

# How Low Code Development Platforms are Changing the Workplace

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## Introduction

With the fast-evolving impact of digital transformation (Wessel et al., 2021), organizations need to respond quickly and resiliently to changing market requirements and user needs (Hanelt et al., 2021). For many companies, this endeavor is somehow troublesome since there is a massive shortage of skilled software developers (Hess et al., 2016). In particular, according to recent predictions, the demand for those skilled professionals will be multiple times higher than the supply provided by the market (i.e., measured by the number of graduates in software engineering or similar yearly) (Breaux & Moritz, 2021; Torres, 2018; Waszkowski, 2019). Turning to the current situations in many IT departments, we can clearly observe that the demand for information systems is way higher than what can be provided by IT professionals (Waszkowski, 2019). In many cases, this leads to cost overruns, conflicting project requirements, overly long development times and a lack of business-IT alignment. Therefore companies have looked at different approaches to solve this issue. While concepts such as DevOps bring together the development and operation of software solutions and the call for agility at all levels of a company is getting louder, there are still some difficulties that need to be addressed. For instance, the technical aspects of an application must be merged with the business-relevant processes to adapt software more precisely to companies (Fokaefs et al., 2017), which then, in turn, also takes up budget and time. Thereby organizations that are faced with this issue are looking for quicker and cheaper ways to meet their IS development needs (Fryling, 2019). Simultaneously, in recent years, low code development platforms (LCDPs) have seen an increasing uptake (Gartner Inc, 2022; Rymer et al., 2019) as they address the need to quickly develop applications with a comparably low development effort by democratizing the software development and thus accelerating the development and deployment process (Alamin et al., 2023). Therefore, technology democratization has led to the fact that any project that traditionally required coding can now be undertaken by a business user (Brinker, 2018). This great potential to bridge the gap between systems requirements and developer constraints has not gone unnoticed by major technology providers such as Microsoft, Amazon or Google. Up to date (2022), there already more than 400 LCDPs provided (Ugur, 2021) for a wide variety of use cases such as process automation (see UiPath) or application development (see Mendix). However, to create value and contribute to the need for IS development, employees need to be able to grasp and deploy technologies (Makarius et al., 2020). While a new generation of tech-savvy, digitally native workers is emerging, who are already equipped with the necessary skills to be developing applications with low code, we observe that LCDPs allow them to faster, simpler and cheaper develop those application and services (Lethbridge,

2021). According to industry estimates, by 2025, 70% of all new software applications in organizations will be built with LCDPs (Wong et al., 2021). Furthermore, LCDPs are expected to enable the large-scale development of more than 500 million new digital solutions between 2020 and 2025, which is equal to the total number of software applications developed in the previous 40 years (Gens, 2019). Companies like Shell (Kappeyne, 2021) and H&M (Banghar, 2021) have already jumped on LCDPs bandwagon and are empowering their employees in this matter. For example, Shell initiated its "do it yourself" program to encourage a cultural shift toward the democratization of digital skills (Kappeyne, 2021). Within a year, the program had produced over 1,000 low code developers and over 75 LCDPs-built applications (Kappeyne, 2021). Even though this novel development paradigm and technology bears great potential, little is known about the effects that LCDPs have on the work environments of those non-IT professionals. Equipped with extensive domain knowledge, we argue that business users are suitable for using LCDPs for deploying or editing digital services (e.g., chatbot services). However, little is known about how those domain experts are using LCDPs. We assume that LCDPs enable users to affect their work by deploying software systems that reduce their workload as means of automation (Staaby et al., 2021). In this research paper, we aim to explore how by the use of LCDPs IT can be democratized within organizations. A theoretical framework to potentially explain LCPD use is job crafting, which is based on the job resource demand theory (Lazazzara et al., 2020). Job crafting refers to activities of employees who voluntarily change their work environment for self-targeted benefits and long-lasting effects (Wrzesniewski & Dutton, 2001). Job crafting has shown a multitude of positive consequences for job crafters, such as an increase in work motivation and organizational performance (Demerouti, 2014; Lee et al., 2018), work engagement (Bakker et al., 2012; Chiu, 2017), meaningfulness (Wrzesniewski et al., 2013), job satisfaction (Lazazzara et al., 2020), and wellbeing (Bruning & Campion, 2018). In recent years the job crafting literature has begun to focus on IS-related job crafting phenomena. More specifically, scholars investigated employees' proactive implementation of changes to better adopt specific information systems (IS) as means to change work processes (Bruning & Campion, 2018). These research endeavors have shown that the proactive use of a specific IS will allow job crafters to maintain high levels of work flexibility (Sturges, 2012) or even lead to finding innovative ways of solving their work tasks (Mattarelli & Tagliaventi, 2015). While recognizing the importance of information and communications technology (ICT), the lack of "specific technology-related [job] crafting forms" (Lazazzara et al., 2020, p. 6) is reflected in the small number of IS journal publications (see chapter on related work). Moreover, research has shown that technologies that have a high degree of reconfigurability or customization enable employees to craft their jobs (Xu et al., 2018). LCDPs appear to fulfill these requirements, as they allow domain experts to develop services voluntarily and change their work environment for their benefit, e.g., by creating web applications to automate part of their work. Therefore, we argue that job crafting might explain part of how domain experts use LCDPs to affect their work environment. As we aim to explore the relationship between the use of LCDPs and job crafting, we draw on a two-phased interview

study with a total of 52 experts who have experience with successful implementations of LCDPs. Our results indicate that the phenomenon of using LCDPs can be explained via job crafting. To represent the unique quality of LCDPs to empower BUDs to change their work environment, our research question is as follows: *How does LCDPs implementation drive the democratization of IT?*

## **Research Design**

To address the research question, we applied a qualitative research design and adopted an interpretive approach to studying the socially constructed experiences of experts on LCDP. Following the notion of “knowledgeable agents” by Gioia (2013), we captured experts’ thoughts, experiences, and behaviors, allowing the discovery of novel concepts. In order to ensure a high degree of projectability of the findings from the research, care was taken when selecting the interviewees to ensure that different sectors and companies of all sizes (small, medium-sized and large companies) were covered. Overall, a data triangulation took place during the expert interviews due to the diversity of persons from different industries, different company sizes as well as groups regarding application, consulting or offering. The experts were all contacted in March and April 2022 via various communication platforms and the interviews were then conducted during the same period. The interviews took place exclusively by telephone or video call and were recorded for later transcription. The interviews lasted on average 48 minutes, ranging from 24 to 70 minutes.

## **Discussion**

The current job crafting literature has focused on individual job crafting consequences, which were summarized under positive experiences (Lazazzara et al. 2020). Our interviewees have stressed the organizational benefits of employing LCDPs. We argue that this might be particularly important to ICT-enabled job crafting: Within our LCDP context, business developers use LCDPs to improve their existing work environment (Lethbridge 2021), thus, LCDP-based technology is benchmarked with organizational benefits (Staaby et al. 2021). We thus argue ICT-enabled job crafting forms should explore both positive experiences and organizational benefits to better assess the effects of LCDP-enabled job crafting. These implications can potentially shed more light on LCDP project success (Bock & Frank, 2021) and are in line with the call to study ICT use from a work design perspective (Wang et al. 2020). Our results also provide insights into technology-specific job crafting forms (Lazazzara et al. 2020). Further, we argue that the presented job crafting form appears to either inherit characteristics or is embedded in its use context. This opens new questions regarding the relationship between the nature of ICT and ICT-enabled job crafting forms. The agency characteristic of our LCDP appears to be a ICT-specific job crafting characteristic: BUDs use the LCDP to create chatbots, whose *agency* stands for a last line of defense (cognitive crafting) and changes the newly augmented agent-customer-chatbot interaction (relational crafting). Similarly, the avoidance cognitive crafting form of evading

the AI substitution topic altogether is related to the social positioning of the technology. We argue that AI-chatbots are feared to become associated with other existing debates around AI-substitution. These inherited digital object traits influence avoidance cognitive crafting. In summary, we a) argue that our results show a general relationship between LCDP-enabled job crafting and job crafting consequences (Lazazzara et al. 2020) and b) discuss that LCDP-enabled job crafting has a relationship with the job crafting enabling digital object (Runde and Faulkner 2019).

## Conclusion

In conclusion, this paper provides novel insights into ICT-enabled job crafting forms. More specifically, this paper provides exploratory qualitative research based on investigating how LCDP use affects the BUDs' work environment. We contribute to the LCDP literature by providing a novel conceptualization that provides insights into citizen developer behaviors and the impacts of LCDP on their work environment. For job crafting theory, our paper provides LCDP-specific job crafting forms that coincide with the call for technology-related job crafting forms (Lazazzara et al. 2020). For the IS literature, we contribute to the ICT-enabled job crafting literature (Tarafdar and Saunders 2021). We believe that job crafting provides novel approaches for specific technologies, such as LCDP, that can leverage job crafting motives and consequences to improve effective use and provides an understanding of LCDP as a new workplace technology and is a form of IT-enabled emergent work configuration (Baptista et al. 2020).

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