# Interpersonal Relations and Team Dynamics in the Introduction of Social Robots in the Context of the Social and Solidarity Economy in Bulgaria

**Mayiana Mitevska, Prof. D.Sc.**
Plovdiv University "Paisii Hilendarski", Faculty of Pedagogy, Department of Psychology, Bulgaria, Plovdiv.

**Vladislav Lazarov, Prof. D.Sc**
Chairperson of the Governing Board, General Assembly of the Labour-Production Cooperatives Union – Sofia

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**Abstract:** This paper explores the interpersonal and organizational dynamics involved in the integration of social robots within educational and mental health support systems in Bulgaria, viewed through the lens of the Social and Solidarity Economy (SSE). It focuses on how team collaboration, trust, and emotional intelligence shape the successful adoption of social robotics in universities and schools. Drawing on interdisciplinary research and pilot practices, the study examines the role of institutional culture, leadership engagement, and readiness for innovation in fostering effective human-robot interaction. Particular attention is given to how social robots, when introduced within SSE-aligned frameworks, can enhance inclusive, participatory, and ethically grounded support models. The findings highlight the importance of nurturing interpersonal trust and team cohesion in order to realize the full potential of social robots as tools for emotional and educational well-being. The paper concludes with recommendations for sustainable integration practices, emphasizing co-design with stakeholders and culturally responsive implementation strategies in the Bulgarian context.

**Keywords:** Social robots, Team dynamics, Professional recognition, Self-determination, Solidarity economy

## Introduction

The implementation of social robots in higher education represents not only a technological innovation but also a profound cultural and organizational shift. In contexts such as Bulgaria, where hierarchical and collectivist organizational cultures prevail, the dynamics within academic teams—between educators, administrators, and technical staff—are critical to the success or failure of such innovations. Interpersonal trust, collaboration, and shared meaning-making become pivotal in navigating resistance, fostering acceptance, and integrating robots in ways that are both pedagogically and ethically sound.

This study explores the interplay between team dynamics and the principles of the social and solidarity economy (SSE), which emphasizes democratic participation, shared ownership, and equity in innovation. The goal is to uncover how social cohesion and professional recognition contribute to sustainable adoption of robotic technologies in the academic workplace.

## Theoretical Framework and Relevance

The study is grounded in three interrelated theoretical lenses:

Organizational Psychology
Theories of team dynamics, motivation (Deci & Ryan's Self-Determination Theory), and leadership under conditions of innovation and uncertainty.
Constructs such as autonomy, competence, and relatedness are considered central to engagement and acceptance.
Technology Acceptance and Resistance Models
Institutional TAM, models of psychological resistance (e.g., identity threat, control loss), and co-creation approaches (Ifenthaler & Yau, 2020; Cameron et al., 2021; Woolley & Feller, 2022).


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Social and Solidarity Economy (SSE)
Innovation is understood as a collective and participatory process, rather than a top-down deployment.
Values of solidarity, inclusion, mutual aid, and ethical responsibility are incorporated into technology planning and decision-making.
Relevance:
As Bulgaria's academic institutions strive to modernize, incorporating principles from the SSE ensures that innovation benefits are distributed equitably, technological anxiety is reduced, and resistance is mitigated through inclusive governance and cultural alignment. This study is timely in responding to both national digital transformation strategies and global calls for socially responsible AI.

**Research Aim**

To investigate how interpersonal relationships and team dynamics affect the successful introduction of social robots in higher education, with a specific focus on applying the principles of the social and solidarity economy in the Bulgarian academic context.

**Research Objectives**

To identify key interpersonal and team-based factors that facilitate or hinder the introduction of social robots in academic institutions.
To assess the role of professional recognition, autonomy, and perceived control in shaping faculty attitudes toward robotic technologies.
To evaluate how solidarity-based practices (co-design, shared ownership, ethical transparency) influence resistance and acceptance.
To compare Bulgarian cultural and institutional characteristics with international cases of robot integration.
To propose a culturally adapted and solidarity-driven implementation model for educational robotics.

**Research Hypotheses**

H1: Interpersonal trust and collaborative team dynamics positively predict faculty openness to using social robots in teaching.
H2: Faculty members' perceived professional recognition and control are stronger predictors of acceptance than the robot's technical features.
H3: Institutions applying solidarity economy principles (e.g., participatory design, mutual learning, inclusive leadership) will demonstrate lower resistance to robotic innovation.
H4: In hierarchical and collectivist cultures, structured autonomy and cultural alignment are essential for sustaining innovation adoption.
H5: The absence of motivational support (autonomy, competence, relatedness) leads to passive or symbolic compliance, rather than deep integration of new technologies.

**Object of the Study**

The object of the study is the organizational and psychological environment in academic institutions in Bulgaria during the process of implementing social robots in education.
Interpersonal Relations and Team Dynamics in the Introduction of Social Robots: A Psychological and Cultural Perspective
Effective team dynamics are a critical element of any organizational change. In the context of introducing social robots, interpersonal relations among teachers, administrators, and technical staff play a decisive role. Trust, mutual support, and open communication within academic teams significantly enhance the collaborative work required to implement new technologies.
Moreover, a collaborative culture facilitates the exchange of knowledge and skills necessary for adapting to innovative practices. In contrast, a hostile, fragmented, or hierarchical team dynamic can lead to passive or even active resistance—regardless of the objective benefits of the technology.
Organizational psychology views team dynamics as a key factor in innovation implementation:
Teachers and technical specialists must form collaborative, cross-functional teams.


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Motivational theories (e.g., Self-Determination Theory) indicate that autonomy, competence, and purpose sustain long-term acceptance of new technologies.
A study by Alzubi et al. (2023) among university faculty revealed that:
"The acceptance of social robots depends more on the perception of professional recognition and control than on the robot's technical features."
In most educational innovation projects, technological parameters—such as artificial intelligence, emotional recognition, voice interaction, and adaptability—tend to dominate the conversation. However, the study by Alzubi et al. (2023) highlights a less explored yet crucial factor: how educators perceive their own roles, authority, and recognition amid technological changes.
Their research, based on surveys and interviews with faculty from various disciplines, found that:
"The acceptance of social robots depends more on the perception of professional recognition and control than on the robot's technical features."
(Alzubi et al., 2023)
In other words, the successful integration of social robots in academic settings is driven less by the "quality" of the technology and more by the cultural and psychological context in which it is introduced.

**Analysis Through the Lens of Organizational Psychology**

Perception of Professional Recognition
Faculty members are deeply tied to their identity as experts and educators. When new technologies are introduced without consultation, or when robots are perceived as replacements rather than assistants, resistance emerges—not due to technophobia, but due to perceived erosion of professional status.

Research in motivational psychology (Deci & Ryan, 2000) shows that autonomy and competence are essential for engagement. Technological innovations that bypass or diminish academic expertise are seen as threats rather than resources.

Perception of Control Over the Process
Alzubi et al. emphasize that educators are more likely to accept social robots when they have opportunities to participate in the implementation process—through training, involvement in projects, feedback loops, and the ability to define how robots are used.

This illustrates the principle of participation and co-creation: when technological change emerges from collective efforts rather than top-down directives, trust and openness to innovation increase substantially.

**Table 1: Practical Implications from Alzubi et al. (2023)**

| Factor | Positive Effect (when present) | Negative Effect (when absent) |
|---|---|---|
| Professional Recognition | Increased engagement and innovation | Resistance, passivity, withdrawal |
| Perceived Control & Participation | Sense of ownership and collaborative learning | Perception of technology as "imposed" or "managerial pressure" |

Comparative Findings from Mitevska (2025) and Alzubi et al. (2023)

Both studies apply the Self-Determination Theory (Deci & Ryan), but reflect different contextual pathways for achieving sustainable results:

Mitevska (2025), analyzing the Bulgarian context, emphasizes the need for structured autonomy and inclusive participation, especially in hierarchical academic cultures.

Alzubi et al. (2023) highlight the importance of leadership and institutional vision as drivers of motivation in internationally diverse educational environments.


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Despite cultural and organizational differences, both studies confirm that when motivational needs—autonomy, competence, relatedness—are met, the probability of successful technology adoption increases significantly.

**Table 2: Applying the Self-Determination Theory in Higher Education Contexts**

| Study | Methodological Focus (Deci & Ryan) | Predictions | Extended Commentary |
|---|---|---|---|
| Mitevska, Lazarova (2024) | Assessment of autonomy, competence, and relatedness in hierarchical academic cultures | High motivation and acceptance of social robots when autonomy, co-design, and support are present | Hierarchical contexts require structured support and engagement. Faculty motivation rises with process control and role clarity. |
| Alzubi et al. (2023) | Self-determination in international HE contexts with focus on leadership and digital adaptation | Stable technology integration when trust, vision, and digital readiness are ensured | Leadership support is key. When leaders model learning and foster open communication, faculty motivation improves. |

Predictive Insights

Institutions that apply a motivation-integrated approach will demonstrate higher continuity and innovation adaptability.
When internal motivation and a supportive culture are present, educators will see robots not as threats but as teaching partners.
In contrast, a lack of motivational support and autonomy may result in resistance or superficial compliance, without real pedagogical integration.

Toward a Culturally Sensitive and Ethically Grounded Implementation Model

The introduction of social robots and AI in higher education requires a comprehensive approach that combines technical expertise with cultural planning and leadership design. In this context, the Cultural-Leadership Implementation Model is proposed—drawing on frameworks by Mitevska (2025), Adel (2024), Ahsan (2025), and the motivational foundations of Deci & Ryan (1985), with recent extensions from Alzubi et al. (2023).

At its core, the model is based on the idea that technological change is not a purely technical act, but a cultural negotiation of values, leadership style, role structuring, and motivation. The model includes seven core components:

Cultural Diagnosis – Assessment of organizational readiness using the CVF and Hofstede's dimensions.
Leadership Commitment – Leaders model adaptive learning, show empathy, and create psychologically safe environments.

Ethical Framework – Transparent strategies, data protection, and responsible deployment aligned with Adel's recommendations.

Co-Design and Participation – Roles and behaviors of robots are co-created with users, respecting cultural sensitivity.

Pilot Implementation – Iterative feedback loops, impact assessments, and modular expansion.
Learning Culture Development – Digital literacy, critical thinking, and autonomy-building grounded in self-determination theory.

Monitoring and Adaptation – Ongoing feedback, regulation of interactions, and cultural alignment.

The model is especially suitable for Bulgaria's prevailing clan- and hierarchy-based organizational culture, offering a structured, motivationally attuned, and ethically grounded transition to innovation—without clashing with


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deeply held institutional values.

As such, it represents a pragmatic and context-responsive roadmap for the successful and sustainable integration of social technologies in education.

Conclusion: Interpersonal Dynamics, Motivation, and Solidarity in the Context of Educational Robot Integration
The successful introduction of social robots in higher education does not rest solely on technological excellence. It critically depends on the interpersonal dynamics within academic teams, the motivational climate of the institution, and the degree to which educators feel recognized, included, and in control of the innovation process. This study highlights that professional identity, team trust, and collaborative culture are not peripheral but central to innovation. Drawing from organizational psychology and the principles of the social and solidarity economy, we understand that educational transformation must be both technically sound and socially just.

When educators feel that their autonomy is respected, that their expertise is valued, and that they are co-creators in the change—not passive recipients—they are significantly more likely to embrace robots not as threats, but as collaborative agents in the learning process.

Based on the findings and the theoretical grounding, we propose the following hypotheses for empirical testing:

Hypotheses
H1: Interpersonal trust and collaborative team dynamics positively influence educators' acceptance of social robots in academic settings.
H2: The perception of professional recognition and participation in the implementation process is a stronger predictor of acceptance than the robot's technical capabilities.
H3: Higher levels of perceived autonomy, competence, and relatedness among faculty (as defined by Self-Determination Theory) will correlate with greater openness to robot-assisted teaching.
H4: Institutions that integrate solidarity-based practices—such as participatory design, shared decision-making, and transparent leadership—will experience lower resistance to educational robotics.
H5: In hierarchical and collectivist academic cultures, structured autonomy and cultural adaptation are necessary conditions for sustainable innovation adoption.

**In conclusion**, integrating social robots in education requires more than infrastructure and training—it requires empathic leadership, inclusive strategy, and a commitment to values of solidarity, equity, and participation. By aligning organizational practices with the psychological needs of educators and the cultural context of institutions, we can ensure that social robotics not only serve pedagogical goals but strengthen the human relationships at the heart of learning.

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