

Chapter 19

Competency Framework for the Fourth Industrial Revolution

Mustafa Kemal Topcu

 <https://orcid.org/0000-0002-3298-1283>

ST Strategy and Technology Development LLC, Turkey

ABSTRACT

Today's business environment is described with volatility, uncertainty, complexity, and ambiguity. In order for organizations to survive in the fourth industrial revolution characterized by continuously changing resulted from digital transformation and technological development, it is critical to identify a vision, to attract qualified human resources, to motivate them, to allocate resources to complete the mission, and to speed activities up to achieve the desired end state. It is of great significance to analyze the organization and create a competency framework to harbor all relevant steps to move the organization further. Therefore, this study aims at drawing attention to competency framework for the Industry 4.0 environment. There is no doubt that a standard competency framework for the fourth revolution may not be proposed. However, as a starting point, a generalized competency framework is proposed as a sample for further conceptual and empirical studies.

INTRODUCTION

Competency as a concept was first introduced by White (1959) in the United States of America to describe attributes leading to high performance and motivation of employees. According to the researcher, competency is interaction of an individual with the work environment. By supporting the researcher with empirical studies, McClelland (1973, 1998) developed competency measurement model still in use. Inadequacy of psychometric scales to measure individual performance and that of using job descriptions to manage performance result in employing competency models (PAHRODF, 2017). Nonetheless, as Barrett and Depinet (1991) state, there is not enough evidence that McClelland's model produces useful results. On the other hand, the model became more common by 1990s after the efforts of Boyatzis (Rothwell & Lindholm, 1999; Cardy & Selvarajan, 2006). To this end, competencies are considered untrivial factor for sustainable competitive advantage of the organizations (Campbell & Sommers Luchs,

DOI: 10.4018/978-1-7998-8548-1.ch019

1997; Nadler & Tushman, 1999). Thus, we may describe competence as a concept introducing a holistic approach to use workforce, knowledge, and technology effectively and interactively. Likewise, job-based learning urges organizations to analyse, plan, and conduct human capital of the organizations with a better understanding of competencies. In short, competency may be defined as everything to achieve better results in efficiency, effectiveness, and productivity. So, competency is the total of the factors that distinguish the best from the rest at a given work environment (Monk, 2001, p. 47). However, there are some studies identifying competency as a skill or an ability (for instance; Boyatzis & Sala, 2004). To this end, we may contend that competency comprises behaviours, attitudes, and knowledge providing reliable high performance. And we may widely describe competency as a guiding tool including knowledge, abilities, personal attributes, and behaviours contributing to achieving strategic goals of the company (Gangani et al., 2006; Dessler, 2007; Petersen et al., 2011).

Accordingly, competency based human resources management is fed by individual differences, industrial psychology, leadership researches, and job analyses. Besides, contemporary work environment is much more different than the past and is ever changing faster than expected. The fourth industrial revolution is organization of life cycle of a product from customer requirements through recycling following delivery to the end user (Prifti et al., 2017). The aim of the fourth industrial revolution is efficient, flexible, and customized production by means of digitally decentralized controls, self-organized supply chains, and fully automated factories by real-time and sensor technologies (Kagermann et al., 2013; Gebhardt et al., 2015). Therefore, the workforce is anticipated to comprehend the processes, connection along the networks, digitalization, and data collection and utilisation (Ras et al., 2017). By digital transformation and technological development, business environment is continuously changing leading to changes in competencies business world would like to employ. As Longo and his colleagues (2017) state, employees are required to be more flexible and to display adaptive capabilities in this dynamic working environment. The tasks they work on are getting less routine and ask for continuous knowledge and skills development (Ras et al., 2017).

Rapid changes in technology, globalization, and environment require business world adapt to changes to sustain in the VUCA environment. Today's business competitive environment is described with the acronym "VUCA", stands for volatility, uncertainty, complex, and ambiguity. The changing environment urges companies to use resources efficiently, become decentralized and less bureaucratic, decide and act rapidly, produce more qualified products, speed up innovations, deliver better service, and make use of employees to adapt to the (Brockbank et al., 2003). To this end, efficient and effective use of organizational resources may result in facilitating the adaptation of the firms to VUCA environment. It is renowned that human resources are one of the factors that provide organizations sustainable competitive advantage. Hence, competencies as well as other factors are to be well described to employ and develop qualified workforce. Therefore, this study aims at drawing attention to competency framework for the Industry 4.0 environment. Literature on competency models regarding the fourth industrial revolution is scarce (Prifti et al., 2017). Although the research on the fourth revolution itself recalls the change in the workplace, no models are recommended regarding human resources management. Similarly studies on competency modelling in the literature lack a universal understanding of competency framework and relation with organizational strategies and policies (Vraniak et al., 2017). Thus, the study contributes to the literature by a methodology proposal for competency framework oriented through the future's workplace. Within this context, the rest of the study is as follows; after defining competency as a concept, types of competencies are given, and competency framework is discussed. Consequently, a methodology is proposed to prepare competency framework for future workplaces in the fourth industrial revolution.

19 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/competency-framework-for-the-fourth-industrial-revolution/276827

Related Content

Performance Analysis of Cloud Systems with Load Dependent Virtual Machine Activation and Sleep Modes

Sudhansu Shekhar Patra and Veena Goswami (2018). *International Journal of Applied Industrial Engineering* (pp. 1-20).

www.irma-international.org/article/performance-analysis-of-cloud-systems-with-load-dependent-virtual-machine-activation-and-sleep-modes/209377

Industry 4.0 in Cultural Industry: A Review on Digital Visualization for VR and AR Applications

Antonios Kargas and Dimitrios Varoutas (2021). *Research Anthology on Cross-Industry Challenges of Industry 4.0* (pp. 1379-1396).

www.irma-international.org/chapter/industry-40-in-cultural-industry/276880

Economic Load Dispatch Using Linear Programming: A Comparative Study

Ahmad A. Al-Subhi and Hesham K. Alfares (2016). *International Journal of Applied Industrial Engineering* (pp. 16-36).

www.irma-international.org/article/economic-load-dispatch-using-linear-programming/159083

An Empirical Study on Adoption of ERP on IT and Non-IT Companies in Odisha

Monalisha Patel (2018). *International Journal of Applied Industrial Engineering* (pp. 58-67).

www.irma-international.org/article/an-empirical-study-on-adoption-of-erp-on-it-and-non-it-companies-in-odisha/209381

Employer's Role Performance Towards Employees' Satisfaction: A Study of SME Industry 4.0 in Malaysia

Siti Noorjannah Abd Halim and Siti Noorhaslina Abd Halim (2021). *Research Anthology on Cross-Industry Challenges of Industry 4.0* (pp. 1721-1735).

www.irma-international.org/chapter/employers-role-performance-towards-employees-satisfaction/276899