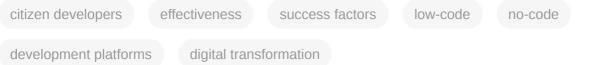# Unlocking Citizen Developer Potential: A Systematic Review and Model for Digital Transformation

Subjects: Computer Science, Hardware & Architecture
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Citizen developers, individuals outside formal IT departments who create applications using low-code/no-code platforms, are becoming increasingly pivotal as organizations navigate digital transformation. The driving force behind this paradigm shift stems from an exponentially growing demand for software solutions that consistently outpaces traditional IT departments' capacity. Consequently, companies are turning their attention toward citizen developers, entrusting them with crafting solutions. In this work, we perform a systematic review of the existing literature to unearth the pivotal themes and subthemes and identify the factors contributing to citizen developers' effectiveness. Our systematic review revealed a significant gap in scholarly understanding of factors contributing to citizen developers' effectiveness. While some studies touched on these factors, none explored them comprehensively or provided an integrated framework for understanding their interrelationships. To fill this void, we propose a conceptual model to advance the understanding of the factors that influence the effectiveness of citizen developers in creating applications. While the model contributes to the theoretical understanding of citizen development, practical implications further reinforce its value. By leveraging the model, organizations can make informed decisions to enhance the productivity of citizen developers, align digital transformation strategies, and foster innovation.

citizen developers   effectiveness   success factors   low-code   no-code

development platforms   digital transformation

According to the forecast by Gartner [1], individuals outside formal IT departments will make up at least 80% of the user base for low-code development tools by 2026, marking a notable increase from the 60% recorded in 2021. In the current marketplace, regardless of their scale and sector, enterprises must undertake the digital transformation of their internal information systems to stay aligned with the rapidly evolving demands of the market. The IT departments of enterprises have a backlog of significant business innovation tasks and need help completing them because of insufficient software developers on their teams [2]. The surge of this digital transformation wave has resulted in a notable upswing in the need for software development skills. IT departments need help managing the escalating backlog of activities related to business innovation [3]. According to Breaux and Moritz [4], there will be a shortage of software developers in the IT industry. Because of these challenges, a growing number of companies are embracing citizen development, an emerging approach to incorporating low-code/no-code (LC/NC) development by citizen developers into their digital transformation strategy. However, Binzer and Winkler [5] question whether non-IT professionals can effectively build digital solutions using LC/NC platforms. Bock and Frank [6] assert that low-code platforms significantly enhance productivity by streamlining routine tasks in low-to-

moderate-complexity software development projects. According to Waszkowski [7], adopting low-code solutions represents a significant advancement in business application development, offering the fastest and potentially most cost-effective approach to software creation. Kass et al. [8] highlight that a significant market gap exists in skilled software development, and low-code development platforms (LCDPs) offer a solution by enhancing efficiency, effectiveness, cost reduction, and user empowerment. Gundlapalli [9] states that the market for LC/NC platforms is expected to expand from USD 13.2 billion in 2021 to USD 45.5 billion by 2025, reflecting a remarkable compound annual growth rate of 28.1%. Using low-code development platforms (LCDPs) and including a broader range of individuals from the business side in application development can help address software demand issues cost-efficiently [3].

According to Carroll and Maher [10], a citizen developer is a "proactive troubleshooter who swiftly builds applications using user-friendly and innovative software, resulting in applications accessible through LC/NC platforms". Di Ruscio et al. [11] state that citizen developers possess digital proficiency but have little to no formal programming experience in application development. Oltrogge et al. [12] define citizen developers as individuals with little to no coding or software engineering background who create applications using low-code or no-code platforms. According to Khorram et al. [13], citizen developers with little formal programming background leverage low-code and no-code platforms to create domain-specific applications. Although definitions of citizen developers vary across the literature, they consistently highlight three fundamental aspects: non-IT professionals, using low-code/no-code platforms, and developing business-specific applications. Based on these common elements, we define citizen developers as individuals outside of formal Information Technology (IT) departments who utilize low-code/no-code (LC/NC) platforms to create applications that solve business problems within their specific roles and areas of responsibility.

There are several advantages of citizen developers. For example, they can use LCDPs to automate tasks and turn business knowledge directly into solutions [3]. Citizen developers alleviate the burden on IT by creating apps, eliminating the need for heavy dependence on the IT department, thus empowering IT specialists to concentrate on crucial projects while concurrently reducing the volume of requests they need to handle.

Citizen developers possess expertise in a specific domain and the functionalities of a system, enabling them to comprehend and articulate requirements [14]. They are subject matter experts in their fields, and they can establish software specifications by recognizing an issue and subsequently crafting a digital solution to address it [15]. Business and IT leaders should acknowledge citizen developers' significance in digital transformation endeavors [10].

The literature review revealed a notable gap in scholarly publications on the study of citizen developers' effectiveness. We found very few publications that mentioned the contributing factors to the efficacy of citizen developers, and the ones that mentioned them did not discuss this topic at length. It is this void that the present paper seeks to address, uncovering key themes and subthemes, aiming to identify the factors contributing to citizen developers' effectiveness. This research gap is particularly concerning given the projected growth in citizen development adoption and its strategic importance for organizational digital transformation initiatives. We put forth

a conceptual model to enhance comprehension of these factors affecting the effectiveness of citizen developers in application creation.

The model synthesizes key themes and factors influencing citizen developers' effectiveness, offering both theoretical insights and practical value. It provides organizations with a structured framework to guide decision-making, foster the development of citizen developers, and better align digital transformation initiatives with organizational goals. Furthermore, the model emphasizes the need for senior leadership to actively support and cultivate an environment where citizen developers are recognized as vital contributors to innovation and efficiency. By addressing organizational and technological challenges, this model aims to reduce IT dependency, promote a culture of innovation, and position citizen developers as integral to cost-effective and impactful application development.

This study lays the groundwork for future research by highlighting the factors influencing citizen developers' effectiveness and calls for empirical validation and application of the model in real-world organizational settings. By bridging the gap between theory and practice, this work aspires to make a meaningful contribution to the academic literature and the operational strategies of organizations embracing citizen development.