

RESEARCH IN PROGRESS

DESIGN AND EVALUATION OF A DIGITAL TRANSFORMATION CANVAS FOR SME

LUKAS NEIDLINGER, JÜRGEN JUNG

Frankfurt University of Applied Sciences, Faculty of Computer Science and
Engineering, Hesse, Germany
lukas.neidlinger@stud.fra-uas.de, juergen.jung@fra-uas.de

Due to the rapid evolution of digital technologies and associated business benefits, companies are forced to adapt their business models and operational processes. However, especially small and medium-sized companies perceive a significant risk imposed by a digital transformation as they lack digital capabilities and necessary resources. Overwhelmed by heavy-weight frameworks and methods, such companies rather need a simple approach like a business model canvas for digital transformation. The objective of the research presented in the paper at hand is to present research in progress on the design and validation of a digital transformation canvas for small and medium-sized enterprises. It has been developed together with the Chamber of Industry and Commerce in Offenbach (Germany) as well as two member companies.

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1 Motivation and Research Objective

Digital Transformation (DT) is widely perceived as a business transformation enabled by modern digital technology (Morakanyane et al., 2017). Digital technology is an enabler for business model innovation (Ancillai et al., 2023) or the adaption of existing business models with digital services (Tian et al., 2022). Typical drivers for a DT are expectations of digital customers (Verhoef et al., 2021), innovative (or disruptive) digital technologies (Ancillai et al., 2023) or digital ecosystems (Ancillai et al., 2023). Furthermore, DT can be used for improving existing business processes or even achieve operational excellence (Draganic, 2023).

However, due to its holistic impact on an organisation, DT still remains a challenging task even though dedicated methods and frameworks are available (Ciruskabiri & Varnaseri, 2023; Torres et al., 2024). Especially Small and Medium-sized Enterprises (SME) struggle with such an endeavour, as digitalization is not their core competency and they lack of necessary resources and digital capabilities (Pelletier & Cloutier, 2019) and existing canvases are only partially suitable (Neidlinger, 2025). In order to provide a tangible starting point for a DT in SME, the objective of the paper at hand is to present the design and evaluation of a corresponding canvas. A Design Science Research (DSR) approach (Hevner et al., 2004) has been chosen as the research aims to develop an artefact that can be applied in a business context. A first draft canvas was derived based on results from a Structured Literature Review (SLR) on existing canvases, digital transformation as well as peculiarities of SME. This draft has been evaluated in an interview with an expert of the Industrie- und Handelskammer (IHK)¹ in the city of Offenbach (Germany) and then validated by conducting two scenario workshops with selected SME.

2 Overview on Existing Research

A couple of candidates for DT canvases for SME have been identified based on the SLR as documented in (Neidlinger, 2025). The databases of Springer, Elsevier and IEEE have been searched resulting in 140 publications. These have been filtered by excluding very specific topics or other contexts and including those with a holistic

¹ Chamber of Industry and Commerce in Offenbach, Germany

perspective for DT. Candidate fields have been identified and related to SME requirements based on the final 25 papers.

The Business Model Canvas (BMC) by Osterwalder and Pigneur (Osterwalder & Pigneur, 2013) aims to support shaping a (new) business model (Osterwalder & Pigneur, 2013). Even though it does not directly address a DT (Bachmann et al., 2025), it offers a validated base to build upon. Dedicated DT canvases in particular focus on employees (e.g. Moencks et al., 2022) and the usage of data as a driver for DT (e.g. Elia et al., 2024). Both points are relevant for SME having a limited number of employees and difficulties in recognizing potential for successful usage of data in their business processes. Nevertheless, these canvases are not fully suited as comprehensive DT canvases, as they focus on their specific subject areas while other essential aspects of DT are not included. Security and safety aspects are emphasised as relevant topics for SME (e.g. Azinheira et al., 2023; Jäntti, 2020) but not adequately recognised in existing DT canvases except for one: (Elia et al., 2024). A considerable amount of canvases follow a business focused approach, aiming to display most aspects of a business model on a high level of abstraction (e.g. Elia et al., 2024). Additionally, there are human-centered canvases (e.g. Moencks et al., 2022), moving the employee into the focus to display its relevance in DT, while others are technology-focused (e.g. Andre et al., 2018; May et al., 2024) or guiding the introduction of key drivers for DT.

3 DT Canvas for SME

The structure of the canvas, as shown in Figure 1, is based on Osterwalder and Pigneur's BMC (Osterwalder & Pigneur, 2013). *Employee* is positioned to the left of *Value Creation* to emphasize its role as the core of value creation in the company. New elements *Data* and *Digital Technologies* are inserted into the center of the canvas, to reflect their relevance for processes of *Value Creation* as well as *Delivery*. *Security & Regulations* is placed at the top to emphasize its impact on other elements. The canvas contains two types of arrows to indicate dependencies. Large arrows follow the flow of value creation from within the company on the left towards the customer on the right. Small arrows (with labels) describe the interconnectedness between canvas fields. The following explains the fields and their relations to each other in depth.

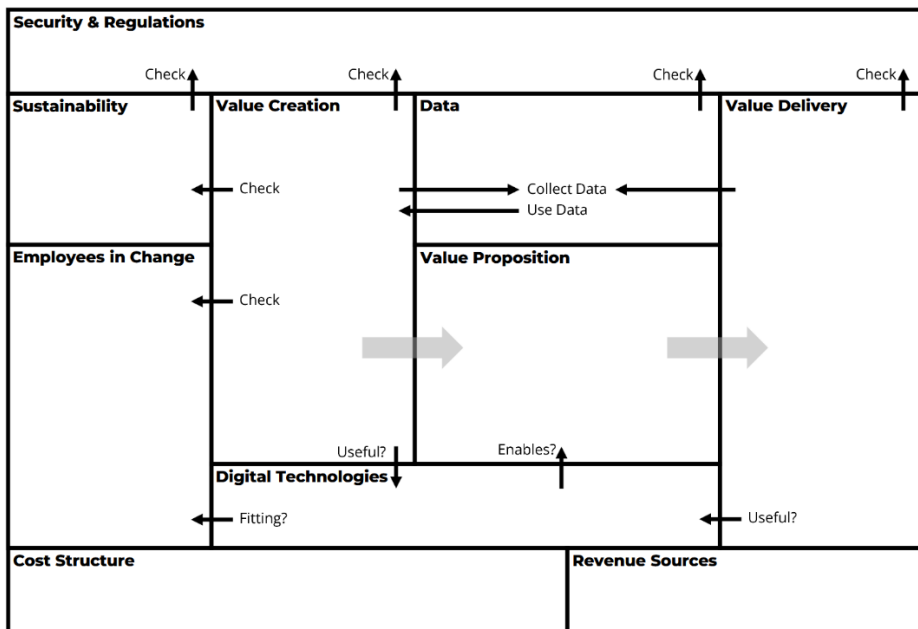


Figure 1: DT canvas overview
Source: (Neidlinger, 2025), p. 55

The field *Data* encourages to think about what data can be collected from *Value Creation* as well as *Value Delivery* (arrow labeled *collect data*). For *Value Creation*, this may encompass data from past activities or machines (Gualtieri et al., 2020), while on the *Value Delivery* side, data about consumer behavior or demographics could be gathered (Enshassi et al., 2025). Encouraged by the *use data* arrow, users should further reflect on how data can be used for value creation, like for example predictive maintenance (Khan et al., 2022), or gather more customer data for better tailored marketing.

Security and Regulations is located above *Data* to challenge data security and check for relevant regulations. Attention has also been paid to implementing measures to prevent or mitigate security risks, like introducing regular IT-security trainings (Le et al., 2024). The field should also address physical security hazards that can occur during a digitalization process, for example through the introduction of robots in manufacturing (Cagno et al., 2024; Romero et al., 2019).

Digital Technologies serves as a collection of technologies currently in use with the objective to make two initial considerations: Does technology help with the current *Value Creation* or *Value Delivery*? Or does it enable new ways of *Value Creation* and potentially a new *Value Proposition*? SMEs should further consider the fit of the technology to the employees, because in the end they are the ones using it (Fischer et al., 2019). This is emphasized by the proximity of both fields.

Employees are defined by Osterwalder and Pigneur to be part of a company's *Value Creation*. However, the field *Employees in Change* does not refer to employees as individual resources, but depicts how employees, being a key driver of value creation in SMEs, are affected by change. This field shows how an employee's work environment is changed through digitalization, how they react to change and what measures can be taken to prepare them or inspire them for DT.

Sustainability addresses both ecological and economic sustainability of the business model. It makes the user consider whether planned changes may strengthen or weaken the organization's ecological footprint. Further, it encourages reflection on how the adapted business model can remain competitive in the long term.

The DT Canvas combines the results of the SLR and SME requirements and, therefore, does not focus on one specific level of abstraction but perceived usefulness of SME. It enables them to ideate business models at a strategic level while still addressing crucial operational aspects, such as changes to employees' work environments. This mix of abstraction is the result from SME requirements identified in the SLR as well as the expert interview and scenario workshops. However, future research is necessary to confirm its usefulness.

The canvas is supposed to be filled in by business stakeholders together with a facilitator who supports adding contents and keeps it consistent. A questionnaire has been developed to guide such a facilitator through the process of filling in the DT Canvas. This is accomplished by simple questions for the user of the canvas to be answered in order to complete it. Details on the questionnaire and its application can be found in (Neidlinger, 2025).

4 DT Canvas Evaluation

An online interview has been conducted with an expert of the Chamber of Industry and Commerce of Offenbach on July 8, 2025 using Microsoft Teams. Even though the feedback was generally encouraging, the expert raised concerns with respect to the usability and comprehensiveness of the canvas for SMEs in particular. As a consequence, the facilitator's guide and the guiding arrows as explained in the previous section have been introduced to improve user understanding.

The DT Canvas was then evaluated in two consecutive workshops with SME. There were no explicit sampling criteria as only two companies were willing to support the evaluation. They were chosen to get early feedback as recommended in (Yin, 2007). Results from the workshop were noted ex post by the researcher based on observations of the behavior, issues and feedback. Topics have been identified with respect to usability (e.g. canvas field size), user understanding (e.g. field names) and flexibility (e.g. different usage scenarios).

We describe the workshop to provide an example on how it can be applied with a facilitator in a SME: During the first workshop, a blank A0 print of the canvas was used at the company's premises. After a short overview of the canvas, post-its were used to map the "AS-IS" business model of the company by addressing each field according to the order defined in the guiding questionnaire. As an exception, the field *Employees in Change* was left empty as no specific change occurred, yet. The resulting canvas was then used as a base to discuss possible scenarios for digitalization or DT. With the help of the guiding arrows, opportunities for leveraging data from the side of the customer or the value creation were explored, as well as the potential use of new technologies and the implications of these changes for security and employees. These scenarios were added to the canvas by using sticky notes having different colors. This workshop has also shown that clearer naming of canvas elements was needed as the practitioner experienced some confusion. Thus, the initial fields *Employees* and *Technologies* were renamed to *Employees in Change* and *Digital Technologies* respectively. Furthermore, the version of the canvas used in this workshop had an additional field labelled *Competitors*. The field was removed to allow more focus on core elements and speed up the process of filling out the canvas, as this took a considerable amount of time. Too much focus on competitors may also

lead to an inadequate business model, for example by copying a business model or technology without sufficient resources or capabilities (C. Matt et al., 2015).

The second workshop was conducted online. While no direct changes to the canvas were made, the current structure and layout of the canvas was confirmed with respect to understanding, usability and flexibility. However, the observation was made that consultation of additional employees during the process of filling in the DT Canvas may lead to better results, especially since employees are a core topic in the canvas.

5 Summary and Outlook

The paper at hand described the design and evaluation of a canvas addressing a DT in SME. A first version of the canvas has been derived from results of a SLR and then evaluated by an expert from a Chamber representing industry and commerce firms in the Offenbach area (Germany). This interview already implied changes to the canvas and the practicability check continued with two scenario workshops conducted with selected SMEs. Experiences from the evaluations lead to changes in the canvas' structure as well as the creation of a guiding document explaining the application of the canvas through dedicated questions.

Future research will have to be done in order to improve the canvas. As already discussed in section 4, further workshops should be conducted with additional employees as it was not in the scope of the evaluation. Interviewing additional experts will lead to more diverse insights and better validity of results. Especially since the second workshop was conducted online, another on-site test could lead to additional insights in regard to usability of the printed-out canvas. To further assess user acceptance of the DT canvas, future research will incorporate the Technology Acceptance Model (TAM) as an evaluation framework (Davis & Granić, 2024). Another limitation, which is common in Design Science Research, is that the researcher also acted as the evaluator of the developed artifact (Hevner et al., 2004). This may introduce some bias into the evaluation process, even though care was taken to interpret evaluation as objectively as possible. Thus, future evaluation by several researchers is recommended.

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