Scientific Annals of Economics and Business
73 (3), 2026, 593-616
DOI: 10.47743/saeb-2026-0030

Technical and Non-Technical Employees' Perceptions on How Low-Code and No-Code Development Platforms Impact the Democratization of Coding: A fsQCA Analysis

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Abstract: Democratization of coding - the increased accessibility of software development to non-technical employees - is an emerging but under-conceptualized dimension of digital workplace transformation. This study examines how IT and non-IT employees in Romanian large companies perceive the influence of low-code and no-code development platforms (LC/NCDP) on this phenomenon. Data were collected via a structured questionnaire from 212 respondents (88 IT, 124 non-IT) and analyzed using fuzzy-set Qualitative Comparative Analysis (fsQCA), building on a conceptual model grounded in the Technology Acceptance Model. Results show that both IT and non-IT employees generally expect LC/NCDP to replace aspects of traditional coding, driven mainly by perceived usefulness (benefits, work impact) and ease of use, with organizational use and, for non-IT employees, age also playing a core role. A minority in both groups hold low expectations, primarily where perceived benefits are low. Because these findings capture perceptions and expectations rather than observed organizational outcomes, they should be read as evidence of anticipated, not demonstrated, impact. We recommend that organizations offer LC/NCDP training, particularly for non-IT staff, and propose that policymakers support LC/NCDP

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Article history: Received 26 March 2026 | Accepted 2 September 2026 | Published online 29 September 2026

To cite this article: Crișan, E.L., Chiș, D.M., Appiah-Kubi, E., Bodea, E.E., Mihăilă, A., Sireteanu, N.A. (2026). Technical and Non-Technical Employees' Perceptions on How Low-Code and No-Code Development Platforms Impact the Democratization of Coding: A fsQCA Analysis. *Scientific Annals of Economics and Business*, 73(3), 593-616. https://doi.org/10.47743/saeb-2026-0030.

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adoption as part of digital transformation strategy. The study contributes a conceptual model and an fsQCA-based empirical account of democratization of coding, and outlines avenues for future research on the organizational and demographic factors shaping this process.

Keywords: : Low-code development platform; no-code development platform; Fuzzy-Set Qualitative Comparative Analysis; democratization of coding; digital work transformation.

JEL classification: O32; M50; M15; M12.

1. INTRODUCTION

The nature of work has undergone significant changes due to digitalization (Fossen and Sorgner, 2021; Mendonça and Kougiannou, 2023). Initially, IT solutions were regarded as tools to perform various business tasks. However, users were often dissatisfied with pre-developed software and expressed a desire to create their own tools. The increasing adoption of no-code and low-code platforms has allowed non-technical users to build customized applications more easily, addressing the demand for tailored solutions and greater flexibility in software development (Razak *et al.*, 2024). The philosophy of model-driven development (MDD) has emerged as a powerful approach in software engineering, facilitating faster development cycles, improved collaboration with non-technical stakeholders, and the creation of more scalable solutions. Recent literature emphasizes how model-driven development (MDD) aligns with modern trends like Artificial Intelligence (AI) integration, aiding software development processes and expanding its scope to AI-specific applications (Bucchiarone *et al.*, 2020). In this context, low-code and no-code platforms (LC/NCDP) are practical manifestations of model-driven development (MDD), allowing both IT and non-IT employees to create software solutions with minimal coding. These platforms, which have grown in popularity, leverage the power of model-driven development (MDD) while lowering entry barriers for non-programmers. Recent studies have examined how low-code tools align with model-driven development (MDD) principles, highlighting that both are essentially methodologies that simplify software development, yet low-code approaches have gained traction by being more accessible to a broader audience (Cabot, 2022)

Despite the increasing adoption of low-code and no-code platforms (LC/NCDP), it remains unclear whether employees fully perceive these tools as democratizing coding or significantly influencing their work and employment opportunities (Mannan and Pek, 2024). Recent studies suggest that these platforms empower non-technical employees to independently address workplace challenges by creating custom applications, fostering a sense of ownership and innovation within their roles (Quixy, 2023). However, existing research still emphasizes employee attitudes toward advanced technologies, such as Smart Technology, Artificial Intelligence, Robotics, and Algorithms (STARA), which non-IT employees often find complex and less accessible (Oosthuizen, 2019; Bhargava *et al.*, 2021). This contrast highlights the need for further exploration of how low-code and no-code platforms (LC/NCDP) can bridge the gap between technical and non-technical users, ultimately transforming workplace dynamics. For this reason, the democratization of coding - defined as the increased accessibility of coding for non-technical employees - remains under-conceptualized and less integrated within existing literature (Baptista *et al.*, 2020; Ongalo and Wanjare, 2022). The rise of low-code and no-code development platforms (LC/NCDP) offers

a transformative avenue for digital workplace innovation, yet their influence on democratizing coding is not fully explored. Addressing this gap, our study investigates the perceptions of IT and non-IT employees regarding the impact of low-code and no-code development platforms (LC/NCDP) on coding democratization in the context of Romanian large companies. This approach contributes to the literature on emerging technologies, work, and employment by examining how these platforms drive accessibility, collaboration, and skill-building across diverse employee roles. We define democratization of coding as the process by which software-development capability is extended from a bounded population of trained IT professionals to a broader population of employees, regardless of formal programming training, through platforms that substitute visual, configuration-based interaction for hand-written code (see Section 2.1.2 for how this differs from adjacent constructs).

Considering the above, we conducted a fuzzy-set qualitative comparative analysis (fsQCA) to explore the various pathways influencing IT and non-IT employees' perceptions of the role of low-code and no-code development platforms (LC/NCDP) in the democratization of coding. This phenomenon contributes significantly to digital workplace transformation. Our analysis included factors such as perceived usefulness, perceived ease of use, real use, and the demographics of both IT and non-IT employees. Based on these variables, we developed a conceptual model that illustrates the democratization of coding and its implications for workplace transformation (see Figure no. 1). By addressing the study's objectives, this paper contributes to the literature by conceptualizing the democratization of coding. The findings highlight that the adoption of low-code and no-code development platforms (LC/NCDP) platforms is perceived as a transformative shift in the coding landscape, with the potential to democratize coding practices. This democratization can significantly impact workplace innovation by enabling the development of new solutions and enhancing the productivity of both technical and non-technical employees.

To provide a clear structure for the study, Section 2 presents the literature review, followed by the methodology in Section 3. Sections 4 and 5 detail the findings and discussion, respectively. Finally, the conclusion is outlined in Section 6.

2. LITERATURE REVIEW

2.1. Democratization of coding

Bhargava *et al.* (2021) emphasized that democratization extends beyond IT teams, allowing non-technical employees to participate in software development, while Ongalo and Wanjare (2022) highlighted the increasing accessibility of these tools to non-technical users. Earlier, Rao (2012) suggested democratization was primarily about expanding access to coding resources like GitHub, a view that aligns with modern shifts toward collaborative development platforms. Talagala (2022) later synthesized these perspectives, proposing that low-code and no-code development platforms (LC/NCDP) not only enable non-IT employees to tackle simpler coding tasks but also elevate the role of IT professionals by automating routine processes, allowing them to focus on complex tasks like algorithm optimization and advanced design.

Recent studies underscore the broader organizational impacts of low-code and no-code development platforms (LC/NCDP) adoption. According to Yan (2021), these platforms accelerate digital transformation by significantly improving the productivity of both technical and non-technical employees. Fernandes (2024) highlighted that low-code and no-code

development platforms (LC/NCDP) adoption fosters agility and reduces dependency on large IT teams, empowering line-of-business managers to directly contribute to software tailored for specific needs. This dual empowerment-enhancing capabilities of both IT and non-IT staff-positions low-code and no-code development platforms (LC/NCDP) as transformative tools in modern workplaces, driving innovation and productivity at unprecedented levels.

By integrating these perspectives, we argue that democratization of coding encompasses more than solving immediate organizational problems with IT tools. It represents a paradigm shift where the workforce collectively leverages technological advancements, enhancing overall efficiency and enabling innovation across all organizational levels.

2.1.1. Practitioners' perspective concerning democratization of coding

We noticed that there is a huge gap between the interest of practitioners and researchers concerning this field. This is because the searches performed in August 2022 of the key terms associations 'democratization of coding' and 'democratization of programming' generated 16,600 and 27,600 results on google.com, and only 5 and 30 results on Google Scholar, respectively. While research papers mention the terms sporadically, with very little quality journals publishing papers containing these key terms associations in title, they have been given the needed attention in the professional literature. Democratization of coding/programming is interpreted in two different ways, its definition and factors influencing. It encompasses making more people, beyond coders, capable to create software (Mixson, 2021), one definition which we consider in this paper. In August 2024, searches for the terms "democratization of coding" and "democratization of programming" showed notable growth in interest. Google searches returned approximately 42,000 and 58,000 results, respectively, indicating increasing attention in professional and industry-focused literature. However, academic exploration remains limited, with Google Scholar showing only 18 and 55 results.

These findings align with Navarro (2024), who emphasized that low-code platforms primarily gain traction in industry contexts, reflecting the evolving role of these technologies in workforce empowerment and digital transformation. This shift fosters inclusivity in software development and innovation.

Practitioners view the democratization of coding as the deployment of technologies enabling non-coders to create IT solutions, primarily through Low-Code and No-Code Development Platforms (LC/NCDP) (Mixson, 2021; Di Ruscio *et al.*, 2022; Ongalo and Wanjare, 2022). LCDP-NCDP reduce the coding required for technical users and simplify application creation for non-technical users, thus addressing developer shortages and cutting costs (Pantelimon *et al.*, 2019; Silva *et al.*, 2021). Additionally, they support workflows, track efficiency during development phases, and even enable the creation of data schemas (Sanchis *et al.*, 2019). At an organizational level, these platforms represent transformative solutions to workforce challenges while maintaining the rigor of traditional development processes.

Low-code development platforms (LCDPs) are powerful tools that streamline application development by reducing or eliminating traditional coding requirements. They support diverse functionalities, such as workflow automation, data management, and user interface design (Cai *et al.*, 2022). LCDP-NCDP solutions prioritize ease of use, enabling rapid deployment with minimal effort in configuration, user training, and implementation. This makes them especially versatile for organizations with limited technical resources, as highlighted by Waszkowski

(2019). While professional literature highlights their role in digital transformation, academic research remains sparse, underscoring the need for deeper exploration.

2.1.2. Researchers' perspective concerning democratization of coding

Democratization of coding, as explored in scientific literature, integrates paradigms that enhance the ability of non-technical individuals to develop IT-based solutions (Tsahat *et al.*, 2023). Low-code and no-code platforms (LC/NCDP) automate labor-intensive coding tasks using transformation rules (Panach *et al.*, 2015). These platforms elevate abstraction levels, simplify software complexity, and reduce errors, building upon the principles of model-driven development (MDD). Model-driven development (MDD) employs conceptual models to represent systems, generating executable code automatically (Panach *et al.*, 2015; Hoppe and Souza, 2023), thus bridging technical gaps and fostering accessibility in IT development.

In scientific terms, one of the closest concepts to the democratization of coding/programming is End-User Development (EUD), defined as "a set of methods, techniques, and tools that allow users of software systems, who are acting as non-professional software developers, at some point to create, modify, or extend a software artifact" (Lieberman *et al.*, 2006; Barricelli *et al.*, 2019). Recent research has expanded this definition to incorporate its applications in emerging technologies, such as artificial intelligence (AI) and robotics. For instance, Esposito *et al.* (2023) examine how End-User Development (EUD) supports personalization and adaptability in artificial intelligence (AI) systems, empowering non-technical users to create AI-driven solutions. Similarly, Stegner *et al.* (2024) explore the role of End-User Development (EUD) in human-robot interaction (HRI), where non-expert users can customize robotic behaviors through accessible interfaces. These developments demonstrate that End-User Development (EUD) continues to evolve, not only as a tool for modifying software artifacts but also as a critical enabler of inclusivity in advanced technology adoption. Related paradigms such as end-user programming (EUP) and end-user software engineering (EUSE) reinforce this perspective, focusing on enabling users to actively contribute to software customization and development (Barricelli *et al.*, 2019; Stegner *et al.*, 2024). Democratization of coding is related to, but conceptually distinct from, EUD/EUP/EUSE. EUD/EUP/EUSE describe individual-level practices of end users modifying or extending existing software artifacts (Lieberman *et al.*, 2006; Barricelli *et al.*, 2019); their unit of analysis is the individual user-artifact interaction. Democratization of coding, by contrast, is an organizational and occupational-level construct: it concerns the redistribution of who is structurally enabled to create software within an organization and how the division of labor between IT and non-IT roles is reconfigured as a result. LC/NCDP are the technological enabler of this shift; democratization of coding is the broader organizational outcome, not a relabeling of EUD-enabled tool use.

2.2. Employees perceptions concerning the impact of information technologies

Information technologies, particularly low-code and no-code development platforms (LC/NCDP), are increasingly recognized as critical enablers of workplace digital transformation (Ohlert *et al.*, 2022). These technologies systematically influence workplace dynamics, embedding themselves within organizational processes and creating novel human-technology configurations (Baptista *et al.*, 2020). The evolution of workplace technologies

reflects a progression from basic standalone software applications to integrated digital ecosystems that leverage artificial intelligence (AI), automation, and collaborative tools (Maran *et al.*, 2022). Unlike traditional applications designed for discrete tasks, these platforms enable complex human-machine collaboration, fostering innovation and efficiency in organizational workflows. This shift highlights the transformative potential of information technologies in reshaping workplace structures and enhancing employee productivity across both technical and non-technical roles.

Beyond the positive effects of digital work such as fostering an environment conducive to innovation, improving collaboration among employees, boosting productivity, and enhancing flexibility for workers (Dittes and Smolnik, 2019; Marsh *et al.*, 2022) - there are significant negative effects as well. These include technology-related stress, information overload, anxiety, interruptions, distractions, addiction, and excessive use (Beare *et al.*, 2020; Marsh *et al.*, 2022). Consequently, employees' intention to use technology has been shown to depend on their information and digital literacy, as well as their perceptions of the usefulness and ease of use of these technologies (Nikou *et al.*, 2022).

2.3. Conceptual Model

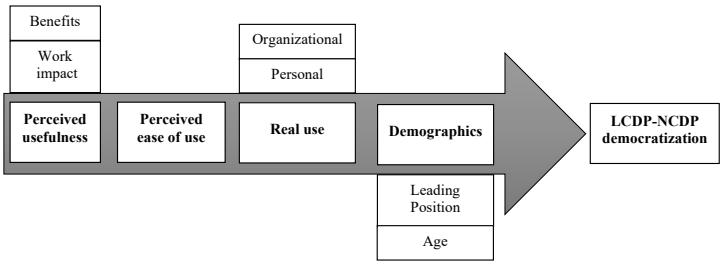
Considering the above discussion, we employed the Technology Acceptance Model (TAM) to propose a conceptual framework for democratization of coding, a concept that remains underexplored in academic literature. TAM, a widely recognized model for understanding individual adoption of technology (Mujahed *et al.*, 2024), posits that perceived usefulness (PU) and perceived ease of use (PEOU) are the two primary beliefs influencing user acceptance and behavior (Bhattarai *et al.*, 2010; Rafique *et al.*, 2020). Despite its extensive application in various domains, there is limited research on how these constructs contribute to democratization of coding within organizational contexts. Our study addresses this gap by identifying specific perceived usefulness factors of LC/NCDP that shape employee perceptions of democratization of coding. This contribution broadens existing literature by linking TAM to the transformative potential of LC/NCDP in fostering inclusive technological engagement across diverse employee profiles. Because the adoption of LC/NCDP for the purpose of democratizing coding is shaped not only by individual beliefs but also by organizational context and workforce composition, we extend the core TAM constructs (perceived usefulness, perceived ease of use) with organizational-use and demographic conditions (personal use, organizational use, leading position, age). We treat the resulting framework as an extended TAM: perceived usefulness and ease of use remain the individual-belief core, while organizational use, leading position, and age are included as boundary conditions that prior technology-acceptance research has shown to shape how usefulness and ease-of-use beliefs translate into adoption outcomes (Kolnhofer-Derecskei *et al.*, 2017; Ivanov *et al.*, 2020).

LC/NCDP platforms provide numerous advantages, including robust security features, seamless data integration, straightforward updates, and access to pre-built applications that accelerate development processes (Frank *et al.*, 2021). These platforms are equipped with integrated components designed to present information in an intuitive and comprehensible manner, facilitating better user engagement and understanding (Pantelimon *et al.*, 2019; Gao and Fagerholm, 2024). Moreover, LC/NCDP significantly reduce the effort required for environment installation, configuration, training, and implementation, making them accessible to a wider range of users (Waszkowski, 2019; Talagala, 2022). In addition to these practical

benefits, LCDP-NCDP support diverse functionalities such as reporting, data analysis, event processing, user interface development, and business logic (Razak *et al.*, 2024), all of which encourage coding democratization and broaden their appeal across organizational roles (Frank *et al.*, 2021). By simplifying entry-level tasks for non-IT employees while simultaneously enabling IT professionals to focus on high-level activities such as advanced algorithm design, user experience enhancement, and code optimization, these platforms bridge the gap between technical and non-technical contributors to digital transformation (Talagala, 2022).

It has been well-documented that employees' information and digital literacy significantly influence their intention to adopt and utilize technology effectively (Nikou *et al.*, 2022). While no-code platforms are designed for users with no technical background, low-code platforms demand some degree of technical proficiency, necessitating a mix of digital literacy and minimal programming skills (Wolff, 2019; Silva *et al.*, 2021). Additionally, beyond perceived usefulness and ease of use, the compatibility of a system with existing processes and tools is a critical factor that affects its adoption, particularly in complex organizational settings (Benbya *et al.*, 2020). Organizations must address the challenges associated with IT system compatibility while fostering user awareness and training. Research has also highlighted that job position influences the extent of employee involvement in decision-making regarding the adoption of automation technologies, suggesting that seniority plays a role in technology acceptance (Ivanov *et al.*, 2020). Furthermore, demographic factors such as age are recognized as significant in mitigating fears surrounding automation, with younger employees often displaying greater adaptability toward technological innovation (Kolnhofer-Derecskei *et al.*, 2017). These insights underscore the importance of tailoring strategies to address both organizational and individual factors in promoting the democratization of low-code and no-code platforms (LC/NCDP).

Based on the above discussion, we identified seven critical factors encompassing literacy, compatibility, job position, and demographics, that influence perceived democratization through LC/NCDP. These variables form the foundation of our conceptual model (see Figure no. 1). Specifically, benefits and work impact operationalize perceived usefulness; ease of use operationalizes perceived ease of use; personal use and organizational use capture actual behavioral engagement with LC/NCDP, which TAM treats as the outcome of usefulness and ease-of-use beliefs and which we include here as boundary conditions on expectations; and leading position and age capture workforce-composition factors previously shown to shape technology-adoption attitudes (Kolnhofer-Derecskei *et al.*, 2017; Ivanov *et al.*, 2020), rather than being derived directly from TAM's belief constructs.



Source: authors' own creation

Figure no. 1 – The Conceptual Model for Democratization of Coding

3. METHODOLOGY

3.1. Data collection

Data were collected from a survey conducted in May 2023 – September 2023, whose respondents were IT and non-IT employees from Romanian large companies. Large companies are usually resourced to engage in IT development and adoption. We considered Romania to be appropriate for the study since the country has a low level of digital workplace transformation (Herman, 2020), despite its larger number of qualified IT specialists per capita (Yoruk *et al.*, 2021; Bunduchi *et al.*, 2022). We further delimited our geographical scope to Cluj-Napoca, Romania's second biggest city for software development (Yoruk *et al.*, 2021) because it is a large hub for IT development and adoption. Structured questionnaire was used for the data collection. It was sent by email to the organisations' employees, which comprises both the targeted groups of respondents. The emails of the respondents were sourced from the websites of the organizations, using convenient sampling method to select available and willing respondents. After a five-week data collection period, a total of 212 responses were received. Since the questionnaire was developed in such a way that all sections needed to be completed before submission, all the responses were valid (Appiah-Kubi, 2024; Bordean *et al.*, 2024). The questionnaire was administered in Romanian, the respondents' native language, and covered four blocks of items: outcome expectations regarding LC/NCDP, perceived-usefulness items (benefits, work impact), perceived ease of use and real-use items, and demographic items (age, leading position). Prior to distribution, item wording was reviewed internally by the research team for clarity and face validity. Because convenience sampling via organizational email lists was used, the sample is subject to self-selection: employees already interested in, or aware of, LC/NCDP may be over-represented relative to the wider workforce, and non-response bias cannot be ruled out. Likewise, restricting the sample to large companies in Cluj-Napoca chosen for its concentration of IT activity - means the findings describe perceptions in a specific organizational and regional context rather than the Romanian workforce at large; we return to both limitations in Section 6.

3.2. Variables

Five-point Likert scale of 1=Strongly disagree to 5=Strongly agree was used to measure both the outcome variable (democratization of coding) and condition variables, with the exception of personal use, leading position, and age. There were seven conditions including perceived benefits, work impact, perceived ease of use, personal use, organizational use, executive position, and age. The measurement items were self-developed to suit the purpose of the study. In order to assess the perceived benefits generated due to these platforms' development, we included the following items – low-code and no-code development platforms (LC/NCDP) lead to reduced costs with operational activities in the organization; reduce the cost of software development in the organization; lead over time to the faster development of IT solutions developed at the organizational level; increase the quality of services provided by the organization; and increase the profitability of the organization. These items reflect employees' self-reported perceptions of organizational benefits rather than independently verified financial or operational outcomes. The expectation that LC/NCDP reduce operational and software-development costs is consistent with prior accounts of

LC/NCDP lowering the technical and staffing effort required to build and maintain applications (Pantelimon *et al.*, 2019; Waszkowski, 2019; Silva *et al.*, 2021), though we treat these as perceived, not audited, cost effects.

In assessing the work impact perceived by respondents, the following items were considered - low-code and no-code development platforms (LC/NCDP) usage leads to an increase in employee productivity at the operational level; these platforms make it easier for other employees to use the IT solutions developed; their usage leads to a change in the way the work is performed and the related procedures for the activity performed by the employees at the operational level; they simplify the work of people with IT background in application development; they lead in the long run to the replacement in software development of people who have IT background with people who do not have that experience; they can increase the number of people who develop IT solutions, even if they do not have IT background; the need for classic/traditional programmers will decrease due to the existence of these platforms.

When referring to the perceived ease of use within the organization, we analyzed the responses regarding the increase of the number of IT solutions developed in organizations due to these platforms, and if these software development platforms easily integrate with existing infrastructure in organizations. With regards to personal use, we considered three ordinal levels, respectively: 1: have not heard, 2: heard of such platforms in which simple users develop software, and 3: have used such platforms in which they do not use code writing to develop IT solutions. Moreover, with respect to organizational use, in our questions we explored if the employees are advanced in the use of such platforms in their organizations, if they currently use these platforms to develop applications within their organization, whether they have a thorough knowledge of software development through the use of these platforms, and if the people from their team/department believe that the use of platforms is important in their organization. For the first demographic variable which is the leading position, we considered the following – employee without leadership role; operational team coordinator (Operational Management) or top management position (Organization Activity Coordination or Extended Area); and entrepreneur/associate. For the last demographic variable, which is age, we considered the following categories: age - under 25 years, between 26 and 35 years, between 36 and 45 years; between 46 and 55 years, and over 55 years.

As in other similar quantitative studies (Pappas *et al.*, 2019; Pappas and Woodside, 2021), we proceeded to evaluate the constructs for reliability and validity. Therefore, based on the Cronbach alpha indicator, reliability showed acceptable indices of internal consistency since all our constructs exceeded the cut-off threshold of 0.70. To further assess convergent and discriminant validity beyond internal-consistency reliability, we conducted confirmatory factor analysis (CFA) on the item-level responses for the five multi-item constructs (Benefits, Ease of use, Work impact, Organizational use, Outcome expectations), separately for the IT sample (n=88 complete cases) and the non-IT sample (n=124 complete cases). All constructs except Work impact (IT sample) and Organizational use (non-IT sample) exceeded the average variance extracted (AVE) threshold of 0.50, and all constructs exceeded the composite reliability threshold of 0.70 except Ease of use in the IT sample (CR=0.688). Discriminant validity, assessed via the Heterotrait-Monotrait ratio (HTMT), was not fully established between Benefits, Ease of use, and Work impact: HTMT ratios among these three constructs ranged from 0.87 to 1.01 across both samples, exceeding the conventional 0.85 threshold (Henseler *et al.*, 2015). This pattern suggests that these conceptually distinct components of perceived usefulness under TAM were not fully distinguishable empirically, a

common challenge when operationalizing closely related sub-dimensions of a single higher-order construct as separate first-order factors. Future studies could test a single composite perceived-usefulness condition or refine the item pool through pilot testing and expert review, which were not conducted for the present self-developed scale. We note that fsQCA, unlike covariance- or variance-based SEM, treats conditions as calibrated set-membership scores rather than orthogonal latent variables (Ragin, 2009), so this limitation concerns measurement precision rather than the validity of the configurational analysis itself.

3.3. Fuzzy-Set Qualitative Comparative Analysis

We carried out Fuzzy-Set Qualitative Comparative Analysis (fsQCA) due to its capacity to analyze complex causation, defined as a situation in which an outcome may follow from several different combinations (or configurations) of causal conditions (Ragin, 2009). Moreover, Fuzzy-Set Qualitative Comparative Analysis (fsQCA) is able to overcome several limitations of both Crisp-Set Qualitative Comparative Analysis (csQCA) and Multi-value QCA (mvQCA), integrating fuzzy-sets and fuzzy-logic principles with Qualitative Comparative Analysis (QCA) principles (Rihoux and Ragin, 2008) that offers a more realistic approach since variables values range between 0–1 (Pappas and Woodside, 2021). As stated by Pappas and Woodside (2021), Fuzzy-Set Qualitative Comparative Analysis (fsQCA) is not employed to measure the unique contribution of each variable to the overall observed data, but to identify complex solutions and combinations of independent variables. As such, Fuzzy-Set Qualitative Comparative Analysis (fsQCA) approach was suitable for our research since we focused on identifying and analyzing the possible pathways that are formed by interdependencies between our organizational and individual variables, and that jointly lead to high/low expectations concerning the replacement of traditional coding with low-code and no-code platforms (LC/NCDP) (Yoruk *et al.*, 2021).

The variables were calibrated to form fuzzy sets with values ranging from 0 to 1 (Ragin, 2009), where 1 stands for the full-set membership and 0 is the full non-set membership (Pappas and Woodside, 2021). Here, considering Pappas and Woodside (2021), the three thresholds were based on the questionnaire scale. While we used percentiles for the five-point Likert scale variables because they allow the calibration of any measure regardless of its original values, the thresholds 3, 2, 1 were used for the three-point Likert scale variables because they provide a more accurate representation of our sample. Ragin (2009), all these variables are calibrated on a logistic function to fit into the three thresholds.

Thereafter, both necessary condition and sufficient analyses were conducted. The necessary conditions procedure presents consistency and coverage scores for conditions. According to Schneider and Wagemann (2012), a consistency threshold of at least 0.9 should be reached in order to consider a necessary condition. On the other hand, the sufficiency condition presents configurations of causal conditions that guarantee a specific outcome if present in a case (Ragin, 2009). As stated by Soto Setzke *et al.* (2023), in comparison to the necessary conditions, a specific configuration does not always have to be present to produce the outcome, hence multiple configurations can be obtained for the same outcome. We used SPSS 13.0, Fuzzy-Set Qualitative Comparative Analysis (fsQCA) 3.0 software package and Fuzzy-Set Qualitative Comparative Analysis (fsQCA) R package as the analyses software. Table no. 1 presents the true table for high/low expectations of IT respondents, concerning the replacement of traditional coding with LCDP. Also, Table no. 2 features the true table for high/low

expectations of Non-IT respondents, concerning the replacement of traditional coding with LCDP. Beyond consistency and coverage, Tables no. 1 and no. 2 also report PRI and SYM consistency for each configuration in the truth tables, and Tables no. 4 and no. 5 report raw coverage, unique coverage, raw consistency, and overall solution coverage/consistency for each sufficient configuration, following Fiss (2011) and Ragin (2009).

Table no. 1 – True Table for high/low expectations of IT respondents concerning the replacement of traditional coding with LC/NCDP

Benefits (usefulness)	Work impact (usefulness)	Ease of use	Personal (real use)	Organizational (real use)	Leading position	Age	High expectations of IT respondents	Number of cases	Raw consistency	PRI consistency	SYM consistency
1	1	1	1	0	1	0	1	1	0.92	0.69	0.69
1	1	1	1	0	0	0	1	1	0.89	0.68	0.68
1	0	1	1	1	1	0	1	1	0.89	0.28	0.28
0	1	0	1	1	0	1	1	1	0.88	0.56	0.56
0	1	1	1	0	0	1	1	1	0.86	0.47	0.47
1	0	1	1	1	0	1	1	1	0.85	0.29	0.30
1	1	1	1	1	0	1	0	4	0.83	0.61	0.62
1	1	1	1	1	0	0	0	2	0.81	0.50	0.51
0	0	0	1	0	1	0	0	1	0.80	0.34	0.34
0	0	0	0	0	0	1	0	2	0.77	0.16	0.17
0	0	0	1	0	0	0	0	1	0.76	0.29	0.29
0	0	0	1	0	0	1	0	2	0.74	0.29	0.30
0	0	0	1	0	1	1	0	1	0.74	0.25	0.27
0	0	0	0	0	1	1	0	1	0.73	0.17	0.17
Benefits (usefulness)	Work impact (usefulness)	Ease of use	Personal (real use)	Organizational (real use)	Leading position	Age	Low expectations of IT respondents	Number of cases	Raw consistency	PRI consistency	SYM consistency
1	0	1	1	1	1	0	1	1	0.96	0.72	0.72
0	0	0	0	0	1	1	1	1	0.94	0.83	0.83
0	0	0	0	0	0	1	1	2	0.94	0.79	0.83
1	0	1	1	1	0	1	1	1	0.94	0.68	0.70
0	0	0	1	0	0	0	1	1	0.90	0.71	0.71
0	0	0	1	0	1	0	1	1	0.90	0.66	0.66
0	0	0	1	0	1	1	1	1	0.89	0.68	0.73
0	0	0	1	0	0	1	1	2	0.88	0.68	0.70
0	1	1	1	0	0	1	1	1	0.87	0.53	0.53
0	1	0	1	1	0	1	1	1	0.85	0.44	0.44
1	1	1	1	0	1	0	0	1	0.82	0.31	0.31
1	1	1	1	1	0	0	0	2	0.80	0.49	0.49
1	1	1	1	0	0	0	0	1	0.78	0.32	0.32
1	1	1	1	1	0	1	0	4	0.73	0.38	0.38

Source: authors' own creation

Table no. 2 – True Table for high/low expectations of non-IT respondents concerning the replacement of traditional coding with LC/NCDP

Benefits (usefulness)	Work impact (usefulness)	Ease of use	Personal (real use)	Organizational (real use)	Leading position	Age	High expectations of Non-IT respondents	Number of cases	Raw consistency	PRI consistency	SYM consistency
0	1	1	0	0	0	1	1	1	0.98	0.85	0.85
0	0	0	0	1	1	0	1	1	0.93	0.45	0.51
1	1	1	0	1	0	1	1	1	0.93	0.82	0.82
1	1	1	1	0	0	1	1	1	0.90	0.55	0.55
1	1	1	1	1	0	1	1	2	0.85	0.52	0.53
1	0	1	1	1	0	1	1	1	0.85	0.31	0.31
0	0	0	0	0	0	1	1	4	0.83	0.26	0.28
0	0	0	0	0	0	0	0	2	0.83	0.29	0.29

Benefits (usefulness)	Work impact (usefulness)	Ease of use	Personal (real use)	Organizational (real use)	Leading position	Age	High expectations of Non-IT respondents	Number of cases	Raw consistency	PRI consistency	SYM consistency
0	0	0	1	0	1	1	0	1	0.77	0.25	0.25
0	0	0	1	0	0	0	0	1	0.73	0.15	0.15
0	0	0	1	0	0	1	0	4	0.66	0.13	0.13
Benefits (usefulness)	Work impact (usefulness)	Ease of use	Personal (real use)	Organizational (real use)	Leading position	Age	Low expectations of non-IT respondents	Number of cases	Raw consistency	PRI consistency	SYM consistency
0	0	0	1	0	0	0	1	1	0.95	0.85	0.85
0	0	0	1	0	0	1	1	4	0.95	0.86	0.87
1	0	1	1	1	0	1	1	1	0.93	0.69	0.69
0	0	0	0	0	0	0	1	2	0.93	0.70	0.71
0	0	0	0	1	1	0	1	1	0.93	0.43	0.49
0	0	0	0	0	0	1	1	4	0.92	0.66	0.72
0	0	0	1	0	1	1	1	1	0.92	0.75	0.75
1	1	1	1	0	0	1	1	1	0.87	0.45	0.45
0	1	1	0	0	0	1	1	1	0.87	0.15	0.15
1	1	1	1	1	0	1	1	2	0.83	0.45	0.47
1	1	1	0	1	0	1	0	1	0.67	0.18	0.18

Source: authors' own creation

4. RESULTS

The results of the necessary condition analysis are presented in Table no. 3, revealing that for high expectations concerning the replacement of traditional coding with low-code and no-code platforms (LC/NCDP), the consistency values range between 0.37 and 0.87 (for IT respondents) and between 0.42 and 0.78 (for non-IT respondents), for the negation of the causal conditions. On the other hand, for low expectations concerning the replacement of traditional coding with low-code and no-code platforms (LC/NCDP), the consistency values range between 0.39 and 0.80 (for IT respondents) and between 0.46 and 0.79 (for non-IT respondents), for both the presence and absence (i.e. negation) of the causal conditions. Therefore, none of the causal conditions exceeded the consistency threshold of 0.9 (Schneider and Wagemann, 2012), which represents the threshold for a condition to be considered as a superset of the outcome of interest (Pappas *et al.*, 2019). Hence, none of our conditions can be considered necessary/indispensable for high/low expectations concerning the replacement of traditional coding with low-code and no-code platforms (LC/NCDP). Also, the coverage levels reveal that these conditions explain a considerable part of the outcome (Ragin, 2009).

4.1. Configurations for IT people high/low expectations concerning the replacement of traditional coding with low-code and no-code platforms (LC/NCDP)

Having achieved the required thresholds for the necessary condition analysis, we conducted the fuzzy-set analysis in order to identify sufficient combinations of the causal conditions that explain high/low expectations concerning the replacement of traditional coding with low-code and no-code platforms (LC/NCDP). The results of the fuzzy set analysis are presented in Table no. 4 and Table no. 5. Each column represents an alternative combination of conditions that are associated with the outcome, Considering the Fuzzy-Set Qualitative Comparative Analysis (fsQCA) convention, the presence of a condition is indicated with a black circle (●), the absence/negation with a crossed-out circle (⊗), and the "do not care" condition

with a blank space (Fiss, 2011), indicating that the condition is not relevant for explaining the outcome (Soto Setzke *et al.*, 2023). Moreover, large circles indicate core conditions with high empirical relevance, while small circles represent peripheral conditions that surround core conditions (Fiss, 2011; Soto Setzke *et al.*, 2023). As proposed by Fiss (2011), solutions are grouped by their core conditions. Our solution tables indicate the presence of both core and peripheral conditions as well as neutral permutations of some configurations.

Considering the IT respondents, as Table no. 4 shows, we identified four and three configurational groupings for high and low expectations, respectively concerning the replacement of traditional coding with low-code and no-code platforms (LC/NCDP). All the required thresholds including the consistency levels, and coverage levels were met in our proposed solutions (Ragin, 2009). Configuration A1 indicates that in the case of young IT-employees, high work impact, high ease of use, and low organizational use of low-code and no-code platforms (LC/NCDP) are core conditions that lead to employees' high expectations. Configuration A2 shows that in the case of older IT-employees with no leading position in the firm, low benefits, high work impact, high ease of use, and low organizational use of low-code and no-code platforms (LC/NCDP) are the core conditions that result in employees' high expectations. Configuration A3 suggests that in the case of older IT-employees with no leading position in the firm, low benefits, high work impact, and low organizational use of low-code and no-code platforms (LC/NCDP) are the core conditions that influence employees' high expectations. Configuration A4.1 shows that in the case of older IT-employees with no leading position in the company, high benefits, low work impact, high ease of use, and high organizational use of low-code and no-code platforms (LC/NCDP) are core in affecting employees' high expectations. Similarly, configuration A4.2 shows that in the case of young IT-employees with leading position in the company, high benefits, low work impact, high ease of use, and high organizational use of low-code and no-code platforms (LC/NCDP) are crucial in impacting employees' high expectations. Although, personal use of low-code and no-code platforms (LC/NCDP) appeared to be peripheral condition in all the four configurations, all our IT respondents present a high background regarding low-code and no-code platforms (LC/NCDP). In general, considering our solutions, low benefits and low work impact are core constructs, pointing out employees' low expectations concerning the replacement of traditional coding with low-code and no-code platforms (LC/NCDP).

Table no. 3 – Necessary conditions for high/low expectations concerning the replacement of traditional coding with LC/NCDP

Conditions	IT group of respondents				Non-IT group of respondents			
	High expectations concerning the replacement of traditional coding with LCDP		Low expectations concerning the replacement of traditional coding with LCDP		High expectations concerning the replacement of traditional coding with LCDP		Low expectations concerning the replacement of traditional coding with LCDP	
	Consistency	Coverage	Consistency	Coverage	Consistency	Coverage	Consistency	Coverage
Benefits (usefulness)	0.74	0.64	0.61	0.65	0.74	0.75	0.58	0.51
Work impact (usefulness)	0.81	0.71	0.58	0.61	0.78	0.81	0.56	0.50
Ease of use	0.78	0.66	0.63	0.65	0.74	0.79	0.55	0.52
Personal (real use)	0.87	0.56	0.80	0.63	0.52	0.63	0.69	0.72
Organizational (real use)	0.68	0.62	0.60	0.66	0.74	0.75	0.62	0.54
Leading position	0.37	0.56	0.39	0.73	0.43	0.69	0.46	0.64
Age	0.70	0.57	0.68	0.68	0.72	0.65	0.79	0.63

Conditions	IT group of respondents				Non-IT group of respondents			
	High expectations concerning the replacement of traditional coding with LCDP		Low expectations concerning the replacement of traditional coding with LCDP		High expectations concerning the replacement of traditional coding with LCDP		Low expectations concerning the replacement of traditional coding with LCDP	
	Consistency	Coverage	Consistency	Coverage	Consistency	Coverage	Consistency	Coverage
~ Benefits (usefulness)	0.59	0.55	0.66	0.76	0.51	0.58	0.72	0.71
~ Work impact (usefulness)	0.56	0.52	0.72	0.83	0.51	0.57	0.78	0.76
~ Ease of use	0.59	0.56	0.67	0.79	0.55	0.59	0.78	0.72
~ Personal (real use)	0.42	0.64	0.43	0.81	0.77	0.74	0.65	0.54
~ Organizational (real use)	0.63	0.56	0.66	0.72	0.55	0.62	0.72	0.71
~ Leading position	0.83	0.53	0.77	0.60	0.78	0.62	0.78	0.54
~Age	0.60	0.61	0.57	0.70	0.59	0.77	0.56	0.63

Source: Based on Fiss (2011). ~ logical NOT; Necessity consistency threshold: 0.9

Table no. 4 – Sufficient configurations for high/low expectations of IT respondents concerning the replacement of traditional coding with LC/NCDP

Causal Conditions	High expectations of IT respondents					Low expectations of IT respondents					
	A1	A2	A3	A4.1	A4.2	B1.1	B1.2	B2.1	B2.2	B3.1	B3.2
Benefits (usefulness)	●	⊗	⊗	●	●	⊗	⊗	⊗	⊗	●	●
Work impact (usefulness)	●	●	●	⊗	⊗	⊗	⊗	●	●	⊗	⊗
Ease of use	●	●	⊗	●	●	⊗	⊗	●	⊗	●	●
Personal (real use)	●	●	●	●	●		●	●	●	●	●
Organization (real use)	⊗	⊗	⊗	●	●	⊗	⊗	⊗	●	●	●
Leading position		⊗	⊗	⊗	●			⊗	⊗	⊗	●
Age	⊗	●	●	●	⊗	●		●	●	●	⊗
Raw coverage	0.36	0.26	0.27	0.28	0.17	0.38	0.41	0.22	0.22	0.25	0.15
Unique coverage	0.11	0.01	0.02	0.03	0.02	0.05	0.08	0.01	0.01	0.05	0.02
Raw consistency	0.88	0.86	0.88	0.85	0.89	0.88	0.87	0.87	0.85	0.94	0.96
Overall solution coverage	0.50					0.59					
Overall solution consistency	0.81					0.84					

Source: Based on Fiss (2011). Black circle indicate presence of a condition, Crossed-out circle absence of a condition, Empty row may be either present or absent, Large circle indicate core condition, Small circle peripheral condition

Table no. 5 – Sufficient configurations for high/low expectations of non-IT respondents concerning the replacement of traditional coding with LC/NCDP

Causal Conditions	High expectations of non-IT respondents						Low expectations of non-IT respondents					
	C1.1	C1.2	C2	C3	C4	C5	D1.1	D1.2	D1.3	D2	D3.1	D3.2
Benefits (usefulness)	●	●	●	⊗	⊗	⊗	⊗	⊗	⊗	⊗	•	•
Work impact (usefulness)	•		•	⊗	⊗	•	⊗	⊗	•	⊗	•	
Ease of use	●	●	●	⊗	⊗	●	⊗	⊗	•	⊗	•	•
Personal (real use)		•	•	⊗	⊗	⊗		⊗	⊗	●	●	●
Organization (real use)	●	●		⊗	●	⊗	⊗	•	⊗	⊗		•
Leading position	⊗	⊗	⊗	⊗	•	⊗	⊗	•	⊗		⊗	⊗
Age	•	•	•	●	⊗	●		⊗	•	•	•	•
Raw coverage	0.39	0.25	0.27	0.22	0.16	0.20	0.46	0.18	0.20	0.39	0.29	0.28
Unique coverage	0.12	0.01	0.02	0.06	0.04	0.01	0.12	0.02	0.01	0.05	0.01	0.01
Raw consistency	0.87	0.83	0.85	0.83	0.93	0.98	0.90	0.93	0.87	0.92	0.80	0.83
Overall solution coverage	0.55						0.71					
Overall solution consistency	0.82						0.81					

4.2. Configurations for non-IT people high/low expectations concerning the replacement of traditional coding with low-code and no-code platforms (LC/NCDP)

Considering the non-IT respondents, as Table no. 5 shows, we identified five and three configurational groupings for high and low expectations, respectively concerning the replacement of traditional coding with low-code and no-code platforms (LC/NCDP). All the required thresholds including the consistency levels, and coverage levels were met in our proposed solutions (Ragin, 2009). Configuration C1.1 indicates that in the case of older non-IT employees with no leading position, high benefits, high ease of use, and high organizational use of low-code and no-code platforms (LC/NCDP) are pertinent in leading to employees' high expectations. Configuration C1.2 depicts that in the case of older non-IT employees with no leading position, high benefits, high ease of use, and high organizational use of low-code and no-code platforms (LC/NCDP) are important in influencing employees' high expectations. Configuration C2 shows that in the case of older non-IT employees with no leading position, high benefits, and high ease of use, are core in affecting employees' high expectations. Configuration C3 depicts that in the case of older non-IT employees with no leading position, low personal use of low-code and no-code platforms (LC/NCDP) is core in impacting employees' high expectations.

It is worth indicating that age as a demographic variable was a core condition in this configuration. Configuration C4 portrays that in the case of young non-IT employees with leading position, high organizational use of low-code and no-code platforms (LC/NCDP) is crucial in influencing employees' high expectations. Configuration C5 depicts that in the case of older non-IT employees with no leading position, high ease of use, and low personal use of low-code and no-code platforms (LC/NCDP) are crucial in affecting employees' high expectations. Just like configuration C3, age as a demographic variable was a core condition in this configuration. In general, considering our solutions, low benefits and high personal use of low-code and no-code platforms (LC/NCDP) are core constructs, pointing out to employees' low expectations concerning the replacement of traditional coding with low-code and no-code platforms (LC/NCDP).

5. DISCUSSION

This paper presents an advanced and new technique for analyzing IT and non-IT employees' perceptions concerning the influence of low-code and no-code platforms (LC/NCDP) on democratization of coding. Since our research focused on identifying and analyzing the possible pathways that are formed by interdependencies between our organizational and individual variables, and that jointly lead to high/low expectations concerning the replacement of traditional coding with low-code and no-code platforms (LC/NCDP) implementation, a more complex model, Fuzzy-Set Qualitative Comparative Analysis (fsQCA) approach was suitable for the study (Crișan and Stanca, 2021).The majority of IT-employees expect democratization of coding to transform the way coding is performed to contribute to digital workplace transformation (Talagala, 2022). This finding supports previous studies on employees' perception concerning the impact of technologies on workplace digital transformation (Bryant *et al.*, 2021). Employees' intention to use technology has been found to be determined by employees' information and digital literacy, and their perceptions concerning the usefulness and ease of use of these technologies (Nikou *et al.*, 2022; Niță *et al.*, 2024).

With respect to the path of the anticipated changes, a lion's share of the IT employees in Romanian companies expect low-code and no-code platforms (LC/NCDP) to replace the traditional coding (Pathways A1 to A4), this perception relating to both young and older IT-employees with or without leading position. This decision was arrived in variety of ways. High benefits and high work impact which both contribute to perceived usefulness are crucial in influencing IT-employees expectations concerning the replacement of traditional coding with low-code and no-code platforms (LC/NCDP) (Pantelimon *et al.*, 2019; Waszkowski, 2019; Bock and Frank, 2021). Perceived usefulness is revealed as a major determinant of attitude towards the intention to use technology (Brachten *et al.*, 2021). Low-code and no-code platforms (LC/NCDP) are perceived to improve employees' productivity, thereby encouraging them to have positive perception towards it (Baptista *et al.*, 2020). Nevertheless, high ease of use was revealed as a significant core factor that leads to high expectations concerning the replacement of traditional coding with low-code and no-code platforms (LC/NCDP) (Sanchis *et al.*, 2019). Low-code and no-code platforms (LC/NCDP) encourage IT-staff to work on higher-level projects such code designs, user experiences, and algorithm selections with ease (Talagala, 2022). Although, personal use of low-code and no-code platforms (LC/NCDP) appeared to be peripheral condition in all the four configurations

(Pathways A1 to A4), all our IT respondents demonstrate a high background regarding low-code and no-code platforms (LC/NCDP). Similar to benefits, work impact and ease of use, we found organizational use of low-code and no-code platforms (LC/NCDP) be core in influencing high expectations concerning the replacement of traditional coding with LC/NCDP. This category of employees expect democratization to influence workplace digital transformation (Dery *et al.*, 2017).

In light of the above discussion, we found minority of the IT employees in Romanian companies to have low expectations of LCDP-NCDP to replace the traditional coding. This finding is in tandem with past studies on employees' perception concerning expectations of LCDP-NCDP to replace the traditional coding (Pathways B1 to B3), this perception relating to both young and older IT-employees with or without leading position. We discovered that low benefits and low work impact which make up perceived usefulness are core factors that lead to low expectations concerning the replacement of traditional coding with LC/NCDP among Romanian IT employees. Ease of use, personal use of LCDP-NCDP, and organizational use of LCDP-NCDP were all found to be peripheral conditions for perceived usefulness. This perception might be due to the fear of losing their jobs to non-IT employees (Sahay *et al.*, 2020; Di Ruscio *et al.*, 2022). This finding is in congruence with Van Looy (2022) which revealed that workers appear to have a very good attitude about robots in the workplace and are at ease delegating minor jobs to them, although employees are skeptical about their usage.

Parallel to the IT-employees, we found majority of non-IT-employees to expect low-code and no-code platforms (LC/NCDP) to replace the impact of technologies on workplace digital transformation. Mainly, professionals suggest that routine, and repeatable business processes can be automated/transformed by regularly business users (Ongalo and Wanjare, 2022) by the use of low-code and no-code platforms (LC/NCDP). With respect to the path of the anticipated changes, a significant number of the non-IT employees in Romanian companies equally expect low-code and no-code platforms (LC/NCDP) to replace the traditional coding (Pathways C1 to C5), this perception relating to both young and older non-IT employees with or without leading position. Although benefits and work impact which constitute perceived usefulness in our study were revealed to account for the high expectations concerning the replacement of traditional coding with low-code and no-code platforms (LC/NCDP) among non-IT employees in Romanian companies, they were considered to be more of peripheral that core.

However, high ease of use was found to be core condition leading to high expectations concerning the replacement of traditional coding with low-code and no-code platforms (LC/NCDP) among Romanian non-IT employees. Low-code and no-code platforms (LC/NCDP) encourage non-IT employees to easily code simpler tasks (Talagala, 2022). Similar to perceived usefulness, personal use of low-code and no-code platforms (LC/NCDP) portrayed to be more of peripheral to influence the high expectations concerning the replacement of traditional coding with low-code and no-code platforms (LC/NCDP) among Romanian non-IT employees. This finding supports the idea that low-code and no-code platforms (LC/NCDP) provides access to non-technical users to democratization since no knowledge of specific languages is required (Sanchis *et al.*, 2019). Contrary to this, high organizational use of low-code and no-code platforms (LC/NCDP) was revealed to be a crucial factor that impacts the high expectations concerning the replacement of traditional coding with low-code and no-code platforms (LC/NCDP) among Romanian non-IT employees. Organizational consideration of the complexity of IT system compatibility as well as user awareness influences democratization of coding (Benbya *et al.*, 2020). Low-code and

no-code platforms (LC/NCDP) include some built-in components that allow the presentation of information in an understandable format regardless of the technology knowledge of the user. These platforms can provide encryption, and authentication mechanisms to ensure that applications developed using the platform are secure and immune to cyber threats. One of the key contributions of our study is premise on the finding that age is a core factor that influences Romanian non-IT employees' high expectations concerning the replacement of traditional coding with low-code and no-code platforms (LC/NCDP). Older people are less adaptable and less ready to put in the time necessary to retrain themselves for the workforce, whereas younger people are more flexible and hopeful (Ivanov *et al.*, 2020). Due to the difficulty of being proactive and learning new skills to use automation technology in the workplace, older employees may favor corporate and social solutions over individual ones (Ivanov *et al.*, 2020).

On account of the above, we found minority of the non-IT employees in Romanian companies to have low expectation of LC/NCDP to replace the traditional coding (Pathways D1 to D3), this perception relating to both young and older IT-employees with or without leading position. In general, low benefits as a determinant of perceived usefulness and high personal use of LC/NCDP as a determinant of real use are core factors that accounted for the low expectations concerning the replacement of traditional coding with LC/NCDP. The other conditions including work impact, ease of use, and organizational use of LC/NCDP demonstrated to possess peripheral impacts on the low expectations of non-IT employees of Romanian companies concerning LC/NCDP democratization. Our findings support Ivanov *et al.* (2020) which revealed that some groups of people who are identified by their views and demographics are more afraid of their occupations becoming automated than others. Employees' fears about automation originate from their beliefs that they would lose their employment to automation and, in the event that they do, how simple it will be for them to find another work in the same or a different field, keeping them out of financial hardship (Ivanov *et al.*, 2020).

By considering the above results for IT and non-IT employees' perceptions concerning the influence of low-code and no-code platforms (LC/NCDP) on democratization of coding as a path for digital workplace transformation, our conceptual model confirms to be effective in explaining democratization of coding. In addition to literature, our Fuzzy-Set Qualitative Comparative Analysis (fsQCA) analysis reveals seven important factors that drive democratization of coding. Although extant studies on digital transformation have recognized perceived usefulness, ease of use, benefits, and work impact as factors influencing digital workplace transformation (Dittes and Smolnik, 2019; Brachten *et al.*, 2021; Marsh *et al.*, 2022; Nikou *et al.*, 2022), we found additional factors including personal use of low-code and no-code platforms (LC/NCDP), organizational use of low-code and no-code platforms (LC/NCDP), leading position, and age to be significant in contributing to digital workplace transformation through democratization of coding.

6. CONCLUSIONS

A pivotal contribution of this study to the digital transformation literature is the use of Fuzzy-Set Qualitative Comparative Analysis (fsQCA) to reveal IT and non-IT employees' perceptions concerning the influence of low-code and no-code platforms (LC/NCDP) on democratization of coding. Aside shedding light on the less conceptualized but important concept (democratization of coding) which impact digital transformation, we developed a conceptual model to present the factors that lead to the phenomenon. We found that a lion's share of the IT employees in Romanian

companies highly expected low-code and no-code platforms (LC/NCDP) to replace the traditional coding. These employees arrived at this decision with the perceptions that high benefits, high work impact, high ease of use, and high organizational use of low-code and no-code platforms (LC/NCDP) will lead to high expectations concerning the replacement of traditional coding with low-code and no-code platforms (LC/NCDP).

We also found minority of the IT employees in Romanian companies to have low expectation of low-code and no-code platforms (LC/NCDP) to replace the traditional coding with the perceptions that low benefits and low work impact will lead to low expectations concerning the replacement of traditional coding with low-code and no-code platforms (LC/NCDP). We found a significant number of the non-IT employees in Romanian companies to equally expect low-code and no-code platforms (LC/NCDP) to replace the traditional coding. The high level of benefits, high work impact, high ease of use, and high organizational use of low-code and no-code platforms (LC/NCDP) were revealed to be crucial in leading to high expectations concerning the replacement of traditional coding with low-code and no-code platforms (LC/NCDP). Finally, we found minority of the non-IT employees in Romanian companies to have low expectation of low-code and no-code platforms (LC/NCDP) to replace the traditional coding. In general, low benefits and high personal use of low-code and no-code platforms (LC/NCDP) are pertinent reasons that accounted for the low expectations concerning the replacement of traditional coding with low-code and no-code platforms (LC/NCDP).

In light of our findings, majority of IT and non-IT employees of Romanian companies expect low-code and no-code platforms (LC/NCDP) to lead to democratization of coding, a right direction for digital workplace transformation. The few IT and non-IT employees of Romanian companies who had low expectation of low-code and no-code platforms (LC/NCDP) to replace the traditional coding largely attributed this to low benefits of low-code and no-code platforms (LC/NCDP). Hence, practitioners are advised to organize low-code and no-code platforms (LC/NCDP) training programs for them. This will expose them to the benefits and background regarding LC/NCDP. Furthermore, employees are encouraged to embrace low-code and no-code platforms (LC/NCDP) to customize their own platforms for the execution of their responsibilities. This is expected to improve the productivity of both employees and businesses. As a policy implication, the government of Romania in specific and other governments in general, should motivate businesses to integrate low-code and no-code platforms (LC/NCDP) in their value chain.

Our study, which is the first to explore IT and non-IT employees' perceptions concerning the influence of low-code and no-code platforms (LC/NCDP) on democratization of coding, comes with limitations, hence, provides future research suggestions. First, the sample was restricted to large companies in Cluj-Napoca; given the uneven level of digital transformation across Romania's regions, findings may not generalize to smaller firms or to other regions of the country, and future studies should extend data collection to a broader national and international sample. Second, convenience sampling via organizational email lists introduces a risk of self-selection and non-response bias, potentially over-representing employees already engaged with LC/NCDP; probability-based sampling would strengthen external validity in future work. Finally, structured questionnaire was deployed as the data collection instrument. Since structured questionnaire limits the ability of respondents' own perceptions to be considered, future studies are encouraged to include both questionnaire and interviews.

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