

Appropriating Digital Transformation: Transformative Ideas about Technology

SIGDITE ICIS Workshop Paper

Markus Philipp Zimmer

University of Turku

Rehtorinpellonkatu 3, FI-20500 Turku

markus.zimmer@utu.fi

Marko Niemimaa

University of Jyväskylä

P.O. Box 35, FI-40014 Jyväskylä

marko.i.niemimaa@jyu.fi

Abstract

Extant research on digital transformation (DT) views digital technologies and the changes these enable as a core concern for DT. Drawing on translation theory, we propose studying DT not only as a technological concern but as a matter of transformative ideas about technology. In an ethnographic study, we explore how a large German car manufacturer (Car Inc.) appropriated DT. Prior to introducing digital technologies, Car Inc. translated ideas about technology into its local context. Putting its ideas about technology for its DT into practice, Car Inc.'s digital infrastructure evolved into a 'digital jungle'. Our study delves into Car Inc.'s appropriation of DT as a translation of ideas about technology and how its ideas influence and shape its DT process and in particular, its infrastructure's evolution into a 'digital jungle'. We thereby contribute to DT research illustrating the criticality of linking an organization's appropriation of DT to its DT process.

Keywords: Digital Transformation; Translation; Institutional Theory; Digital Infrastructure; Digital Jungle

Introduction

Digital transformation (DT) comprises significant changes to society, industries, organizations and individuals. In past years, DT has received increasing attention from both researchers and practitioners. They found that DT affects organizations' value offering, business processes, identity and culture (Bharadwaj et al. 2013; Svahn et al. 2017; Tumbas et al. 2018; Vial 2019; Westerman and Bonnet 2005). Yet, in extant literature, researchers have treated DT mainly from a technology dominant perspective (Chanas et al. 2019; Sebastian et al. 2017; Vial 2019). This is reflected in Vial's definition of DT composed on the basis of a review of DT research: DT is "a process that aims to improve an entity by triggering significant changes to its properties through combinations of information, computing, communication, and connectivity technologies" (Vial 2019). While this definition acknowledges the processual nature of DT, it assumes that the significant changes to improve an entity are driven by digital technologies.

Assuming that DT is driven by digital technologies, DT research looks at how organizations craft strategic responses that rely on digital technologies for their DT process (Chanas et al. 2019; Vial 2019). Such responses, or DT strategies, are similar to organizing visions. They outline ideas about how an organization intends to entangle technology and organizing and by this, transform the latter (Svahn et al. 2017; Swanson and Ramiller 1997). However, unlike full-fledged DT (or DT strategies), ideas about technology inscribed in such strategies may travel within and between organizations (Czarniawska and Joerges 1996; Nielsen et al. 2014). When travelling, the ideas influence how an organization entangles technology and organizing, thus they shape and influence an organization's DT process (Nielsen et al. 2014; Swanson and Ramiller 1997).

Studies of translation look into how management ideas and practices travel and are translated between and within organizations (Czarniawska and Joerges 1996; Wæraas and Nielsen 2016). Translation is a process of adoption, i.e., reinterpreting and implementing ideas about technology into an organization's context (Czarniawska and Joerges 1996; Niemimaa and Niemimaa 2017; Wæraas and Nielsen 2016). It is closely linked with theorization which looks at how an organizational field interprets technology (Greenwood et al. 2002; Nielsen et al. 2014). Employing these concepts, Nielsen et al. (2014) found that adaption of fairly similar technologies varied across different local contexts. Similarly, Swanson and Ramiller (1997, 2004)

found that organizing visions play a crucial role in how IT innovations disseminate as they encapsulate ideas about how technology may transform organizing.

Drawing on translation, we came to question the technology-driven view of DT. Instead, we view DT as transformative institutional ideas about technology that organizations translate into their context as they appropriate DT. Conceiving DT as transformative ideas about technology opens up conceptual space to explore 'how organizational appropriations of DT as transformative institutional ideas about technology trigger and shape significant changes to an organization?'

We enter this conceptual space in an ethnographic field work of a large German car manufacturer (Car Inc.). In 2016, Car Inc. launched a DT initiative (Eberle and Maeder 2016; Van Maanen 2011). Collecting and analyzing data on how Car Inc.'s DT initiative transforms its organizing, we noticed that to understand Car Inc.'s DT process, we need to understand its institutional ideas about technology. In fact, at the inception of its initiative, Car Inc. dealt with questions of "what DT means to Car Inc.?" and "which measures should Car Inc. take to implement DT, and why?". In other words, Car Inc. started its DT process by appropriating DT as a translation of ideas about technology into its local context.

Institutional Theory, Translation and Digital Transformation

Institutions are socially constructed established orders (Mignerat and Rivard 2009; Nielsen et al. 2014; Scott 1987). Institutional theory provides constructs to analyze and explain institutional effects and institutionalization across an organizational field and within a single organization (DiMaggio and Powell 1983; Meyer and Rowan 1977; Mignerat and Rivard 2009). An organization can be an institution. At the same time, an organization is part of an organizational field, i.e., "organizations that, in the aggregate, constitute a recognized area of institutional life" (DiMaggio and Powell 1983).

In a review on institutional theory in IS research, Mignerat and Rivard (2009) found that IS research has mainly focused on studying institutional effects. Drawing on DiMaggio's and Powell's (1983) set of institutional pressures, IS researchers have studied how these pressures affect adoption, implementation and use of IT in organizations (Mignerat and Rivard 2009). They conclude their review suggesting for further research into how organizations respond to such pressures other than complying. As research has illustrated the significance which an organization's context (its history, needs and capabilities) may take when it responds to such pressures, they suggest the concept of organizing visions (Swanson and Ramiller 1997, 2004) as a possible avenue for future research (Mignerat and Rivard 2009).

"An organizing vision is a focal community idea for the application of information technology in organizations" (Swanson and Ramiller 1997). Swanson and Ramiller (1997) conceptualize an organizing vision as the outcome of organizations' sense making process. In this process, organizations generate ideas about a technology's application. Organizations do not make sense of technologies alone but as part of an organizational field theorizing ideas about technology (Greenwood et al. 2002; Swanson and Ramiller 1997). These theorizations may travel over time and space between and within organizations entailing organizational change as they are put into practice (Czarniawska 2009; Czarniawska and Joerges 1996; Nielsen et al. 2014). However, they do not travel unchanged, but organizations act as interpretive filters translating ideas into their local context (Czarniawska 2009; Suddaby 2010).

Translation conceptualizes the process in which organizational actors reinterpret and implement ideas about technology into their local context (Czarniawska and Joerges 1996; Nielsen et al. 2014; Wæraas and Nielsen 2016). It is "as a complex process of negotiation during which meanings, claims and interests change and gain ground" (Wæraas and Nielsen 2016). Consequently, ideas about technology do not emerge unchanged from translation into a local context but are constructed anew (Czarniawska 2009). They provide visions for entangling technology and organizing and thus, shape, influence and change organizational practice (Orlikowski 2000; Orlikowski and Scott 2008; Swanson and Ramiller 1997)

DT shapes, influences and changes organizational practice (Vial 2019). Extant IS research on DT is concerned with digital technologies' effect on organizations' strategizing, structure, culture or value creation (Chanias and Hess 2016; Svahn et al. 2017; Tumbas et al. 2018; Vial 2019; Westerman and Bonnet 2005). It positions digital technology at the core of DT; as its trigger (Vial 2019). However, IS research also suggests that DT takes similar and various forms across organizations sharing certain characteristics as industry, value offering or size (e.g., Bilgeri et al. 2017; Chanias and Hess 2016; Sebastian et al. 2017;

Tumbas et al. 2018). While this could be explained looking into the digital technologies adopted by these organizations, studies also suggest that it is not IT artefacts travelling in their material form but ideas about these artefacts (Nielsen et al. 2014; Swanson and Ramiller 1997).

As DT affects various entities (e.g., society, industry, organizations) (Vial 2019), various ideas about technology underlying DT exist across these entities. Organizations engaging in their DT therefore appropriate DT into a DT for their context (Svahn et al. 2017). As part of this appropriation, they draw on the variety of ideas about technology existing across the multiple entities in which DT occurs (Greenwood et al. 2002; Swanson and Ramiller 1997). As visions about how technology and organizing are to be entangled, these ideas become transformative influencing and shaping organizations' DT processes and eventually its outcome (Nielsen et al. 2014; Swanson and Ramiller 1997). In this vein, we see benefit in studying DT as a travelling transformative idea about technology as it shifts our perspective from studying how digital technologies affect organizing to how ideas about technology shape and influence entanglement of digital technologies and organizing.

Research approach and setting

Taking an ethnographic approach (Van Maanen 2011), the principal researcher entered the field in July 2017. Interested in DT within the automotive industry, he had sought and gained access to Car Inc., a large German car manufacturer. In the field, he observes a dual role as researcher/employee. He takes a 'research-up' perspective on the process of Car Inc.'s DT. This means, the principal researcher constructs and studies empirical material from a worker's perspective and does not hold privileged access to managerial processes or decision making within the organization (Eberle and Maeder 2016). He collected data using participant observations (Van Maanen 2011), informal interviews, which he both captured in field notes (Emerson et al. 2001), and documents on Car Inc.'s DT.

In 2016, Car Inc. launched a DT program (to which we refer as PolePosition2020). At its inception, Car Inc. dealt with questions of "what DT means to Car Inc.?" and "which measures should Car Inc. take to implement DT, and why?". Answering these questions, Car Inc. appropriated DT for its local context by translating ideas circulating on a field-level into its local context. Its management conveyed these ideas via internal documents, news, videos as well as workshops and event series. An integral part of Car Inc.'s appropriation of DT is its idea to use digital technology to transform its collaboration practices.

Car Inc. integrated various digital technologies for collaboration into its digital infrastructure (DI) (Tilson et al. 2010). It portrays these technologies as enabling 'new ways of collaboration' that will reshape its organizing. As we took an interest in Car Inc.'s DI and how it evolves as part of the car manufacturer's DT, we stumbled upon a puzzling observation. As Car Inc. developed its DI top-down, its employees adopted its ideas about technology engaging simultaneously in bottom-up development. As a consequence, Car Inc.'s management and employees experienced the firm's DI as a 'digital jungle' (Zimmer and Niemimaa 2019a, 2019b). Seeking to understand Car Inc.'s DI evolution into a 'digital jungle', we realized that taking the view of technology triggering DT limits our analysis to how Car Inc.'s DI constrains and enables the firm's DT. Investigating the 'digital jungle, however, the more relevant question appears to be how Car Inc. translated ideas about technology into its local context and how these ideas shape its DI evolution?

Currently, data collection is in an advanced stage. The principal research has accumulated field notes capturing both his participant observations and informal interviews. Moreover, he has collected documents on Car Inc.'s DT and in particular, digital data on interactions between Car Inc.'s management and employees on Car Inc.'s enterprise social media (Akemu and Abdelnour 2018; Murthy 2008). These interactions focus on Car Inc.'s DI evolution as well as its DT process. Continuing data collection, we have gained approval by Car Inc.'s workers council to conduct an interview study delving into Car Inc.'s DT and especially, its DI evolution. Thus, we consider our data collection as advanced but not completed.

While data collection is advanced, our data analysis is only preliminary. Taking a narrative analysis approach (Cortazzi 2001; Silverman 2014), we orchestrated Car Inc.'s PolePosition2020 implementation into a chronological storyline of events focusing on Car Inc.'s DI evolution and its effective use (Zimmer and Niemimaa 2019a). In this study, we intend to analyze the narratives within Car Inc.'s PolePosition2020 documents and our principal researchers tales from the field (Van Maanen 2011) to identify, and analyze how Car Inc. appropriated DT translating ideas about technology into its local context and how these ideas shaped and influenced Car Inc.'s DI evolution into a 'digital jungle', and its DT process more broadly.

Potential contribution

The potential contribution of our study is twofold. First, our proposition to conceive DT as transformative ideas about technology may alter how we study the phenomenon of DT. Second, we may contribute to explain why organizations vary in their DT despite the homogeneity of available digital technologies.

Conceiving DT as an idea about technology, we (as IS researchers) may study DT beyond a technology dominant perspective as a process of sense making (Swanson and Ramiller 1997). It turns our attention to questions targeted at organizations' cognitive dealing and enactment of the phenomenon of DT as well as how the two are intertwined. For example, how organizations theorize DT on a field-level and how they translate, legitimize and mobilize it into their local context (Nielsen et al. 2014; Wæraas and Nielsen 2016). Following ideas as they travel (Czarniawska and Joerges 1996), we may observe how an organization's ideas influence its practice of DT (and vice versa) and by this, link an organization's DT strategy to actors' activities for DT (Vial 2019). Further, studying DT as ideas about technology, we may identify abstract notions inscribed in these ideas that coin the meaning of DT in a local context or on field level. Last, viewing DT as ideas about technology underlines that organizations should not start their DT by first taking a technology and then pondering on its local implementation but rather start by asking 'what does DT mean for us', 'how should we (as an organization) make sense of DT', i.e., to appropriate DT by translating ideas about technology into organizational context. Indeed, this is how we observed DT happening at Car Inc.

Car Inc.'s appropriation of DT engendered organizational change. As part of PolePosition2020, Car Inc.'s management largely appropriated DT as ideas about technology being used to transform internal collaboration practices. Ideas are cognitive artefacts which find representation in linguistic forms (Nielsen et al. 2014). They are subject to negotiation, sense making and discourse which all shape ideas' meaning. Thus, a key point for how Car Inc.'s DT materialized was how its management appropriated DT, i.e., translated ideas about technology underlying DT into the car manufacturer's local context. This emphasizes the role of appropriation for understanding engendered organizational changes. We assume that the observed appropriation was not the only possible but contingent on circumstances under which the appropriation occurred. We thus expect that DT research looking into different organizations' appropriations of DT may identify and explain both similarities and variations in DT across organizations (Chanias and Hess 2016; Tumbas et al. 2018; Vial 2019). Seeing ideas as visions about technology's entanglement with organizing (Swanson and Ramiller 1997), we may start to see different trajectories of how organizations appropriate DT and how DT changes organizing.

References

- Akemu, O., and Abdelnour, S. 2018. "Confronting the Digital: Doing Ethnography in Modern Organizational Settings," *Organizational Research Methods*.
- Bharadwaj, A., El Sawy, O. A., Pavlou, P. A., and Venkatraman, N. V. 2013. "Digital Business Strategy: Toward a next Generation of Insights," *MIS Quarterly* (37:2), pp. 471–482.
- Bilgeri, D., Wortmann, F., and Fleisch, E. 2017. "How Digital Transformation Affects Large Manufacturing Companies' Organization," in *ICIS 2017 Proceedings*, pp. 1–9.
- Chanias, S., and Hess, T. 2016. "Understanding Digital Transformation Strategy Formation: Insights from Europe's Automotive Industry," in *PACIS 2016 Proceedings*, pp. 1–16.
- Chanias, S., Myers, M. D., and Hess, T. 2019. "Digital Transformation Strategy Making in Pre-Digital Organizations: The Case of a Financial Services Provider," *Journal of Strategic Information Systems* (28), Elsevier, pp. 17–33. (<https://doi.org/10.1016/j.jsis.2018.11.003>).
- Cortazzi, M. 2001. "Narrative Analysis in Ethnography," in *Handbook of Ethnography*, P. Atkinson, A. Coffey, S. Delamont, J. Lofland, and L. Lofland (eds.), London: SAGE Publications Ltd., pp. 384–394.
- Czarniawska, B. 2009. "Emerging Institutions: Pyramids or Anthills?," *Organization Studies* (30:4), pp. 423–441. (<https://doi.org/10.1177/0170840609102282>).
- Czarniawska, B., and Joerges, B. 1996. "Travels of Ideas," in *Translating Organizational Change* (Vol. 13), B. Czarniawska and G. Sevón (eds.), Berlin: Walter de Gruyter, pp. 13–48.
- DiMaggio, P. J., and Powell, W. W. 1983. "The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organizational Fields," *American Sociological Review* (48:2), pp. 147–160.
- Eberle, T. S., and Maeder, C. 2016. "Organizational Ethnography," in *Qualitative Research. Theory, Method and Practice* (4th ed.), D. Silverman (ed.), London: Sage Publications, pp. 121–136.

- Emerson, R. M., Fretz, R. I., and Shaw, L. L. 2001. "Participant Observation and Fieldnotes," in *Handbook of Ethnography*, P. Atkinson, A. Coffey, S. Delamont, J. Lofland, and L. Lofland (eds.), London: SAGE Publications Ltd, pp. 352–368. (<https://doi.org/10.4135/9781848608337>).
- Greenwood, R., Suddaby, R., and Hinings, C. R. 2002. "Theorizing Change: The Role of Professional Associations in the Transformation of Institutionalized Fields," *The Academy of Management Journal* (45:1), pp. 58–80. (<https://doi.org/10.5465/AMJ.2009.43670890>).
- Van Maanen, J. 2011. *Tales of the Field: On Writing Ethnography*, (2nd ed.), Chicago: University of Chicago Press.
- Meyer, J. W., and Rowan, B. 1977. "Institutionalized Organizations: Formal Structure as Myth and Ceremony," *American Journal of Sociology* (83:2), pp. 340–363.
- Mignerat, M., and Rivard, S. 2009. "Positioning the Institutional Perspective in Information Systems Research," *Journal of Information Technology* (24), pp. 369–391.
- Murthy, D. 2008. "Digital Ethnography: An Examination of the Use of New Technologies for Social Research," *Sociology* (42:5), pp. 837–855. (<https://doi.org/10.1177/0038038508094565>).
- Nielsen, J. A., Mathiassen, L., and Newell, S. 2014. "Theorization and Translation in Information Technology Institutionalization: Evidence from Danish Home Care," *MIS Quarterly* (38:1), pp. 165–186.
- Niemimaa, E., and Niemimaa, M. 2017. "Information Systems Security Policy Implementation in Practice: From Best Practices to Situated Practices," *European Journal of Information Systems* (26:1), Springer, pp. 1–20.
- Orlikowski, W. J. 2000. "Using Technology and Constituting Structures: A Practice Lens for Studying Technology in Organizations," *Organization Science* (11:4), pp. 404–428.
- Orlikowski, W. J., and Scott, S. V. 2008. "10 Sociomateriality: Challenging the Separation of Technology, Work and Organization," *The Academy of Management Annals* (2:1), pp. 433–474.
- Scott, W. R. 1987. "The Adolescence of Institutional Theory," *Administrative Science Quarterly* (32:4), pp. 493–511. (<http://www.jstor.org/about/terms.html>).
- Sebastian, I. M., Mocker, M., Ross, J. W., Moloney, K. G., Beath, C., and Fonstad, N. O. 2017. "How Big Old Companies Navigate Digital Transformation," *MIS Quarterly Executive* (16:3), pp. 197–213.
- Silverman, D. 2014. *Interpreting Qualitative Data*, (5th ed.), London: SAGE Publications Ltd.
- Suddaby, R. 2010. "Challenges for Institutional Theory," *Journal of Management Inquiry* (19:1), pp. 14–20. (<https://doi.org/10.1177/1056492609347564>).
- Svahn, F., Mathiassen, L., and Lindgren, R. 2017. "Embracing Digital Innovation in Incumbent Firms: How Volvo Cars Managed Competing Concerns," *MIS Quarterly* (41:1), pp. 239–253.
- Swanson, E. B., and Ramiller, N. C. 1997. "The Organizing Vision in Information Systems Innovation," *Organization Science* (8:5), pp. 458–474. (<https://doi.org/10.1287/orsc.8.5.458>).
- Swanson, E. B., and Ramiller, N. C. 2004. "Innovating Mindfully with Information Technology," *MIS Quarterly* (28:4), pp. 553–583.
- Tilson, D., Lyytinen, K., and Sørensen, C. 2010. "Research Commentary: Digital Infrastructures: The Missing IS Research Agenda," *Information Systems Research* (21:4), pp. 748–759.
- Tumbas, S., Berente, N., and vom Brocke, J. 2018. "Digital Innovation and Institutional Entrepreneurship: Chief Digital Officer Perspectives of Their Emerging Role," *Journal of Information Technology* (Vol. 33). (<https://doi.org/10.1057/s41265-018-0055-0>).
- Vial, G. 2019. "Understanding Digital Transformation: A Review and a Research Agenda," *Journal of Strategic Information Systems* (28:2), pp. 118–144. (<https://doi.org/10.1016/j.jsis.2019.01.003>).
- Wæraas, A., and Nielsen, J. A. 2016. "Translation Theory 'Translated': Three Perspectives on Translation in Organizational Research," *International Journal of Management Reviews* (18:3), pp. 236–270. (<https://doi.org/10.1111/ijmr.12092>).
- Westerman, G., and Bonnet, D. 2005. "Revamping Your Business Through Digital Transformation," *MIT Sloan Management Review*, pp. 1–6. (<https://doi.org/10.1108/10878571211209314>).
- Zimmer, M. P., and Niemimaa, M. 2019a. "Navigating in the Digital Jungle: Articulating Combinatory Affordances of Digital Infrastructures for Collaboration," in *Pacific Asia Conference on Information Systems (PACIS) 2019 Proceedings*, Xi'an, pp. 1–14.
- Zimmer, M. P., and Niemimaa, M. 2019b. "Cultivating a Digital Jungle: A Tentative Framework," in *IFIP WG 8.2 OASIS Workshop at ICIS 2019*, Munich, pp. 1–7.