational structures (Brown & Lockett, 2004; Ashurst et al., 2011). The literature suggests that SMEs in general, have reduced human and financial resources (Bridge et al., 1998; Bengtsson et al., 2007) and are therefore likely to be less ready to change their business strategies. The ability to align business strategies with existing technical skills was found to have a significant impact on the level of IT adoption in a SME environment (Fillis & Wagner, 2005). Effective SME participation in the new digital marketplace will involve ongoing up-skilling and training. On one hand, SMEs need to adopt e-business strategies to keep up with the economy. On the other hand, they lack the human resources with appropriate digital competencies. But, how do SMEs' managers know what digital skills they need for their workers? The lack of a precise understanding of what IT-related skills are represents a significant challenge in determining if SMEs have the skills and competencies required for the digital economy (Ashurst et al., 2011). This raises questions in regard to:

How to assess digital competence in the SME context? Whether or not there is a framework for digital competence evaluation in an organizational context?

The purpose of this article is three-folded: to identify through a literature review the key dimensions of the concept of *digital competence* (DC) in terms of the knowledge, skills and attitudes needed for firms to be digitally competent; to advance a conceptual model for digital competence assessment in SMEs; and to propose a research agenda for assessing the conceptual model in an SME context.

BACKGROUND

Competence has been conceptualized as an umbrella-type of notion wrapping almost every attribute that might influence performance (Bassellier et al., 2001). In the context of a 21st century digitized society, digital competence represents a "set of knowledge, skills, attitudes (thus including abilities, strategies, values and awareness) that are required when using IT and digital media to perform tasks, solve problems, communicate, manage information, collaborate; create and share content, and build knowledge effectively, efficiently, appropriately, critically, creatively, autonomously, flexibly, ethically, reflectively for work, leisure, participation, learning, socializing, consuming, and empowerment" (Ferrari, 2012, p.3). This long and detailed definition reveals that digital competence

covers more than the plain know-how and technical skills, by including confidence and a critical way of thinking as well.

Both academic and practitioner literatures on digital competence present three main preoccupations: how to define, how to measure it and how to develop digital competence. Various definitions of digital competence reflect differences based on the context of assessment and the particular concept used, e.g. digital literacy, e-skills, IT skills, IT competence, information literacy, media literacy. This approach has resulted in a 'jargon jungle' (Ferrari, 2012). All these conceptualizations have one commonality: they all portray digital competence as a multi-faceted concept that exists at the convergence of multiple disciplines: media studies, education, information sciences, information systems (IS), and communication studies. Extant conceptual frameworks for the development of digital competence show that while some of these frameworks tend to emphasize the practical and technical aspects of using IT, several others suggest that developing digital necessitates a focus on the acquisition of higher order thinking skills (Ferrari, 2012).

The IS literature suggests that IT skills and the capacity to combine them with business opportunity represents "critical assets and need to be acquired, developed and nurtured appropriately" (Lee, 2001, p.xiv). The IS studies on digital competence focus either on IT competence for business managers (e.g., Bassellier et al., 2001; Bassellier & Benbasat, 2004) or on a general IT user competence (e.g., Marcolin et al., 2000; Jasperson et al., 2005). In the former approach, Bassellier et al. (2001) suggest that in order to become IT competent, business managers need to develop a knowledge- and experience-based tridimensional IT competence: competence as a skill, competence as a personality trait, and competence as knowledge. In the latter approach, researchers suggest that understanding IT user competence is important for organizations that need to be able to capitalize on the benefits in IT investments (Jasperson et al., 2005). In this vein, IT user competence has been defined as being "the user's potential to apply technology to its fullest possible extent so as to maximize performance of specific job tasks" (Marcolin et al., 2000, p. 38) or as being able to "correctly exploit the appropriate capabilities of software in the most relevant circumstances" (Boudreau, 2003, p. 236).

Much of the research in IS in the last several decades has focused on identifying the technical skills required for improving the performance of business managers (Bassellier et al., 2001), the knowledge and skill requirements for programmers, systems analysts, and IT managers (Todd et al., 1995) or on assessing IT professionals' personality characteristics such as trustworthiness and credibility (Bashein & Markus, 1997). In the context of SME, the IS literature provides evidence that different levels of IT competence in the organizations studied are related to different levels of accumulated individual IT skills, knowledge and competence in the organization. In particular the development of internal IT skills combined with management's knowledge and attitudes towards IT adoption and use create the competences required to achieve higher levels of success with IT use in SMEs (Dibrell et al., 2008).

In sum, current research and practice in the field of digital competence provides a myriad of different conceptualizations of digital competence and reveals a scattered image that falls short of providing the clarity needed by scholars and managers alike to understand the multi-faced nature of this concept. Considering this gap in the literature, this article aims to propose a more encompassing conceptualization of digital competence in general and in SME context in particular. This conceptualization will be more reflecting the reality of users. More precisely, three key competence domains, i.e. technological, cognitive and social as well as three underlying dimensions, i.e. skill (know-how), knowledge (know-what) and attitude (know-why) will be assembled in a theoretical framework.

DIGITAL COMPETENCE

A Confusing Concept

There is a wide agreement among researchers that different types of literacies related to Information Technology (IT) or Information Systems (IS), all converge to the concept of *digital literacy* (Martin, 2006). This might explain why there is a variety of terms used to refer to this concept (i.e., Computer/IT Literacy, Information Literacy, Media Literacy, just to mention some of the most common used terms).

9 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage: www.igi-global.com/chapter/towards-a-multi-dimensional-model-of-digital-competence-in-small--and-medium-sized-enterprises/113134

Related Content

Improving Health Care Management Through the Use of Dynamic Simulation Modeling and Health Information Systems
Daniel Goldsmithand Michael Siegel (2012). *International Journal of Information Technologies and Systems Approach (pp. 19-36).*
www.irma-international.org/article/improving-health-care-management-through/62026

Young People, Civic Participation, and the Internet
Fadi Hirzallaand Shakuntala Banaji (2018). *Encyclopedia of Information Science and Technology, Fourth Edition (pp. 3667-3676).*
www.irma-international.org/chapter/young-people-civic-participation-and-the-internet/184075

Cognitive Approaches for Intelligent Networks
T.R. Gopalakrishnan Nair (2015). *Encyclopedia of Information Science and Technology, Third Edition (pp. 122-132).*
www.irma-international.org/chapter/cognitive-approaches-for-intelligent-networks/112322

Rural Intelligent Public Transportation System Design: Applying the Design for Re-Engineering of Transportation eCommerce System in Iran
Leila Esmaeiliand Seyyed AliReza Hashemi G. (2015). *International Journal of Information Technologies and Systems Approach (pp. 1-27).*
www.irma-international.org/article/rural-intelligent-public-transportation-system-design/125626

Measuring Shared Mental Models in Unmanned Aircraft Systems
Rosemarie Reynolds, Alex J. Mirotand Prince D. Nudze (2015). *Encyclopedia of Information Science and Technology, Third Edition (pp. 1188-1196).*
www.irma-international.org/chapter/measuring-shared-mental-models-in-unmanned-aircraft-systems/112515