

Human Capital in the Innovative Performance

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The relationship between human capital and innovative performance in service companies has been studied in countries with fast-growing economies and knowledge-intensive companies. The variable training in innovation activities is positively related to service innovation, but not to process innovation, because service innovation requires a greater development of skills and abilities than process innovation in these activities.

human capital

innovative performance

training

specialized personnel

1. Introduction

Innovation is a driver of a country's economic development ([Aleknavičiūtė et al. 2016](#); [Pejić Bach et al. 2015](#)). In developed countries, human capital is the most important source of innovative performance in companies ([Aleknavičiūtė et al. 2016](#)). In developing countries, many companies have low innovation capacity and as a result have a low level of competitiveness ([Pejić Bach et al. 2015](#)), due to low investment in research and development and several internal barriers in companies such as the lack of qualified personnel ([Zanello et al. 2016](#)).

Innovation in service companies has had less interest in specialized literature than manufacturing or product innovation ([Gopalakrishnan et al. 1999](#)). Innovation in service companies represents a strategic advantage ([Prajogo and Oke 2016](#); [Storey and Kahn 2010](#)) and sustained growth for these companies ([Tadic et al. 2015](#)). Service companies require human capital for innovation, that is, to develop skills and abilities in staff ([Storey and Kahn 2010](#)). The evidence of the relationship between human capital and innovative performance in service companies is concentrated in knowledge-intensive companies ([Doloreux and Frigon 2020](#); [Figueiredo et al. 2019](#))

There is a strong expansion in knowledge-intensive service companies that are considered essential for the development of economies because they contribute to the generation of employment and wealth ([Miles et al. 2018](#)), so it is important to know how service companies innovate and examine these companies regarding the relationship between human capital and innovative performance.

Human capital is considered a part of the intellectual capital of a company, including knowledge, skills, know-how, education, and learning capacity ([Aleknavičiūtė et al. 2016](#)). Human capital is formed by education ([Carter 1989](#); [González et al. 2016](#)), training ([Chatterjee 2017](#); [Hewitt-Dundas 2006](#)), and experience at work, especially in previous R&D processes ([Allameh 2018](#); [González et al. 2016](#)). Its main purpose is to create innovation in companies through generating new ideas, and creating and improving products and services ([Agostini et al. 2017](#)).

The relationship between human capital variables and innovative performance has been studied in fast-growing economies ([Ma et al. 2019](#)) and in companies with complex knowledge ([Buenechea-Elberdin et al. 2018](#)) and knowledge-intensive service companies ([Doloreux and Frigon 2020](#)), but there are few studies in other contexts, such as companies in developing countries that have less qualified workers and service companies handle less complexity of knowledge, so it is not known in these other contexts if the variables of human capital are related to the innovative performance of companies. Little is known yet about how human capital or the skills and abilities acquired by workers affect innovative performance in service companies ([Chowhan 2016](#); [Nieves and Quintana 2018](#)), and there is a gap in the literature on the relationship between human capital and innovative performance ([Van Uden et al. 2017](#)).

2. Innovation as a Source of Entrepreneurship, Competitiveness and Strategy

The resource-based view of firms considers innovation as a result of the resources and capabilities available to the company ([Barney 1991](#); [Penrose 1959](#); [Wernerfelt 1984](#)). In this theory, knowledge is considered the main resource for innovation ([Grant 1996](#)). In the open innovation paradigm, knowledge in the company for innovation may be limited, so they seek to increase knowledge by acquiring external knowledge through links with other market players ([Bogers et al. 2018](#)), but the company requires an absorption capacity that allows internalizing the external knowledge that reaches the company as a result of interactions with other companies and organizations ([Cohen and Levinthal 1990](#); [Laursen and Salter 2006](#)). In service companies, there is a relationship between human capital and the absorptive capacity of the company in such a way that the more human capital the company has, the greater its capacity to absorb external knowledge or assimilate new knowledge in the company ([Doloreux and Frigon 2020](#)). Absorptive capacity is a determining factor for innovation in developing countries ([Pekovic et al. 2015](#)).

Human capital has been widely recognized as a driver of business innovation ([Jones and Grimshaw 2012](#)). The main elements of human capital are knowledge, skills, know-how, education, and learning capacity ([Aleknavičiūtė et al. 2016](#)). Human capital is formed by education, training, willingness to change at work, and job satisfaction, and is composed of tangible and intangible resources, all of which lead to the competitive advantage of companies ([McGuirk et al. 2015](#)). Human capital is considered a part of the intellectual capital of a company, and although the benefits of human capital are not visible, knowledge is the main factor of human capital ([Aleknavičiūtė et al. 2016](#)).

Knowledge-based human resource management methods with a mediatory role of human capital impact the innovative performance, including those practices purposefully designed to enhance knowledge processes within an organization. ([Shahtaheri and Teymournejad 2020](#)). Ethical leadership with the mediating role of human capital impacts the innovative performance of companies, because it encourages ideas for staff innovation ([Ullah et al. 2021](#)). Human resource management can increase the human capital of organizations by managing to share the tacit knowledge that employees have ([Oliveira et al. 2021](#)), and knowledge-based human resource management increases the intellectual capital of the company, and this is the innovative performance of companies ([Kianto et al. 2017](#)).

The main purpose of human capital is to create innovation in companies through generating new ideas, and creating and improving products and services ([Agostini et al. 2017](#)). Human capital specifically in service companies has the ability to create new knowledge and lead to innovation and competitive advantage ([Prajogo and Oke 2016](#)). Innovation is achieved by using the skills and abilities of staff to generate new knowledge or new uses of knowledge or combine knowledge to achieve innovation ([Rupietta and Backes-Gellner 2019](#)). Innovation can also be increased by the company's human capital through the role of social capital, which leads to more prudent and sustainable innovative organizations ([Samad 2020](#)).

Empirical evidence in the literature indicates that human capital has a greater impact on innovative performance in companies in fast-growing economies ([Ma et al. 2019](#)) and in companies that manage complex knowledge ([Buenechea-Elberdin et al. 2018](#)) and knowledge-intensive service companies or those that provide sophisticated knowledge-based services ([Doloreux and Frigon 2020](#)) because the workers represent the company's R&D capabilities, practical knowledge, experience, and know-how ([Ma and Yu 2021](#)). However, a critical portion of the knowledge required for service innovation comes from the knowledge of workers and is created outside of formal R&D activities ([Capozza and Divella 2019](#)), such as the customer relationship network or at the points of contact between customers and employees ([O'Cass and Wetzel 2018](#)).

There are differences between service innovation and manufacturing innovation: Service innovation companies sometimes have a lower level of R&D intensity ([Durst et al. 2015](#)), so in these companies, the knowledge of the workers and the links with other companies and organizations have an important role to acquire external knowledge, since knowledge and innovative ideas can come from different sources and arise from their daily activities or from employees, internal R&D, and from other external sources such as customers, suppliers, service providers, and universities ([Zieba et al. 2017](#)). Service innovation can also come from co-creation processes with other actors, mainly customers and suppliers ([Hidalgo and Herrera 2020](#)).

The literature on service innovation, although it has been increasing in recent years, is still scarce, but it recognizes that services are intangible and sometimes personalized to the needs of the client, which is why service innovation is different, so service companies do not always carry out R&D to innovate, but they do need to increase knowledge to innovate ([Durst et al.](#)

[2015](#)), so these companies have different ways in which they achieve knowledge for co-creation and transfer of knowledge for innovation between service companies ([Figueiredo et al. 2019](#)). Therefore, further studies on service innovation are required ([Durst et al. 2015](#)).

Despite the little empirical evidence on the relationship of the human capital variables examined in this research with innovative performance in service companies, little is known about how human capital, or the skills and abilities acquired by workers affect the innovative performance in service companies ([Chowhan 2016](#); [Nieves and Quintana 2018](#)) so there is a gap in the literature on the relationship between human capital and innovative performance ([Van Uden et al. 2017](#)).

The variables of human capital are related to the stock of knowledge, quality of knowledge, and development of human capital, so the variable of the knowledge stock can be measured by the total number of workers available to the company since it represents the stock of knowledge for innovation and includes the key workers in the knowledge regarding human capital in the company and can lead to innovation ([Mariz-Pérez et al. 2012](#); [Sánchez Muñoz et al. 2014](#)).

Human capital contributes with knowledge, skills, and know-how ([Aleknavičiūtė et al. 2016](#)), and increases the absorptive capacity of the company ([González et al. 2016](#)), which is a capacity to absorb external knowledge acquired by the company through links with other companies and organizations. Innovation comes from finding new knowledge or new uses for knowledge for which human skills are used ([Rupietta and Backes-Gellner 2019](#)) and represents the previous experiences ([González et al. 2016](#)).

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