Citizen Development in Digital Transformation: Towards Empowering Non-Technical Functions with Generative AI

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Introduction

The developments in generative artificial intelligence (GAI) unlock new opportunities across many fields (e.g., Kanbach et al., 2024; Kanitz et al., 2023; Korzynski et al., 2024; Nah et al., 2023) and highlight the potential of us becoming more independent in completing our digital tasks. When it comes to transforming the way we work, GAI can be seen as a technological resource that can empower individuals in organizations (Chandra et al., 2024; Rajaram & Tinguely, 2024). This view is in line with the structural perspective on empowerment, entailing "the delegation of decision-making prerogatives to employees, along with the discretion to act on one's own" (Mills & Ungson, 2003). That is due to the fact that GAI applications allow for natural-language-based interactions, promising to extend individuals' range of digitally-driven action. In other words, by making user interactions more intuitive, GAI provides additional opportunities for individuals to complete their digital tasks independently of their "high-tech" counterparts providing technology-based services to other organizational units (Barkin & Davenport, 2023; T. Davenport, 2023; T. H. Davenport et al., 2023).

While creating additional opportunities for employee empowerment, GAI in organizations comes with its own set of challenges. Individuals performing digital tasks that would otherwise be completed by dedicated teams without established processes re-introduce concerns associated with "shadow IT." Shadow IT refers to business unit stakeholders building, introducing, and using hardware, software, or services for their jobs without the approval or knowledge of their organizations (Haag & Eckhardt, 2017). This outcome comes at the cost of organizations losing control of their IT landscape, being exposed to greater risks, and interfering with the accuracy of data-driven decision-making by dispersing enterprise data sources (Haag & Eckhardt, 2017). GAI in organizations, therefore, requires organizations to engage with the puzzle of supporting employee empowerment while remaining in control of the organizational IT landscape and ensuring that employees' digital actions are compliant with internal and external regulations.

Approaching GAI in organizations as a challenge of empowering non-technical functions in a controlled way allows one to rely on the established knowledge on citizen development in organizations (T. Davenport, 2023). Citizen development arose as a paradigm to combat the phenomenon of shadow IT by providing individuals with sanctioned tools and teaching them how to use them (Binzer & Winkler, 2022). It refers to "the empowerment of employees in non-IT functions (citizen developers) to create own software applications based on IT-tools that are provided, recommended, or at least tolerated by the IT-units" (Binzer & Winkler, 2022, p. 245). The importance of citizen development has been boosted by the increasing demand for digital solutions and digital talent driven by digital transformation (Binzer & Winkler, 2022). Thus, in recent years, in

addition to responding to shadow IT, citizen development has played an additional role in supporting digital transformation and empowering employees to take an active part in it (*Capco Optimize - Democratizing Innovation*, n.d.). GAI in organizations promises to expand and alter the scope of citizen development and the associated activities (T. H. Davenport et al., 2023), meaning that digitally transforming organizations would need to adjust the way they currently approach citizen development. Within this problem scope, this paper aims to investigate how the citizen development phenomenon is being altered by GAI and how organizations should approach facilitating citizen development in light of these changes. This investigation will take place by engaging with the phenomenon of GAI-driven citizen development and its management in practice.

Practical context

This study will be carried out in the context of an international organization providing design, engineering, and consultancy services undergoing continuous digital transformation. In 2017, the organization adopted a selection of low-code development tools offered by the Microsoft Power Platform allowing users to build custom business applications, automate workflows, and analyze data. A choice of tools was provided to boost the organization's digital transformation by engaging employees who were not previously involved in technology-driven activities. Between 2021 and 2022, the digital transformation management team was moved under the supervision of the IT department, resulting in them realizing the lack of governing citizen development activities taking place with the provided tools. If they wanted citizen-developed solutions to be secure and scalable in an organization, they needed to establish dedicated processes and frameworks.

In 2022, the organization launched a pilot program for upskilling citizen developers. The areas selected for training included business skills, software development skills, Microsoft Power Platform, Python, and an introduction to artificial intelligence. After successfully conducting two waves of the upskilling program in 2022 and 2023, the organization set an ambitious goal of upskilling 10% of its workforce by the end of 2026. Beyond focusing on providing individuals with new skills and tools, the organization needed to establish infrastructure for the citizen-developed applications to be hosted and shared while ensuring compliance with internal and external regulations. To this end, the organization has developed a citizen development platform allowing individuals to run their application locally, in a so-called "container," and, after the necessary checks, be pushed onto the platform (*Production-Grade Container Orchestration*, n.d.). The compliance checks were conducted via the citizen development hub including a mix of automated and human review of the requests for applications that citizen developers wanted to develop.

With citizen development activities being supported from technological and organizational perspectives, the developments in GAI present the organization with new challenges and opportunities. On the one hand, GAI can assist in coding and developing new applications. On the other hand, it enables additional use cases and contains transformative potential that can be unlocked by allowing individuals to experiment with GAI capabilities. In light of this changed context for citizen development, the organizational stakeholders responsible for citizen development activities have reviewed

their problem formulation. Currently, they face the puzzle of making (G)AI capabilities accessible to the whole organization while remaining compliant with internal and external regulations. Therefore, they take citizen development to be not only a means of curbing instances of shadow IT but also a way to seize the transformative opportunities of new technologies by developing digital expertise. Thus, both the citizen development activities and the way they are supported in the organization are expected to change.

Study design

This study is situated within the pragmatic qualitative tradition (Goldkuhl, 2012b) which (1) takes research to be focused on understanding through interpretation, situated in the social and historical context of the studied area, and (2) acknowledges the transformative role of action in changing a problematic situation. The ultimate purpose of pragmatic research is, therefore, "to create knowledge in the interest of change and improvement" (Goldkuhl, 2012b, p. 139). The knowledge that is created as a result is not a copy of reality but is constructed to help us better take part in the world (Goldkuhl, 2012b).

Within this epistemological stance, we aim to understand the way GAI alters citizen development activities taking place within the participating organization to gain insight into how to manage it in the changed context. At this stage, the entry point for our investigation draws on the problem formulation of the selected organization and the background literature on citizen development. The organization is faced with the problem of *making (G)AI capabilities accessible to the whole organization by relying on its established citizen development activities while remaining compliant with internal and external regulations.* This problem resonates with the challenge of managing citizen development in the context changed by GAI which has already been acknowledged in academic literature (Barkin & Davenport, 2023; T. H. Davenport et al., 2023). The knowledge that we aim to construct, therefore, has the purpose of improving local practice as well as solving a class of problems that manifest themselves in organizations. For this purpose, we aim to conduct a case study followed by action design research (ADR) in the context of the selected organization (Haj-Bolouri et al., 2016; Mullarkey & Hevner, 2019).

First, we aim to understand how GAI alters existing citizen development activities within the context of the partner organization. To this end, we will gather background information on the organizational context, creating an overview of the development of citizen development activities as well as current supporting factors and their impact. That will be done by overviewing publicly available sources as well as internal documentation and interviewing stakeholders within the organization. In addition to creating an overview of the previous activities, we aim to understand how the problem formulation manifests itself in the organizational context. Capturing some insights at this stage will add to the understanding of how citizen development activities change in the context of GAI and which challenges might arise for managing and scaling citizen development in organizations.

Second, we aim to formulate prescriptive knowledge on how to approach GAI in the context of citizen development to advance the goal of digitally empowering non-

technical functions while ensuring compliance. To this end, the research team joined by the organizational stakeholders addressing the problematic situation will engage in iterations of problem formulation, artifact creation, evaluation, reflection, and learning (Mullarkey & Hevner, 2019). The research team will be participating in practice through (1) "personal actions or close observations of others' actions – the effects and success of different tactics" (Goldkuhl, 2012a, p. 141) and creating a reciprocal space for reflection and learning (Haj-Bolouri et al., 2016). Through the necessary number of ADR iterations, we aim to construct knowledge relevant to other organizations facing a similar problem.

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