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# Guest editorial: Understanding digital transformation from an inter-organisational network perspective

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## 1. Introduction: why an inter-organisational perspective is needed to understand value creation within digital transformation

This special issue aims to explore digitalisation and digital transformation (DT) in a B2B setting. By taking an inter-organisational perspective, we hope to offer an alternative way of understanding such a complex process. The central question we would like to address through this collection of articles is as follows:

- Q1. How does digital transformation affect the value creation process at an inter-organisational level?

Vial (2021), through an extensive literature review, defines DT as “a process that aims to improve an entity by triggering significant changes to its properties through combinations of information, computing, communication, and connectivity technologies”. But Vial (2021, p. 3) also finds that there are currently many definitions of this concept, representing the complexity of the phenomenon and the confusion in the current literature regarding the phenomenon’s scope and characteristics. In a more operational sense, DT has also been defined as an evolutionary change process that can leverage digital capabilities and technologies to enable business models, operational processes and customer experiences to create value (Morakanyane *et al.*, 2017). The use of the terms “evolutionary” and, in Vial’s (2021) definition, “process”, implies that DT is a continuous change taking place over time, thus adding to the phenomenon’s complexity (Fremont, 2021; Zaoui and Souissi, 2020; Kraus *et al.*, 2021). Moreover, the latter definition connects DT to some kind of value creation in terms of improved business processes.

Regarding the key terms “value” and “improve” in the above definitions of DT, the emerging literature about DT has so far shown that digitalisation impacts key business processes – such as marketing, purchasing and sales – and also contributes to the creation of new business models. Scholars are moreover investigating how digital technologies are accepted and used within organisations (Nambisan *et al.*, 2017) with reference to the technologies’ impact on the value of the involved business processes. Attention has also been

paid to how DT might positively affect a company’s overall market performance (Westerman *et al.*, 2014). Thus, it is evident that digital technologies allow for the development of external opportunities, such as new business models, improved customer delivery times and improved customer service quality. By extension, it may also lead to disruptive change, such as changes in business roles, even making a company’s business obsolete within its wider context (Parviainen *et al.*, 2017).

But in sum, the main outcome of DT is, by definition, value creation, both for the firm transforming and for its customers (Fremont, 2021). Such value generation can happen in different forms, and in their literature review on the subject, Morakanyane *et al.* (2017) list operational efficiencies, improved customer experiences, enhanced business models, strategic differentiation, competitive advantage, improved stakeholder relationships and savings, to name a few. Still, in recent literature reviews on DT, it is proclaimed that the connection between DT and subsequent value creation is not fully understood as of yet and spans many empirical applications and levels of analysis (Vial, 2021; Nadkarni and Prügl, 2021; Kraus *et al.*, 2021). Besides the technology, the single organisation’s strategy (Bharadwaj *et al.*, 2013; Matt *et al.*, 2015), as well as changes to that single organisation, including its structure (Selander and Jarvenpaa, 2016), processes (Carlo *et al.*, 2012) and culture (Karimi and Walter, 2015), is required to yield the capability to generate new paths for value creation by means of DT (Svahn *et al.*, 2017). Vial (2021) thus concludes that, notwithstanding the contributions mentioned above, the research community currently lacks a comprehensive understanding of how the phenomenon of DT actually generates value for the focal actors (Vial, 2021; Fremont, 2021). Moreover, DT is believed to generate implications at multiple levels of analysis, something that is not very well understood or captured in the literature today (Vial, 2021; Kraus *et al.*, 2021). This conceptual development might seem strange, as the very definition of DT implies changes happening on different levels, such as in the strategies of single actors, in the process over time, on the inter-organisational level between interacting actors and in the final customer experience

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*Corrigendum:* It has come to the attention of the publisher that the article: Eklinder-Frick, J., Perna, A. and Fremont, V.H.J. (2023), “Guest editorial: Understanding digital transformation from an inter-organisational network perspective”, *Journal of Business & Industrial Marketing*, Vol. 38 No. 6, pp. 1245-1250, <https://doi.org/10.1108/JBIM-06-2023-605> failed to mention the tenth paper included in this special issue. Like the majority of the papers in this special issue, the paper by Luigi Mersico, Elisa Carloni, Roberta Bocconcelli and Alessandro Pagano portrays an in-depth perspective on a focal firm’s DT. They also describe a focal firm’s journey towards a more digitally mature state, still, they do so in the overall digitally mature industry of software and management consultancy. Moreover, this paper depicts the interaction between academia and the private sphere which adds another perspective to the issue. The study explicitly emphasises the focal actor’s resource interfaces and shows the emergence of three main patterns in the evolution of the innovation path: resource-oriented networking, hybrid resource development and resource assembly. The paper thus depicts how a firm transition from being a knowledge broker to a solution provider; adding another description to this special issue of how the opportunity for value generation relates to the different phases of DT maturity. The authors sincerely apologise for any inconvenience caused.

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Journal of Business & Industrial Marketing  
38/6 (2023) 1245–1250  
© Emerald Publishing Limited [ISSN 0885-8624]  
[DOI 10.1108/JBIM-06-2023-605]

(Fremont, 2021). Thus, it is apt to conclude that how DT contributes to value creation, both within and between organisations, is to date an under-investigated and poorly understood research topic.

DT includes – by definition – inter-organisational aspects of how firms create value through social as well as technical change processes, since the term includes interacting properties such as business model generation and value co-creation (Fremont, 2021; Vial, 2021). This makes DT a phenomenon that fits well with the inter-organisational relationship focus that signifies the inter-organisational network perspective within IMP literature (Baraldi *et al.*, 2012; Håkansson and Waluszewski, 2007). Taking a more interactive and relational viewpoint should also contribute to a more comprehensive picture of DT opportunities and hindrances at the network level, where various actors might have different priorities and agendas. Moreover, the ambition of this special issue is also to mend the lack of a clear focus on how DT might change inter-organisational practices, such as interactive activities, joint resource utilisation and relational bonds between organisations (Morakanyane *et al.*, 2017).

IMP studies have acknowledged that value creation depends on how firms interact, build and manage their business relationships (Waluszewski *et al.*, 2017). Within the IMP tradition, the impact of business relationships on business and value creation can be captured by the ARA model (Håkansson and Snehota, 1995). This model describes the relational actor bonds between the actors in the network, the resource ties that result from mutual adaptations in heterogeneous resources over time and the activity links that form from the joint business activities performed in the network (Håkansson and Snehota, 1995). Value – for instance value for customers – is not given but rather created, and it changes according to the way the company interacts within its business network (Håkansson and Snehota, 2017). Value depends on how companies “pack” it by interacting with other business actors; it is therefore the result of mutual decisions and activities carried out at a network level. This makes activities, resources and actor bonds central elements when studying value creation and distribution. Subsequently, considering the boom of digital technologies, which are supposed to enhance firms’ value creation processes (Verhoef *et al.*, 2021), we think it worth investigating how DT affects value within a dynamic and always-changing business context (Håkansson and Snehota, 1995, 2017). Currently, companies are not easily adapting to the demanding and costly changes resulting from DT. Digitalisation – and its consequences in terms of transformation of traditional business processes – leads to deep and often blurry organisational changes that are often costly and time-consuming (Parviainen *et al.*, 2017). As a consequence, this special issue will also point out that “successful” DT processes are difficult to reach, as they are heavily impacted by the business and social-technical contexts. DT goes beyond the mere selection and “activation” of new technologies within organisations; rather, it implies the dedication of substantial attention to the socio-organisational impact of technologies (Fremont, 2021). In sum, from the IMP perspective, value is created within business relationships between interacting actors, and it is thus impossible to fully understand how DT will create value in

any B2B setting without studying how the DT of any firm impacts the resource ties, activity links and actor bonds between themselves and other parties in their extended network. So, if DT is by definition connected to value creation, understanding these processes of change from an inter-organisational perspective is vital to fully grasp the phenomenon. The joint contribution of the papers in this special issue thus aims to contribute to the understanding of how DT can create value from an inter-organisational perspective, as such an understanding lies at the core of the phenomenon and will subsequently help the development of the DT literature as a whole.

The special issue includes nine articles that apply case study methodology and capture specific facets of the DT journeys of companies. From the perspective of *empirical scope*, the articles are different and thus encompass different inter-organisational contexts. A minority of the included papers set out to capture the entire network of interacting actors around a focal resource, while a single paper studies and compares several such networks. Such perspectives take a broader view of the entire network setting and thus capture more overarching inter-organisational tendencies. The majority of the papers study a focal actor’s interactions with a couple of chosen business actors from the focal actor’s extended business network (often supplier–buyer interactions), thus studying fewer interactions and subsequently facilitating a more in-depth perspective on DT.

## 2. Understanding the process of digital transformation from an inter-organisational perspective

Besides capturing different empirical scopes in terms of inter-organisational interaction, the papers also empirically capture and describe *different phases of the DT journey*. Some of the papers explicitly define what phase their empirical data describe; for others, we, the authors of this editorial, had to define the phase according to the empirical description given in the paper. Still, because the papers in this special issue all apply an inter-organisational empirical scope, it is evident that the cases described in the articles capture many different actors with varying maturity in terms of digitalisation. The paper by Mervi Hamalainen and Asta Salmi, describing a whole network, explicitly depicts a network that includes actors with varying maturity in terms of their DT process. However, the network as a whole is described as rather immature in its use of digital tools and, thus, at the very beginning of its DT. The authors suggest a need for the network actors to apply closer collaboration between the interacting actors in order for the network to venture further in its DT journey. The other paper that describes a whole network, by Per Christian Ahlgren and Johnny Lind, does not address DT and is therefore not part of our analysis. The paper by Song Hua, Han Siqi, Liu Wenyi and Ganguly Anirban, however, investigates several networks specifically focused around firms that have integrated sorting and analysis of DT in their value offering. This paper thus describes a mature network in terms of DT. This paper describes how the sorting and diffusion of information by digitally mature companies, such as financial technology companies, can lead

to value creation for the less digitally mature companies within the studied networks, thus offering empirically grounded conclusions regarding how DT of industries can contribute to value creation within supply chain finance networks.

The other papers in this special issue capture different phases of the DT journey, often showing how firms with very immature use of digital solutions are starting to venture towards more integrated use of digital tools in their value creation. In this vein, the work by Dawn Holmes, Judith Zolkiewski and Jamie Burton studies three different cases that are selected partly because they depict different usage of digital solutions in their value creation. They have thus selected cases that explicitly show different forms of digital maturity and, subsequently, implicitly show varying phases of DT. In making such a case comparison, the authors found that the value added to the firm's competitive advantage by data differs between the firms in different phases of DT. For the studied firm that had come farthest in its DT journey, the whole business revolved around the use and interpretation of data, so ultimately, its competitive advantage was defined by data as the final product of the firm. On the other hand, in less digitally mature firms, competitive advantage is centred around other constructs, such as service delivery or product innovation, which may be underpinned by data usage. Thus, if the use of data and digital tools is the actual product delivered, the value created by means of that data changes. The data become the goal in their own right, while for firms that view data as merely supportive for other types of value generation, data usage is not an end in itself. Value creation is therefore dependent upon how integrated data usage is for the focal firm, which indicates that the use of data for value creation changes during the DT journey.

In terms of DT phases, Aleksandra Hauke-Lopes, Milena Ratajczak-Mrozek and Marcin Wiczerzycki capture how one traditional confectionery firm developed from the usage of very basic digital tools (a simple online presence) to the use of basic digitalisation tools like an online web shop. This DT can be described as venturing from almost no digital value creation to some very basic use of digital tools; still, the studied case describes how this journey was aided by collaboration with three digital platform providers, yet again highlighting the value of inter-organisational collaboration between digitally mature and immature firms in DT. In furthering the discussion around value creation by means of DT, the authors interestingly show that DT of firms in traditional industries, such as confectionery, might actually lead to value co-destruction. This is because traditional, "analogue" interaction might be preferred by some customers. This highlights the need to be critical towards digitalisation and not accept the DT of business actors as an end in itself but rather as a means to some other form of value co-creation involving other digital as well as non-digital resources (but, in some specific settings, also value co-destruction of existing resource structures). Similar to the paper by Dawn Holmes, Judith Zolkiewski and Jamie Burton, this work emphasises the changing value of digital solutions based on the different phases of DT, where digitalisation might take on value in itself or destroy value depending on the maturity of the DT.

The paper by Carla Cleira Ferreira and Frida Lind also describes how a digitally immature firm began to use more digitally mature firms, such as IoT suppliers, to aid it in its DT. But instead of describing a very traditional industry setting, like the confectionary industry, the authors depict the DT of a manufacturing company in the welding industry that is described as having ongoing activities in digital servitisation and is thus a somewhat more advanced company in terms of the usage of digital tools. The paper's conclusions focus less on the negative aspects of value creation in DT and more on the close relationships that are needed to work on digital development in agile and sometimes unknown development processes. More specifically, the authors identify three distinct types of supplier interfaces: connected, digital and digital-physical interfaces. These different interfaces play different roles in value creation when IoT suppliers and purchasers combine their respective resources and work jointly on DT. Supplier interfaces have been studied previously, but Carla Cleira and Frida Lind add the perspective of digitalisation to the conceptualisation of supplier interfaces, and by doing so, help in conceptualising how the relationship between customers of IoT technology and their suppliers may aid DT.

The paper by Andrea Sabatini, Federica Pascucci and Gian Luca Gregori describes interactions between focal firms of varying digital maturity. However, in the case described, the focal firm is not the actor seeking help with its DT but rather the more digitally mature one. As such, the focal firm is the firm trying to push its digital solutions to the less digitally mature users. This puts a focus on the friction that imposing digital solutions on a less-ready counterpart might entail, and both positive and negative outcomes of this friction are found. The authors discover five dimensions of friction, namely, the nature of the relationships with buyers and users, data and information sharing, business model innovation, the focal firm's innovation approach and users' readiness. Moreover, they suggest that in circumstances in which the receiving party is less amenable towards digital solutions, it may be beneficial to keep the collaboration at arm's length until the solution is ready to be fully commercialised. The conclusions indicate that inequality regarding digital maturity might impose strain on relationships as the DT journey progresses.

The paper by Marco Paiola, Mario Rapaccini, Lino Cinquini and Riccardo Giannetti describes the relationship between a manufacturing company and its suppliers of software solutions within the context of servitisation. The authors conceptualise the DT journey explicitly by the design of a four-stage, multi-year roadmap, where the focal business actor goes through the stages of strategic road mapping, connecting the equipment, digitalising the service process and finally enabling new digital services. Subsequently, the authors describe how a very digitally immature manufacturing firm goes through DT of its service offering with the aid of more digitally mature software suppliers. In doing so, they portray how a combination of standardised and customised services aids the transformation and how organisational cultures and issues may be tackled by dictating the pace of the DT journey with the use of strategic roadmaps. Customisation plays a more important role in the early stages of the DT journey, while standardisations seem more effective in

the latter stages. It thus appears that the relationships and services provided by software solutions firms change according to the digital maturity of the recipient, connecting the DT of firms with the development of their supplier relationships. Managing digital suppliers thus seems to be more intricate in the early phases of DT, while in the latter stages, it can become more dominated by arms-length relationships. Thus, while previous papers in the special issue are more concerned with “how” resources and activities may be connected between manufacturing firms and IoT service providers throughout the DT journey, this paper adds the dimension of “when”.

The paper by Hannes Lindkvist, Frida Lind and Lisa Melander captures the transition between phases in the DT journey of firms and thus also adds the aspect of “when” certain collaborative aspects seem to matter. But instead of investigating the relationships between manufacturing firms and software suppliers, the authors study how the relationship between public and private actors changes as the DT journey of implementing geofencing for urban freight transport moves from the development to the implementation stage. Here the empirical focus seems not to be on the relationships between specific interacting actors but on the whole network of interacting actors around a focal resource, namely, geofencing applications for freight transport in Sweden. When the network becomes the entity under empirical investigation, it becomes hard to summarise the network’s DT maturity. However, because this paper describes the developing setting in detail, it is safe to assume that the network started out in a rather immature phase and developed towards a more mature one. Moreover, because the empirical scope concerns a network, the focus moves from the contents of specific interactions, such as resource interfaces and service customisation, to actor roles within the focal network. Regarding the roles that the public and private actors undertook through the DT journey, the authors discover six different roles to be performed, namely, regulators, enablers, intermediaries/orchestrators, service providers (supporting services), service providers/developers (geofencing) and users. They show how these roles change when the digital tools studied in the network enter the implementation stage and that both public and private actors alternate between the roles. Moreover, the paper concludes that in the development stage, public actors are less restrained in their roles and subsequent interaction with private actors in comparison to when acting as procurers of products or services. Thus, the authors describe how the roles within an inter-organisational network change throughout the DT journey and subsequently capture the changes that the introduction of digital tools provokes in networks.

This summary of the papers in this special issue clearly shows how the papers all bring a sense of processual characteristics to their empirical descriptions. Because the word “transformation” in the term DT itself imposes a processual character, it makes sense that the value-generating mechanisms behind the phenomenon will relate to, and evolve during, phases or stages. The papers in this special issue illuminate the fact that the opportunity for value generation relates quite clearly to the different phases of maturity of DT described. The papers account for both how the interfaces and the interaction between focal firms alternate throughout the DT journey, as well as how the involved actors’ roles and positions in the networks change. This clearly indicates that the changes

imposed by a DT journey go beyond the single firm and have impacts on the relationships with key suppliers and customers, as well as on the wider surrounding network. Moreover, the papers in this special issue offer some insight into the dynamics that arise when less digitally mature firms collaborate with more mature firms and how this aids the interacting firms to develop the digital ability of the wider network, yet again highlighting that firms do not develop their DT in isolation but rather transform with the help of others. The important question is thus not only “how” these changes come about but also “when” and under what inter-organisational circumstances. The papers in this special issue may serve as a starting point to unravel such questions. Although the research on this kind of transformatory journey from an inter-organisational perspective is in its infancy, we think that the papers in this special issue create a foundation for further studies that will connect the evolving process of DT with a wider empirical focus.

### 3. Understanding value creation within digital transformation from an inter-organisational perspective

When returning to our initial question – *How does digital transformation affect the value creation process at an inter-organisational level?* – it emerges that the role of business relationships and their effects at the network level constitute important variables. As we have already shown, when introducing and problematising DT in business networks, actors, activities and resources are important layers to refer to in order to get a comprehensive of the dynamics of DT view (Håkansson and Snehota, 1995). The papers in this special issue all capture some aspects related to the three layers and, thus, relates to the ARA model. Some papers do so explicitly and as an intended part of their analysis, while other papers deal with actor relationships and roles, interconnected resources or business activities without necessarily connecting those to the IMP tradition of analysis. The paper by Per Christian Ahlgren and Johnny Lind does not directly capture DT, but it does explicitly use the IMP approach to portray how the deals or monetary layers relate to activities performed, and resources connected, in the studied network. The deal structure is thus a layer that connects to, and influences, the layers of the ARA model and is conceptualised as such in their paper. Although the paper does not deal with DT, it offers nuance as to how value is being conceptualised and captured from an inter-organisational and IMP perspective.

Three articles (Mervi Hamalainen and Asta Salmi; Song Hua, Han Siqi, Liu Wenyi and Ganguly Anirban; Hannes Lindkvist, Frida Lind and Lisa Melander) empirically focus on an aggregated network view. These articles aim to shed light on identifying actors, along with their roles, function and position, to analyse how they develop the relationships that create the network in which DT unfolds. These papers are helpful for understanding the changes that the business actors may experience when DT occurs and how value is created when such repositioning in the network takes place: DT seems to offer new positions in the network, and new roles are performed by actors in various ways.

When the empirical focus is set to a micro level and certain interaction between specific actors are studied, other issues

come to the fore. Here the specific interactions that happen in the ties and links between individual actors are sought (see Aleksandra Hauke-Lopes, Milena Ratajczak-Mrozek and Marcin Wiczerzycki; Carla Cleira Ferreira and Frida Lind; Andrea Sabatini, Federica Pascucci and Gian Luca Gregori; Marco Paiola, Mario Rapaccini, Lino Cinquini and Riccardo Giannetti). Both the papers by Aleksandra Hauke-Lopes, Milena Ratajczak-Mrozek and Marcin Wiczerzycki and by Carla Cleira Ferreira and Frida Lind study resource interfaces between a focal actor and its suppliers of digital tools, while Andrea Sabatini, Federica Pascucci and Gian Luca Gregori study resource interfaces between a focal provider of digital solutions and the users of that solution. Subsequently, they offer new ways to identify different types of interfaces but also to analyse which effects such interfaces may have on value creation in producer–user relationships. Here the position and identity of the actors in the network are of less concern, and the nature of the interactions between the actors becomes central. Marco Paiola, Mario Rapaccini, Lino Cinquini and Riccardo Giannetti broaden this perspective and list not only the resources being brought to the table by the focal actors but also the different activities being performed throughout the DT value creation process.

It has been known for some time that regardless of a company's size or the business sector in which it operates, DT implies coping with changes – at both technical and organisational levels – which affect value creation and diffusion. The papers in this special issue reflect that, from a managerial viewpoint, these changes have to be accommodated not only at the dyadic level – for instance, between customer and supplier of digital solutions – but also at the network level. Overall, the adoption of an inter-organisational perspective has revealed the complexity of the DT process as such; in fact, we posit that the already-complex endeavour of DT in a single firm becomes even more complex when viewed from an inter-organisational perspective. The complexity relates mostly to the unpredictability of the value dynamics connected with DT when spread over various activities and resource interfaces beyond a single firm's control.

It is also evident that the empirical scope is important. The papers in this special issue that took a broader empirical scope and investigated whole network constellations seemed to focus on the alternating roles and functions of the actors in that network. Meanwhile, the papers that focused on specific interactions tended to analyse either the affects that DT had on the activities performed or the interfaces between interacting resources. The value-generating mechanisms behind DT are likely to be found in the connection between the roles and functions of the actors and the activities and resources such actors perform. Thus, broader perspectives when studying the effects of DT should be complemented by the micro-level focus, which allows catching the issues emerging from the interactive mechanisms. Future research should bear this multi-level perspective in mind if a more nuanced and inclusive view of value creation and appropriation is to be depicted. This will further the need to study DT from a variety of inter-organisational perspectives to capture nuances both throughout the network of interacting actors but also in the specific interactions between actors. Both an industrial network perspective and an interaction

approach will thus be warranted if value creation by means of DT is to be understood in any depth.

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