

SCIENTIFIC REVIEW

Competence-Based Strategies for Enhancing Organizational Resilience in Virtual Environments

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ABSTRACT

In the era of digitalization and globalization, virtual teams have become an essential organizational form for ensuring adaptability and resilience in dynamic markets. Competencies of team members—particularly in information and communication technologies (ICT)—represent a critical factor in strengthening organizational resilience and sustaining competitive advantage. This paper explores how competence development in virtual teams contributes to resilience by enabling organizations to quickly adapt to disruptions, maintain operational continuity, and innovate under uncertainty. Drawing on the resource-based view (RBV), the study emphasizes the integration of human capital, ICT knowledge, and experiential learning as foundations for resilient and high-performing virtual organizations in a rapidly changing environment.

Keywords: Virtual teams, Competencies, ICT, Resource-based theory, Organizational resilience

JEL classification: M54, M10, J24

INTRODUCTION

In today's dynamic and uncertain business environment, the development of employee competencies plays a critical role not only in achieving operational efficiency but also in strengthening the resilience of organizations. Organizational resilience refers to the ability of an organization to anticipate, prepare for, respond to, and adapt to incremental changes and sudden disruptions to survive and thrive [3]. Competent and adaptable employees are at the core of resilient organizations, enabling businesses to sustain performance and maintain competitiveness even under unpredictable circumstances.

Competence refers to an individual's ability, verified by a formal document, indicating that the person is qualified to perform a specific occupation. It is important to note that during the process of education and training for a profession, individuals develop their abilities in accordance with the standards of that profession [11]. A highly competent workforce strengthens an organization's capacity for resilience by improving adaptability, innovation, and responsiveness in times of crisis.

THEORETICAL REVIEW

Competence Development Virtual Teams, and Organizational Resilience

The rise of virtual teams has fundamentally reshaped the way modern organizations operate, enabling geographically dispersed members to collaborate across borders and time zones. While

virtual teams offer flexibility and scalability, they also introduce challenges related to communication, coordination, and knowledge sharing. In this context, competence development is critical for fostering organizational resilience, defined as the ability to anticipate, absorb, and adapt to disruptions while maintaining essential operations [9].

Competence development in virtual teams encompasses both general competencies, such as problem-solving, communication, leadership, digital literacy, and learning agility, and specific competencies, including expertise in organizational processes, ICT tools, and task-specific technical knowledge ([2]; [1]). General competencies enable flexibility and adaptability across tasks and roles, allowing employees to navigate uncertainty, collaborate effectively, and respond to unexpected challenges. Specific competencies, in contrast, provide the specialized knowledge and organizational insights necessary for maintaining operational continuity and supporting recovery in volatile environments [3].

Drawing on the resource-based view (RBV), competencies embedded in human capital and organizational knowledge represent valuable, rare, and inimitable resources that form the foundation of resilient virtual organizations [9].

ICT knowledge is particularly crucial, as it allows virtual teams to leverage collaboration tools, data analytics, and knowledge repositories, enabling adaptive decision-making and efficient resource allocation. In parallel, **experiential learning** equips teams to internalize lessons from past disruptions, refine processes, and anticipate future challenges, enhancing both individual and collective resilience ([6]; [5]).

Competence development strengthens resilience in multiple ways. Employees equipped with adaptive problem-solving skills, technological expertise, and organizational knowledge can quickly

reallocate tasks, troubleshoot issues, and reorganize workflows in response to disruptions. This not only ensures operational continuity but also supports innovation under uncertainty, as teams can experiment with new solutions, adopt emerging technologies, and implement creative strategies to enhance performance. Furthermore, integrating general and specific competencies within virtual teams fosters a learning-oriented culture, encouraging continuous improvement, knowledge sharing, and the development of dynamic capabilities that allow organizations to sense environmental changes, seize opportunities, and reconfigure resources efficiently.

For practice, this theoretical framework suggests that organizations should invest in targeted training programs, focusing on digital literacy, remote collaboration, problem-solving, and leadership skills, while also cultivating organization-specific knowledge, process expertise, and crisis management strategies. Combining these approaches enables virtual teams to not only respond to change but also proactively leverage disruptions as opportunities for growth, thereby maintaining competitiveness and sustainability in rapidly changing environments.

Competency Categories Supporting Resilience

A large number of competencies can be classified into two categories (Table 1):

- General competencies that can be successfully applied to a wide range of tasks, enhancing workforce flexibility and adaptability during organizational changes or disruptions; These general competencies enhance organizational resilience by enabling the workforce to respond to a wide variety of changes, from minor process adjustments to major market disruptions.
- Specific knowledge, skills, or strategies adapted for a

particular organization, requiring specialized adjustment to support continuity and operational recovery in volatile environments. Specific competencies are critical for organizational resilience, as they allow employees to maintain operational continuity and rapidly recover from disruptions, leveraging knowledge that is often tacit and context-dependent.

Table 1. Competency Type

Competency Type	Definition	Examples	Role in Organizational Resilience
General competencies	Transfereble skills applicable across tasks, roles and contexts	<ul style="list-style-type: none"> - Problem solving & critical thinking - Communication & interpersonal skills - Leadership & decision making - Digital literacy & technology adaptability - Learning agility & continuous learning 	<ul style="list-style-type: none"> - Enable workforce flexibility and adaptability - Allow employees to respond effectively to unexpected changes - Support cross - functional collaboration during disruptions
Specific competencies	Specialized knowledge, skills or strategies tailored to particular organization or operational context	<ul style="list-style-type: none"> - Technical expertise in company specific systems - Organizational knowledge (policies, workflows, stakeholder networks) - Process optimization 	<ul style="list-style-type: none"> - Maintain operational continuity during disruptions - Enable rapid recovery and problem resolution - Support precies, context dependent decision-making

Source: Author s

The competencies essential for thriving in the digital workplace, particularly within virtual teams and digital entrepreneurship. In line with this, Radović-Marković [7], emphasizes the integration of

digital literacy, adaptability, and collaborative skills as foundational elements for success in the digital economy. Effective collaboration and communication are essential, especially in virtual teams and remote work environments. These skills facilitate teamwork and the sharing of ideas and information. [8]. Moreover, it is particularly emphasized importance of collaboration competencies within social networks for assembling competent virtual teams. In her recent research Radović-Marković [10], examines how competency-based education (CBE) aligns with job success in the digital economy.

A resilient workforce requires both types of competencies: general competencies provide the flexibility to navigate change, while specific competencies ensure continuity and effective recovery in volatile or complex environments (Figure 1)

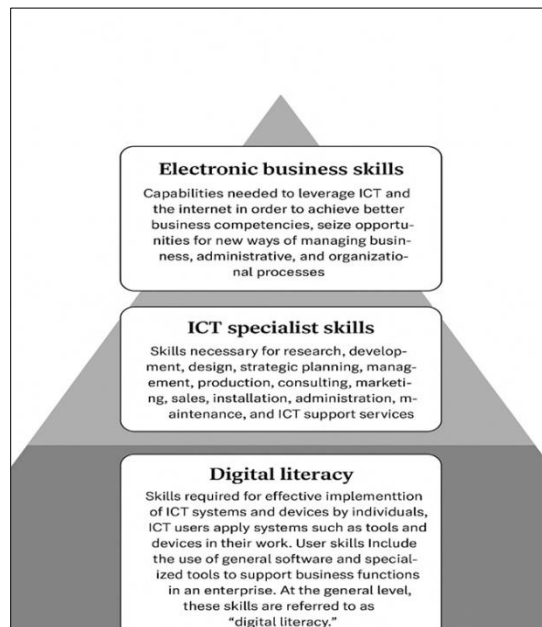


Fig. 1 Pyramid of ICT Skills of the European Union

Source: Author

The choice of product, process, or market innovations is often determined by the market in which the company operates, but it is closely linked to the role of managers and their influence on the company's innovation strategy.

Managerial ICT Competencies, Innovation, and Resilience in Business

Managerial information technology (IT) competencies encompass technology, engineering, management, intellectual capacity, and continuous learning. Creative managers increasingly leverage technology-supported tools to anticipate business changes rather than merely reacting to them. To fully realize this potential, enterprises must develop both managerial capabilities and an environment that fosters lifelong learning, allowing IT tools to enhance innovative capacity ([2]; [1]).

The linkage between ICT resources and business processes can be conceptualized in three phases: readiness, which involves preparing technical, commercial, and social infrastructures for ICT initiatives; intensity, reflecting the extent and nature of ICT or e-commerce use; and impact, capturing behavioral changes, outcomes, costs, benefits, and added value generated by ICT applications. Evidence from Europe shows that employees with IT education adopt new technologies faster, creating a comparative advantage for firms and reducing barriers for SMEs entering new markets. Greater ICT adoption also drives productivity, profitability, and workforce engagement, fostering competitiveness.

ICT operates within the broader information technology and telecommunications sector, intersecting with other information-related sectors to form the information society, where overlapping activities collectively influence firm performance. The European Union's strategic initiatives—including the Digital Agenda,

Innovation Europe, New Skills and Jobs programs, and industrial ICT policies—highlight the importance of ICT investment in enhancing organizational capabilities [6]. These investments support collaborative innovation, improve capital productivity, and enhance quality, with the number of intensive ICT users steadily increasing. Teams composed of skilled specialists create a strong combination of expertise and innovation, which increases both the efficiency and the success of the process [4].

Importantly, integrating ICT competencies and innovation into managerial practice strengthens organizational resilience, enabling firms to adapt to dynamic and uncertain environments. Drawing on insights from Radović-Marković [9] and [3], resilient organizations leverage technological and human capital to anticipate disruptions, maintain operational continuity, and sustain innovation. By embedding ICT, innovation, and resilience into managerial frameworks, firms enhance their ability to respond to market changes, exploit opportunities, and maintain competitive advantage.

CONCLUSION

In the era of digitalization and globalization, virtual teams are increasingly central to organizational success, providing the flexibility and responsiveness necessary to navigate complex and dynamic markets. This paper highlights that the competencies of virtual team members, particularly in information and communication technologies (ICT), are pivotal in enhancing organizational resilience. Competence development enables organizations to adapt rapidly to disruptions, maintain operational continuity, and innovate under uncertainty, thereby sustaining competitive advantage.

Drawing on the resource-based view (RBV), the analysis underscores that resilience is not merely a reactive capacity but a



strategic asset rooted in the integration of human capital, ICT knowledge, and experiential learning. Organizations that actively cultivate these competencies within virtual teams are better positioned to anticipate change, leverage digital tools effectively, and transform challenges into opportunities.

Ultimately, this research demonstrates that deliberate investment in competence development within virtual teams strengthens the adaptive and innovative capabilities of organizations. By fostering a culture of continuous learning and technological proficiency, firms can build sustainable resilience, ensuring high performance and long-term competitiveness in an increasingly digital and unpredictable global environment.

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