

Digital Transformation Literature: A transnational co-creation missing the human factor

Özet

Dijital dönüşüm yönetim arařtırmaları içerisinde çok hızlı bir şekilde önde gelen başlıklardan biri haline gelmiştir. Ancak dijital dönüşüm uygulamaları için önerilen çerçeveler “evrenselci” bir bakış açısıyla, ülke ve bölge farklılıkları gözetmeksizin, her bağlamda uygulanabilirlik varsayımına dayanır görünmektedir. Diğer yandan yönetim bilimleri bu alandaki hemen tüm olguların bağlamsallığına işaret etmektedir. Bu çalışmada dijital dönüşüm literatürünün bu açıdan eleştirel bir incelemesi sunulmaktadır. Çalışmanın ilk bölümünde ilgili literatür bibliyometri yöntemiyle incelenerek literatürün ülke ve bölgeler arasında nasıl bir işbirliği ve etkileşim ile geliştiği ortaya konulmaktadır. Çalışmanın devamında literatürün farklı ülke ve bölgelerdeki ayaklarının ele aldığı temel konular incelenmekte, ve nihayet çalışmanın son kısmında bu bulgular işletmelerde insan unsurunu ele alıp almamaları açısından eleştirel olarak yorumlanmaktadır. Çalışmanın bulgularında (i) Çin başta olmak üzere bir grup ülkenin dijital dönüşüm literatürünün kavramsal gelişiminde “alıcı” konumunda olduğu, (ii) farklı batılı ülke bloklarının bu literatürün oluşumu küresel statükodaki değişimlere bir savunuyu olarak şekillendirdiği, ve (iii) literatürün hemen tamamında insan unsurunun dijital dönüşümün öznesi değil nesnesi olarak ele alındığı görülmektedir.

Anahtar Kelimeler: Dijital Dönüşüm, Uluslararası düzen, Teknoloji ve insan, Bibliyometri, Eleştirel yönetim kuramları

Abstract

Digital transformation has quickly become one of the leading topics in management research. However, the frameworks proposed for digital transformation seem to be based on the assumption of applicability in every context and a "universalist" perspective, regardless of country and regional differences. On the other hand, management sciences point out the contextual nature of almost all phenomena in this field. This study presents a critical review of the digital transformation literature from this perspective. In the first part of the study, the relevant literature is examined using the bibliometric methods and explores how the literature develops with cooperation and interaction between countries and regions. Following this, the basic issues addressed by the literature threads in different countries and regions are examined. Finally these threads are evaluated critically in terms of how they address the human element in businesses. The findings of the study show that (i) a group of countries, especially China, are in the "recipient" position in the conceptual development of the digital transformation literature, (ii) different western country blocs shape the formation of this literature as a defense to the changes in the global status quo, and (iii) throughout the digital transformation literature the human element is present in almost all of it is treated as the object, not the subject, of digital transformation.

Keywords: Digital transformation, Transnational order, Technology and humans, Bibliometrics, Critical management theories

Introduction

Digital transformation (DT) is becoming a key dimension of all things about business and management. There is now a not-so-mature but fast growing research literature around the

concept and its practice. Several reviews outline the emerging concepts of this literature. For example Vial's (2021) inductive review uses an extensive selection of the related literature and proposes a framework of digital transformation in businesses. Many such frameworks are proposed in the literature and all presume a universal applicability. As Hanelt et al. (2021) emphasizes, however "how DT unfolds in a particular setting is really 'an empirical question' and hence leaves the specific characteristics of the analytical framework in limbo" (p1177). In this study we attempt a critical assessment of digital transformation research from a transnational perspective.

Current rhetoric around digital transformation and industry 4.0 is dominated by technological optimism and determinism. It is presented as a universal set of recipes which, we are told, is critical to competition and those who fail to follow them will perish. But organizational research shows us that things are very much contingent on context when it comes to transforming business organizations. So far a universalist view dominates most views on digital transformation. In this study we take issue with such presumption of universalism and question how research work on digital transformation is motivated with different subject matters in different parts of the globe, ie. whether it is a transnational rather than universal phenomena. Following this issue in the first stage of our study we first explore the geographic sources of this literature, with a lens to uncover differing themes of DT research literature across countries and regions, and collaborations & interactions between them. Our aim in this first phase is to identify how digital transformation is conceptualized and a literature around it is co-created across different contexts, such as across European, Asian, and American scholarship. For this purpose

we first delimit the DT literature using bibliometric methods, then we review the key works in different clusters/regions to lay out the differential elements of discourse in each. Our preliminary results for the first phase indicate that digital transformation concepts are produced in certain blocs of Western contexts and “exported” to Eastern contexts. They are “consumed” more in Asian contexts, particularly by Chinese scholars.

A universalist view dominates not only the mainstream but also most antagonistic and critical views on digital transformation. Although rare, such critical discussions shift the focus to the state of human existence in a digitalized world of business (Holford, 2018), but even that body of studies is mostly void of how context bears on the nature of digital transformation. For this reason we found it necessary to complement our findings in the first phase with a critical assessment of the elements of transnational DT literature, and, more importantly, what are the missing elements? Our aim in this second phase is to put back the human condition (e.g. work conditions in business organizations) to the center and discuss digital transformation concepts and regional differences around this core. From a theoretical standpoint, this second phase of our study aims at prescriptive theorizing (Hanisch, 2024) and responsible research (Owen et al., 2012) where we attempt a thematic exploration of transnational differences across DT contexts and try to lay out recommendations for future research on DT. We feel obliged to do so for a reason. As Tanriverdi et al. (2010) notes, today’s highly interconnected world of business is no more a world of stability which is occasionally disrupted by developments (such as DT), just to come back to stability again. Instead it is a complex co-evolving world with a dynamically changing topography and “requires macro and micro perspectives and focusing global triggers

and local improvisations simultaneously” (Hanelt et al., 2021, p1177). A world as such is exactly where prescriptive theorizing matters: its future is shaped with our presumptions and assumptions. We believe that ignoring global inequalities as researchers will not only leave them intact, but also let them deepen. Therefore, it is our responsibility to take them to the foreground of our research perspective.

Methodology and Data

A variety of bibliometric analysis methods (Wimberley, 2003) has proven useful in exploring history, collaboration, and structure of scientific research domains. These methods leverage the relatively well kept records of scientific manuscripts including information about authors and citations, in addition to their content. Today, relative standardization of bibliographic information enables several tools to retrieve and analyze bibliographic databases (e.g. Aria & Cuccurullo, 2017). Author’s country information is one of the standard pieces of information that has been the subject of bibliographic analysis, aiming for a comparison of different countries’ activity in the domain of interest. Such analysis is often limited to the frequency of publications from different countries with which the authors are associated with.

In this study we adapt a bibliometric analysis of country information focused on exploring transnational co-creation of the research domain of interest. We have queried documents from the Web of Science database which (1) has “digital transformation” as a keyword, and (2) is marked as in “Business” and “Management” fields. We have found a corpus consisting of 1570 such documents. For each document in our data set we have data for the country each author is associated with. Therefore, if a document has multiple authors, and if these authors are

associated with multiple countries, the data indicates a multi-country co-authoring of the document. Please note that many scientific articles are multi-country authored. However, for the sake of simplicity, in the rest of this paper we refer to an association based on the first author's country whenever we say "the document's country" or "articles from a country".

With this data we have first run a set of analysis using the publication authors' country information to determine the number of times which each country has published and cited, in order to see their relative level of work and influence. Then we have mapped out the network of collaboration between -authors from- different countries which exposed the structure of collaboration between key countries and thus the transnational co-evolution and clustering of DT literature. Finally, we have selected top articles from each country in order to thematically examine how digital transformation concepts differ across contexts and clusters and to explore how such conceptualizations are shaped against the background of transnational co-creation of this literature. These findings are then discussed from a critical perspective towards prescriptive theorizing (Hanisch, 2024; Owen et al., 2012)

Analysis and Findings

Publication volume of the documents in our corpus data has an increasing trend over the years. This trend is plotted in Figure 1, excluding half year of 2024 and years prior to 2015 with negligible volume of publication. The publication volume over the years shows a leap in 2019, after which the interest in the subject have increased exponentially.

Figure 1 here

We have also explored publication frequency of countries, by using the country information for the first author of publications in our corpus. The number of publications for the top seven countries are shown in Table 1. This and following analysis are applied using bibliometrix package on the R platform (Aria & Cuccurullo, 2017)

Table 1 here

Looking at the table above, we see that researchers from China create more research volume than other countries; i.e. as a country China is working hardest on digital transformation.

We have also looked at the citations received by publication on a per country basis. The results of this analysis are shown in Table 2. In stark contrast with results in Table 1 which shows China as the top publishing country in the digital transformation topic, the citations table shows that research from China is much less cited, for example, with average article citations of research from China having only a quarter of those from USA or UK.

Table 2 here

In the final step of our co-creation analysis we have looked at the country collaborations in our corpus. This is achieved by determining countries of authors in each publication first. Then, if a publication has authors from different countries this is marked as a collaboration link between each pair of countries for the publication. While the resulting network has many countries, the

ones with the highest number of collaborations are shown in Figure 2, in order to explore the backbone of the collaboration network at hand.

Figure 2 here

The network visualization shown in Figure 2 dramatically shows that China and India at the center of influence from two clusters: (1) one on the left dominated by the UK, and (2) another on the right dominated by Italy, with the USA is acting as a bridge and some actors being peripheral (Spain, Poland, UAE). Germany has an interesting place here where it does not collaborate with China and India directly.

Following the above analysis we have determined and reviewed most cited works from top publishing countries, previously shown in Table 1. These works, along with countries of their authors are shown in Table 3.

Table 3 here

Thematic differences across countries in terms of DT contexts and aims

We have run a content analysis of top cited articles from each of the key countries, from Table 3. While there are some common themes that recur in research from different contexts, the differing foci of research in different contexts are strikingly apparent. The following is a summary of these discursive differences between -clusters of-countries:

- Research from **Italy** mostly focused on small and medium sized enterprises (SMEs) (Garzoni et al. 2020; Crupi et al., 2). A defining research question taken up in the research from this country was how to keep the creative edge of European companies in competition (Usai et al. 2021). In addition, a more common issue of adoption of new technologies was also a common theme in this group (Massaro, 2023).
- Research from the **UK** has a focus similar to those from Italy. For example those focusing on adoption of new technologies and keeping the edge (Bouncken et al., 2021), and on the place of SMEs in DT (Troise et al., 2022). Additionally UK research also has a focus on fostering entrepreneurship through DT (Nambisan et al., 2019).
- One focus of the studies from the **USA** is keeping the edge in digital disruption (Karimi and Walter, 2015; Krishnamurthy, 2020). This focus resonates with those from Italy & UK, and suggests that these research are motivated by a global threat felt in the management practice in these countries, especially within the manufacturing industry. In addition, research from the USA has some defining themes such as team enabling and education (Krishnamurthy, 2020; Guinan et al., 2019), in addition to themes such as exploiting global supply chains (Hartley and Sawaya, 2019), which recur elsewhere.
- Works from **Germany** seems to focus on ways of salvaging incumbent firms in the face of global competition, through DT (Warner and Wager, 2019), frameworks and models to keep the competitive edge in global business ecosystems (Chanas et al. 2019; Hanelt et al., 2021; Schalimo et al., 2017). One again the overall look of this research suggests that it is motivated by global threats, similar to research from countries above.

- Almost all top cited papers from **China** were co-authored with Western countries. The focus of research from China is on innovation towards efficiency (Peng and Tao, 2022), responding to - rather than leading - strategic change (Li et al., 2021), and staying in the global value chains (Kim et al. 2020). Broadly speaking, this body of research is more introvert (despite international collaboration), and seems to focus on maintaining the status quo, or “keeping” the place of Chinese industries in the global order.
- **Russian** research themes include navigating DT strategies in Russian context (Tekic and Koroteev, 2019), adapting DT models and frameworks to Russian context (Isaev et al., 2018), agency and governance issues (Ivaninskiy and Ivashkovskaya, 2022), DT competencies in the Russian context (Karapetyants et al., 2017). Therefore the general outlook of DT research from Russia has similarities to Chinese counterparts at its core: maintaining the place of Russian industries through the wave of change stemming from DT.

Despite the contextual differences above, one common feature of the literature summarized above seems to be the fixation on unifying and universalist application frameworks, which all seem to be rooted in the works from first world countries (Hanelt et al., 2021;Correani et al., 2021; Jafari-Sadeghi et al., 2021). This is in striking contrast with the variation in the motivations driving the research in each of the clusters/countries covered here.

A critical discussion and implications

Our preliminary results indicate that no matter the origin of the publication, extant studies are directed to the utilization of digital technologies for efficiency: efficiency in production and

supply chain, efficiency for labor, efficiency for time, efficiency in innovation. In other words, as stated by Nambisan et al., (20129) digital technologies lower production and transaction costs, and promote productivity gains in innovation (Nambisan et al., 2019).

As the increasing number of publications in our sample indicate, digital technologies are becoming ubiquitous. One of the implications of this ubiquity is that digital technologies will be the subject rather than an object for the betterment of work lives in organizations. In other words, instead of digital technologies serving the workforce to have time for thinking, knowing and experimenting, the whole time and effort of the workforce is dedicated to learning, and mastering the usage of the new technologies. Following the reasoning of Marcuse (1968) developed for automation we claim that a new reasoning is emerging, and this reasoning is shaped around control of the supply chain with digital technologies, control of the labor force with digital technologies. This reasoning creates false needs and favors digital technologies for more efficient, more quick action. And this reasoning limits our choices, creativity in the name of transparency and openness of digital technologies.

Furthermore, taking digital technologies as a universal concept that can be applied to all types of industries, to all types of organizations (for example, SME and large), to all countries with the same intention is void of institutional context and affordances. As extant research indicates (for example, Zeng & Yu, 2014; van Dijk et al., 2011) focusing on institutional environment and the role of institutional affordances are important in understanding the usability and applicability of digital technologies in various business practices and thus their role in digital transformation.

Usually, the degree of digital transformation in a specific country or region is evaluated by the investment intensity in ICT, number of start-ups and venture capitalists in the information industry, increasing numbers of patents and copyrights in ICT. Despite these transformations in ICT, “digital divide” will remain as a salient issue (Oba, 2021). Digital transformation brings new actors, new organization structures (for example, heterarchy), new business models (for example, produsage) and practices that transform the existing ways of doing business (for example shortened industry value chains). Thus, we expect that the degree of digital transformation in a specific country will enable and activate the emergence of these new initiatives.

For understanding and evaluating institutional context for digital transformation in a specific country two things are important: institutional infrastructure (for example availability and usage of open data that enables cooperation of various actors, new intellectual property arrangements, legislation) and institutional affordances (how and why actors perceive and use institutional infrastructures).

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Figure 1: Publication volume of Web of Science documents containing “digital transformation” as a keyword.

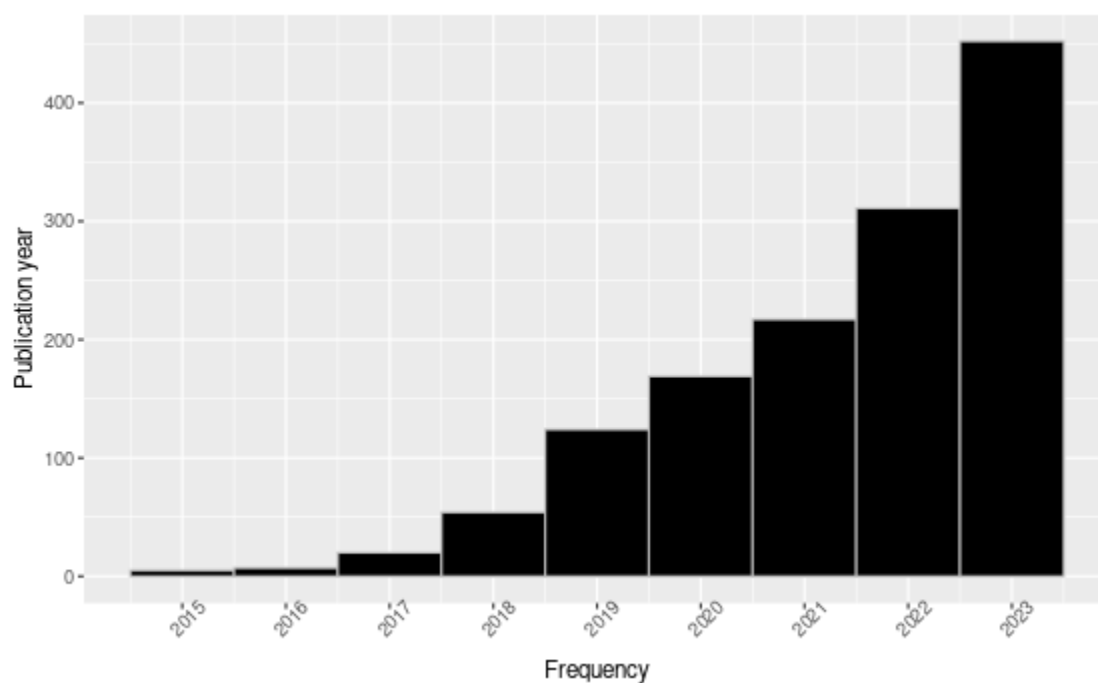
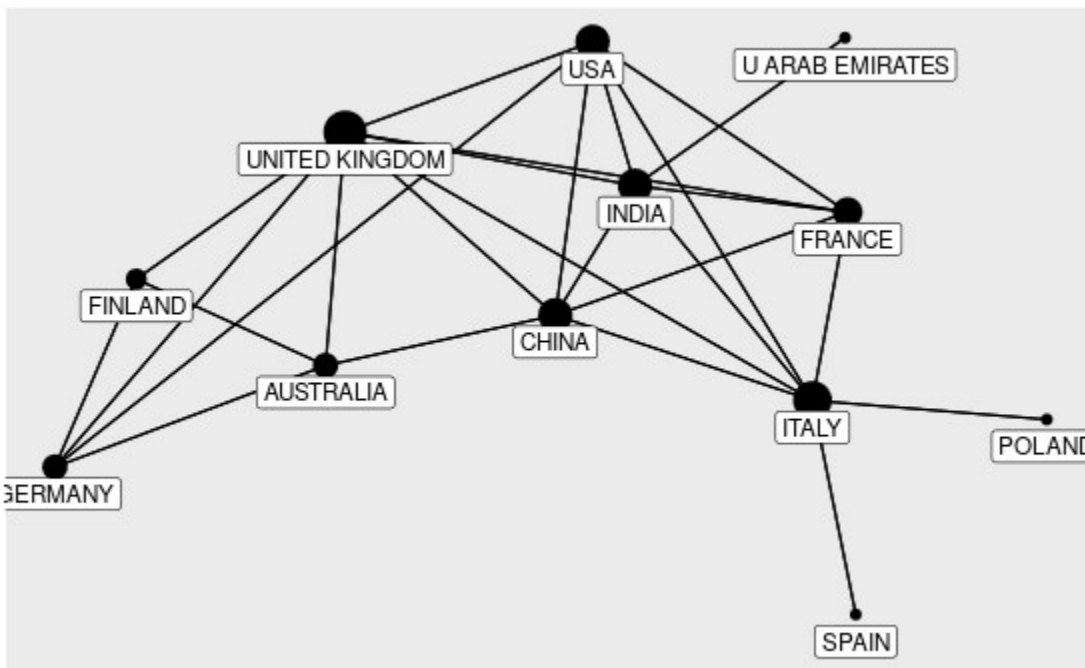


Table 1: Number of publications on “‘Digital Transformation’ by the first author’s country, for the top seven countries.

Country	Number of publications
China	202
Italy	165
Germany	129
Russia	121
Brazil	71
United Kingdom	68
USA	60

Table 2: Total and average citations of publications by country, for top 10 publishing countries

Country	Total Citations	Average Citations	Article
ITALY	3796		23,006
UNITED KINGDOM	2512		36,941
GERMANY	2461		19,078
USA	2408		40,133
CHINA	1975		9,777
CANADA	1898		126,533
SWEDEN	1248		40,258
FINLAND	1060		34,194
PORTUGAL	1032		33,290
BRAZIL	822		11,577

Figure 2: Country collaboration network (weak links are not shown)**Table 3:** Four most cited works from each country for the top seven most publishing countries.

Reference	Countries of authors
Correani et al. (2020)	China;United Kingdom;Italy;Italy;Italy;Italy
Peng and Tao (2022)	China;China
Li et al. (2021)	China;United Kingdom;United Kingdom;USA
Li et al. (2020)	China;Denmark;Italy;Singapore;USA;USA
Usai et al. (2021)	Italy;Italy;Italy;Italy;Italy
Garzoni et al. (2020)	Italy;Italy
Crupiet al. (2020)	Italy;Italy;Italy;Italy
Massaro (2023)	Italy
Warner and Wäger (2019)	Germany;United Kingdom
Hanelt et al. (2021)	Germany;Germany;Portugal

Chantias et al. (2019)	Germany;New Zealand
Schallmo et al. (2017)	Germany;Germany
Tekic and Koroteev (2019)	Russia
Isaev et al. (2018)	Russia;Russia
Ivaninskiy and Ivashkovskaya (2022)	Russia
Karapetyants et al. (2017)	Russia;Russia;Russia
Nambisan et al. (2019)	United Kingdom;USA;USA
Jafari-Sadeghi et al. (2021).	United Kingdom;United Kingdom;France;Italy
Bouncken et al. (2021)	United Kingdom;Germany;Spain
Troise et al. (2022)	United Kingdom;United Kingdom;Italy;Italy
Karimi and Walter (2015)	USA;USA
Krishnamurthy (2020)	USA
Hartley and Sawaya (2019)	USA
Guinan et al. (2019)	USA
