

Building Innovation Capability Through Entrepreneurship: Evidence from Universities of Applied Sciences

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Abstract: This study examines how entrepreneurship promotion within universities influences organizational-level innovation capability. Innovation capability is defined as an institution's capacity to foster innovation through the effective use of knowledge, resources, and collaboration, resulting in outcomes such as new products, processes, systems, research outputs, and innovative teaching methods (Lawson & Samson, 2001; Bartoloni et al., 2021). Rather than focusing on individual or team-level innovation, the study investigates how university staff perceive their institution's overall ability to innovate. The study is grounded in the entrepreneurial university framework, which highlights universities' evolving role as active contributors to innovation, economic development, and societal change (Clark, 1998; Etzkowitz, 2003). Building on prior research on organizational innovation capability (Lawson & Samson, 2001; Hero et al., 2017), this study addresses calls for a deeper understanding of its determinants in higher education contexts (Mendoza-Silva, 2021). Empirically, the study focuses on two organizational drivers of innovation capability: perceived management support for entrepreneurship and institutional support for student entrepreneurship. These dimensions reflect both strategic leadership and the entrepreneurial culture embedded in university structures and practices. Data were collected from two Finnish universities of applied sciences between November 2024 and January 2025, yielding responses from 134 staff members, including teaching and RDI personnel across disciplines. Organizational-level innovation capability, management support, and support for student entrepreneurship were measured using validated multi-item scales. Linear regression analysis was conducted, with the university included as a control variable. The results show that the model explains 56.2% of the variance in perceived innovation capability. Both management support for entrepreneurship and support for student entrepreneurship are positively and significantly associated with organizational-level innovation capability, with management support emerging as the strongest predictor. The control variable indicates some institutional differences, while the overall pattern of relationships is consistent across both universities. The findings contribute to research on entrepreneurial universities by demonstrating that innovation capability is embedded in organizational leadership and culture rather than solely in individual initiatives. Practically, the study highlights the importance of integrating entrepreneurship into institutional strategies and support structures to enhance universities' long-term competitiveness, relevance, and societal impact.

Keywords: Innovation Capability, Entrepreneurship Promotion, Management Support

1. Introduction

Universities of applied sciences (UAS) play a key role in regional innovation ecosystems by acting as interfaces between education, research, and industry, thereby fostering collaboration, entrepreneurship, and competitiveness. This role requires staff to possess strong innovation capabilities and entrepreneurial expertise in both education and R&D activities (Virolainen et al., 2024; Hämäläinen et al., 2022; Audretsch and Belitski, 2023). In addition, UAS have a specific responsibility to enhance students' entrepreneurial readiness and innovation capability, which further emphasizes the importance of entrepreneurial competence among educators (Kayyali, 2023; Hämäläinen et al., 2022; Seikkula-Leino and Salomaa, 2020). These expectations highlight the central role of innovation capability (IC), understood as the ability of individuals and organizations to generate and utilize knowledge and resources for innovation (Hero et al., 2017; Lawson and Samson, 2001).

This study is situated within the literature on entrepreneurial universities, which conceptualizes higher education institutions as active contributors to innovation, economic development, and societal change (Etzkowitz and Zhou, 2022). Entrepreneurial universities are characterized by strategic leadership, organizational flexibility, and a culture that supports innovation and entrepreneurship among staff and students (Audretsch and Belitski, 2023; Guerrero et al., 2022; Etzkowitz and Zhou, 2022). However, despite growing research on innovation capability in higher education (Mendoza-Silva, 2021; Schaap et al., 2025; Albulushi, 2024), studies focusing specifically on UAS remain limited.

Addressing this gap, the present study examines how entrepreneurship promotion influences organizational-level innovation capability in UAS. In particular, it focuses on two key factors: perceived management support

for entrepreneurship and institutional support for student entrepreneurship. By analyzing staff perceptions in two Finnish UAS, the study aims to provide insights into how strategic leadership and organizational culture contribute to strengthening innovation capability and, ultimately, institutional competitiveness and societal impact.

2. Theoretical Framework

This study draws on the concept of entrepreneurial universities, which emphasizes the evolving role of higher education institutions as active contributors to innovation, economic development, and societal change (Etzkowitz, 2003; Clark, 1998). In this perspective, universities are no longer seen solely as producers of knowledge but as dynamic actors that engage in entrepreneurial and innovation activities—both internally and in collaboration with external stakeholders. Though organizational innovation capability has been studied from various perspectives, including personal and team abilities to innovate and the utilization of knowledge and resources (Hero et al., 2017; Lawson and Samson, 2001), yet owing to the multifaceted nature of innovation capability, its development in university context requires a deeper understanding of its determinants (Mendoza-Silva, 2021).

The entrepreneurial university framework provides a relevant theoretical lens for understanding how universities can build innovation capability not only through individual or team efforts but also through organization-wide values, structures, and strategies. This approach also recognizes that promoting entrepreneurship is itself an innovation in the context of higher education—requiring internal adoption, cultural change, and strategic prioritization. Key features of an entrepreneurial university include strategic leadership, organizational flexibility, a supportive culture for innovation, and an institutional commitment to fostering entrepreneurship among staff and students. These elements align closely with the present study's focus on how management support and institutional culture contribute to innovation capability at the organizational level. By assessing staff perceptions of leadership's role in promoting entrepreneurship and the institution's support for student entrepreneurship, this study examines how internal drivers of entrepreneurial orientation relate to broader innovation outcomes.

2.1 Innovation Capability and Related Concepts

In research literature, concepts such as innovation, innovation capability, innovation readiness, innovation capacity, and innovation potential have been defined in various ways and are sometimes used interchangeably. Defining innovation capability and its related concepts must begin with an exploration of innovation itself. Innovations can be understood broadly, encompassing product, service, process, operational, system, and social innovations (Mathias et al., 2024). A key aspect of innovation involves creativity and novelty, but ideas alone are insufficient; innovation requires the successful implementation of a creative idea and its practical usefulness (Quintane et al., 2011). Innovation does not always imply radical change but can also be incremental (Zhang, 2022), highlighting its continuous and context-dependent nature. This characterization emphasizes the importance of innovation capability, referring to an organization's or team's ability to transform knowledge, skills, and ideas into new products, processes, and practices (Hero et al., 2017; Mendoza-Silva, 2021). It includes creativity, problem-solving, collaboration, and technical expertise, and is shaped by internal and external factors such as structures, culture, leadership, resources, and networks (Mendoza-Silva, 2021).

A related concept is innovation readiness, which refers to an individual's ability to recognize opportunities, take calculated risks, and engage in creative thinking and problem-solving (Ovbiagbonhia et al., 2019). Innovation capacity, in turn, describes a firm's ability to innovate efficiently and competitively, combining both resources and capabilities (Pierre and Fernandez, 2018). Thus, it can be seen as a broader concept than innovation capability. Another related concept is innovation potential, which refers to the factors enabling an organization's ability to innovate, such as leadership, structures, collaboration, culture, and individual competence (Saunila and Ukko, 2012). This concept has also been applied at regional and national levels (Gladevich, 2023; Lomachynska and Podgorna, 2018).

In this study, we focus on innovation capability to identify key internal factors influencing innovation at the organizational level in universities of applied sciences. While innovation capability has been widely studied, prior research has often focused more on its outcomes than its underlying drivers (Samson et al., 2017). Previous studies show that innovation capability in higher education is built across multiple levels, requiring both individual competencies and organizational support. For example, Schaap et al. (2025) highlight the role of

interactions between individual, network, and organizational levels, while Albulushi (2024) emphasizes the importance of organizational culture and management in sustaining innovation capability..

2.2 Importance of Organization Culture

Organizational culture is a key factor that guides individuals' behavior, thinking, and experiences within an organization. It is formed by shared values, beliefs, and expectations that define what is considered socially acceptable and legitimate behavior (Hayton et al., 2002; Schein, 1984). Organizational culture provides meaning and context, influencing how members of the organization consciously and unconsciously think and make decisions. Thus, organizational culture functions as a collective programming of thought, which is transferred to new members through learning (Schein, 1984).

In a higher education environment, the operational culture affects how teaching staff and students adopt entrepreneurial practices. An organizational culture that promotes entrepreneurship (entrepreneurial culture, EC) encourages staff to be creative, take risks and responsibility, initiate new projects, engage in continuous learning, and learn from mistakes (Hayton and Cacciotti, 2013; Wong, 2014). Such a culture creates the conditions for individuals to behave innovatively and entrepreneurially.

Engzell et al. (2024) and Valka et al. (2020) point out that teachers often operate between different institutional logics, where traditional academic logic meets an organization-level logic that emphasizes entrepreneurship. Organizational structures and processes influence how initiatives that promote entrepreneurship and innovation are implemented. A low degree of formality and management's trust in staff promote entrepreneurship, whereas high formality and hierarchy may limit the organization's ability to act flexibly and innovatively (Valka et al., 2020). Teachers and other professionals working in innovative higher education institutions are more likely to take calculated risks and engage in creative activities (Albulushi, 2024). Therefore, the organizational culture forms the foundation for organization members' innovativeness and the promotion of entrepreneurship.

Furthermore, the organizational culture of a higher education institution has been found to directly influence how students perceive entrepreneurship as an opportunity and how likely they are to engage in entrepreneurial activities. Hero et al. (2017) emphasize that cultural and collaborative factors in the learning environment are central to the development of students' entrepreneurial competencies, supporting the idea that the organizational culture impacts not only staff but also students. For example, Liu and Peng's (2025) study shows that students' entrepreneurial intentions are positively influenced by their attitudes, beliefs, and experiences of environmental support. Particularly, students' identification with their own academic department ("departmental identification") strengthens these relationships, highlighting the importance of cultural support from the academic community in promoting entrepreneurship.

Joensuu-Salo et al. (2020) have explored the relationship between university teachers' innovativeness and risk-taking ability and their use of entrepreneurship teaching methods. The results showed that teachers' innovativeness, including risk-taking abilities, positively influence how actively they foster students' entrepreneurial skills, such as uncertainty tolerance, creativity, responsibility, and anticipation. In addition, as the study of Hämäläinen et al. (2023) indicates, a teacher's own background and entrepreneurial mindset influence how entrepreneurship-promoting activities are carried out in a university of applied sciences. Some teachers have entrepreneurial experience or other specific expertise related to entrepreneurship, which can be a significant asset to the work community in promoting entrepreneurship. Teachers who have been entrepreneurs themselves tend to be somewhat more active promoters of entrepreneurship within their work environment (Hämäläinen et al. 2023). These findings align with the suggestions of Gibb (2012) who highlights that fostering a culture of entrepreneurship within higher education institutions involves cultivating a dynamic, opportunity-oriented organizational environment that supports experimentation and adaptability, thereby enhancing institutional innovation capability.

Hence, we propose the following hypothesis:

H1: An entrepreneurship-supportive organizational culture is positively associated with organizational-level innovation capability.

2.3 The Importance of Management Support in Promoting Entrepreneurship and Innovation Capability

The Ministry of Education and Culture (2017) has published the Entrepreneurship Guidelines for Education with the aim of guiding the promotion of entrepreneurship and entrepreneurial education measures nationally, including within universities of applied sciences. Additionally, the Universities of Applied Sciences Act (351/2003) obligates higher education institutions to cooperate with business and other working life sectors. To fulfill these obligations, entrepreneurship promotion can be institutionally supported through various regulatory systems such as shared strategies, regulations, and objectives (Hämäläinen et al., 2018; Lahikainen et al. 2018). However, even if entrepreneurship is included in the guiding documents of a higher education institution, the goals and objectives of entrepreneurship education are not always clear to teachers (Heinonen and Hytti 2010).

Moreover, teachers' willingness and capability to promote entrepreneurship do not depend solely on the institution's strategies and guidelines but also on other forms of institutional and leadership support. Such support can manifest in the provision of resources such as information, facilities, funding, opportunities for collaboration, personnel, teaching materials, and exemplifying desired behavior (Montecinos et al., 2015; Ruskovaara, Hämäläinen and Pihkala 2016). These elements help staff perform their duties in the desired and productive manner (Yang and Yu 2022; Hardie et al., 2022; Guerrero and Urbano 2012).

The strategy and leadership practices of a higher education institution have been shown to directly influence teachers' attitudes toward entrepreneurship education (Hämäläinen et al. 2022). In other words, when a teacher perceives that the institution's strategies and management practises support the promotion of entrepreneurship, their own attitudes toward entrepreneurship education tend to be more positive. Since the institution's strategies and management support influence both teachers and the organization as well as how entrepreneurship is promoted, they also strengthen the organization's innovation capability.

Hence, we propose the following hypothesis:

H2: Perceived management support for promoting entrepreneurship is positively associated with organizational-level innovation capability.

3. Data and Method

3.1 Data Collection

The data for this study were collected from two universities of applied sciences from Finland (hereafter UAS A and UAS B) between November 2024 and January 2025. The survey invitation was distributed to the entire staff of both institutions, followed by a reminder two weeks later. A total of 74 staff members from UAS A and 60 from UAS B responded, yielding 134 participants overall. The sample included both teaching staff and research, development, and innovation (RDI) personnel from a range of disciplinary fields.

At UAS A, 55% of respondents reported teaching responsibilities, compared to 43% at UAS B; the remaining respondents in both institutions represented RDI personnel. Women constituted 72% of respondents at UAS A and 53% at UAS B. Differences also emerged in disciplinary backgrounds: in UAS A, the largest share of respondents came from social sciences, business, and administration (41%), whereas in UAS B, most respondents represented engineering and transport (45%).

This study examined staff perceptions of organizational-level innovation capability and its relationship to two key predictors: (1) perceived management support for promoting entrepreneurship, and (2) an entrepreneurship-supportive organizational culture, particularly in relation to student entrepreneurship.

3.2 Measures and Analytical Strategy

Organizational Innovation Capability. Innovation capability was measured with six items adapted from Hurtado-Palomino et al. (2022) and modified for the higher education context. Respondents rated each item on a seven-point Likert scale (1 = strongly disagree, 7 = strongly agree). The construct demonstrated strong reliability (AVE = .70, CR = .93, factor loadings .79–.87; see Table 1).

Entrepreneurship-Supportive Organizational Culture. This construct was measured with three items adapted from Bergmann et al. (2018), focusing on the extent to which the institution fosters student entrepreneurship. Reliability was excellent (AVE = .88, CR = .96, factor loadings .91–.97; see Table 1).

Management Support for Promoting Entrepreneurship. Perceived management support was assessed with three items derived from a previously validated survey for UAS teachers (Joensuu-Salo et al., 2023). Respondents evaluated institutional strategies, top management, and their immediate supervisor with respect to entrepreneurship promotion. Reliability was high (AVE = .80, CR = .92, factor loadings .84–.98; see Table 1).

Table 1: Measurement items, factor loadings, AVE, and CR

Construct & Item	Factor Loading	AVE	CR
Organizational Innovation Capability		.70	.93
Our institution effectively uses information from multiple sources to improve operations.	.855		
Our institution quickly adapts to changes in the operating environment in developing its activities.	.873		
Employees are encouraged to generate new ideas.	.826		
Our institution actively makes use of new ideas from stakeholders.	.827		
Collaboration across different fields of education works well in our institution.	.789		
Internal practices for open knowledge sharing between teams are developed in our institution.	.852		
Entrepreneurship-Supportive Organizational Culture		.88	.96
Our institution's culture encourages students to develop new business ideas.	.940		
Our institution's culture supports students in becoming entrepreneurs.	.968		
Our institution's culture encourages participation in entrepreneurship-related activities.	.908		
Management Support for Promoting Entrepreneurship		.80	.92
Our institution's strategies support the promotion of entrepreneurship in my work.	.851		
The top management of our institution supports the promotion of entrepreneurship in my work.	.978		
My immediate supervisor supports the promotion of entrepreneurship in my work.	.844		
<i>Note.</i> AVE = Average Variance Extracted; CR = Composite Reliability			

The university of applied sciences (UAS A vs. UAS B) was included as a control variable. Linear regression analysis was employed, and all assumptions were met: residuals followed a normal distribution, no significant autocorrelation was detected, variance of errors was approximately constant (homoscedasticity), and multicollinearity remained at an acceptable level (VIFs 1.3–1.4) (Hilbe, 2009; Menard, 2010). Scatterplots suggested linear relationships between the predictors and the outcome, while diagnostic tests (e.g., Shapiro–Wilk, Durbin–Watson, Cook's distance) confirmed the robustness of the model.

4. Results

The regression model explained a substantial proportion of the variance in organizational innovation capability (adjusted $R^2 = .562$). The overall model was statistically significant, $F = 57.77$, $p < .001$ (see Table 3).

Both focal predictors were positively and significantly associated with organizational innovation capability. Management support for entrepreneurship emerged as a strong predictor ($\beta = .375$, $p < .001$), indicating that staff who perceived greater support for entrepreneurship promotion from institutional strategies, top management, and supervisors also rated their institution as more innovative. Similarly, an entrepreneurship-supportive organizational culture was significantly related to higher levels of innovation capability ($\beta = .328$, $p < .001$), underscoring the role of organizational culture in fostering innovation.

The control variable (institution) was also statistically significant ($\beta = .182$, $p < .01$), suggesting modest differences between UAS A and UAS B, with staff at UAS A evaluating innovation capability slightly more favorably. Importantly, however, the effects of leadership support and culture were consistent across both institutions.

Taken together, the findings provide strong support for both hypotheses. An entrepreneurship-supportive organizational culture (H1) and perceived management support for promoting entrepreneurship (H2) were robustly linked to organizational innovation capability in UAS.

Table 3: Regression results predicting organizational innovation capability

Predictor	B (SE)	β	p
Constant	0.315 (0,331)		-
Institution (control)	0.517 (0,196)	0.182	<.01
Entrepreneurship-supportive organizational culture	0.336 (0,079)	0.328	<.001
Management support for entrepreneurship promotion	0.322 (0,069)	0.375	<.001
Adjusted R ²	0.562		
F	57.770		<.001

5. Discussion and Conclusions

The aim of this study was to examine the impact of entrepreneurship-supportive organizational culture and perceived management support for promoting entrepreneurship on the innovation capability of universities of applied sciences. The results demonstrate that both entrepreneurship-supportive organizational culture and perceived management support play a significant role. This aligns with Schaap et al. (2025), who argue that innovation capability in higher education is built through interactions at individual, network, and organizational levels, with management as a key resource. The findings reinforce that management support, particularly in promoting entrepreneurship, is critical for fostering innovation capability. They are also consistent with Albulushi (2024), showing that innovation is shaped by both individual and organizational factors. Notably, an entrepreneurial culture fosters creativity, risk-taking, and continuous learning, which are closely tied to innovation (Hayton and Cacciotti, 2013).

Developing innovation capability in higher education requires a holistic understanding of internal organizational factors such as management and culture. Innovation capability does not emerge solely from structures or resources but from a constellation of factors (Ocampo et al., 2022; Pan et al., 2024). The findings highlight two key levers: first, top management commitment and clear entrepreneurship strategies, reflected in communication, actions, and supervisory support; and second, support for student entrepreneurship, which contributes to organizational innovation capability by reinforcing an entrepreneurial climate.

The results support the view that innovative organizations require both “hard” (resources, strategies, management commitment) and “soft” (culture, climate) support. Although the institutional control variable had a smaller effect, differences between institutions were modest, suggesting that innovation capability exists in both and can be strengthened, particularly through management support and entrepreneurial culture.

It is important to note that the study captures individual perceptions rather than objective measures of innovation capability. These perceptions may vary within institutions and across subcultures, influenced by management and supervisory support, as well as the encouragement of student entrepreneurship. Nevertheless, the findings suggest that broadly fostering entrepreneurship among staff and students is crucial for strengthening institutional innovation capability.

The study has limitations. Data was collected from only two universities of applied sciences in one country, limiting generalizability. In addition, reliance on self-reported data may introduce bias. Future research could combine quantitative and qualitative approaches to provide a more comprehensive understanding of innovation capability and its drivers.

In conclusion, the findings highlight the importance of mechanisms that enable innovation, such as management development, cross-functional collaboration, and entrepreneurship-supportive practices. By investing in an innovation-friendly culture and strengthening management capacity, higher education institutions can enhance their competitiveness, support regional innovation, and increase their societal impact.

Ethics Declaration

Ethical clearance was not required for the research.

AI Declaration

AI tools (ChatGPT) were used solely for language editing and proofreading of the manuscript.

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