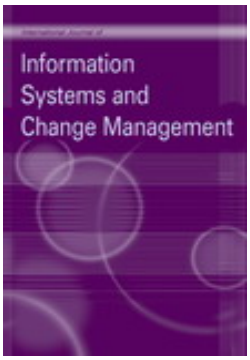

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Exploring the drivers of digital transformation in Indian organisations: a multi-sector study

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Exploring the drivers of digital transformation in Indian organisations: a multi-sector study

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Abstract: Digital transformation (DT) has presented tremendous opportunities and challenges to organisations. By leveraging continuously emerging digital technologies, organisations are increasingly pursuing to make their business models efficient and smart. Consequently, research on DT has gained significant momentum in academia and practice. Although many studies present insights about DT as a phenomenon, the underlying factors encouraging such transformations are not frequently evaluated and discussed, and less so in Indian context. This study addresses this research gap by conducting a multiple case study of six organisations engaged in DT and identifying primary reasons driving the organisations towards DT. These factors are broadly classified into four categories – business innovation and process improvement, business sustainability, internal digital aspirations, and unplanned external exigencies. The study empirically identifies the drivers of DT that beginner organisations can use to address 'where to start for DT'. The well-established organisations can use these drivers as a baseline to assess, contextualise and strategise their DT efforts to improve the success rates of their DT endeavours.

Keywords: digital transformation; transformation drivers; digital adoption; digitisation.

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1 Introduction

Organisations are increasingly embracing digital technologies to create ever intelligent business models. They realise that realigning their strategic goals based on real-time data generated by digital technologies can provide them with a significant competitive advantage. Consequently, the business models are being redesigned across customer offerings (Nambisan et al., 2017), operational processes (Wang et al., 2018; Huang et al., 2014), partner collaborations (Choudhury et al., 2021) or generating new digitally oriented revenue streams (Berman, 2012; Tavoletti et al., 2021). The advent of new digital technologies has compelled businesses to investigate their benefits, resulting in improved business procedures, products, and services. This endeavour of attaining digital sophistication is referred to as 'digital transformation' (DT) (Sebastian et al., 2017). Fitzgerald (2013, p.4) define DT as "the use of new-age digital technologies to enable major business improvements (such as improving customer experience, streamlining operations, or developing new business models)". For this study, digital transformation (DT) is operationally defined as the use of new-age digital technologies, such as big data, mobility, analytics, cloud computing, and internet of things, by the business to radically transform their customer offerings, operational processes, or the business models (Berman, 2012; Hanelt et al., 2020). It is important to differentiate DT from IT-enabled business transformation. Where the IT enabled transformation is primarily focused on attaining automation through information systems (Zhu et al., 2006), DT impacts a larger sphere of the organisations, including the workplace and human capital (Brynjolfsson and McAfee, 2014). If adopted strategically, DT can enable organisations of every size to start quickly and use the technology in their favour (Faro et al., 2019; Bouncken et al., 2021).

As Ross et al. (2016) highlight, DT relies upon new age digital technologies such as IoT, big data analytics, cloud computing, social media, artificial intelligence (AI), 3D printing, virtual reality (VR)/augmented reality (AR), blockchain, robotic process automation (RPA), and machine learning (ML), to name a few. For leveraging these digital technologies, the organisations are adopting technology platforms that serve as a base for design and development of digital technologies. These platforms allow for simple customisations to produce several cost-effective digital applications that result in cutting-edge product and services.

However, the multidimensionality of DT frequently challenges organisations by presenting trade-offs such as scalability vs. cost, cloud vs. on-premise deployments and/or accessibility vs security. As a result, despite significant investments and endeavours, DT initiatives at times fail to deliver (Davenport and Westerman, 2018). Rogers (2016) estimates an 84% probability of failure in digital transformation projects, while other consulting organisations such as BCG, McKinsey and KPMG rate the risk of failure between 70% and 95% (Block, 2022). Specifically, established organisations often find digitalisation difficult because they do not know where to start from (Seth, 2021) since they fail to assess the actual motives underlying their willingness to digitalise. This is the most important prerequisite to extract value from the digitalisation initiatives, improve the success rates of DT projects, and channel the efforts in the right direction to build digital as a competitive advantage. Moreover, the organisations can focus on their efforts towards DT only if they understand the underlying factors prompting the need of DT. Therefore, it is critical to address why organisations decide to digitise their ways of generating value. A comprehensive understanding of the drivers that lead to the proposition of digital transformation in organisations is also essential for effective selection of the digital projects, setting control measures, to ultimately influence the factors that drive success for digital transformation (Liere-Netheler et al., 2018). Most importantly, the organisations can measure their success or failures in the DT initiatives only if they benchmark the driving factors. Therefore, a clear understanding of the driving factors of DT is vital at every step of the digital transformation process. Accordingly, this study focuses on identifying and exploring prominent drivers of DT.

In the past, there have been studies on the similar aspects (Baryshnikova and Taratukhin, 2017; Berghaus and Back, 2017; Heilig et al., 2017; Morakanyane et al., 2017; Osmundsen et al., 2018; Liere-Netheler et al., 2018; Hauser et al., 2019; Stentoft et al., 2019). These studies have presented valuable insights into reasons that promote DT, yet, these are either restricted to particular industry such as retail (Hauser et al., 2019), seaports (Heilig et al., 2017), timber (Baryshnikova and Taratukhin, 2017), or a specific industry segment, for example, manufacturing (Liere-Netheler et al., 2018), retail (Hauser et al., 2019) or to a specific business domain, for example, HR, finance, production or to a specific technology Further, most of the studies have been conducted in the USA, Europe and China (refer to Table 1) with a very little coverage of emerging economies such as India. Hence, although the literature on DT has got high academic attention in recent years, yet, a comprehensive understanding of what motivates the organisations to initiate and adopt DT requires further exploration, particularly in the context of rapidly developing countries such as India. The purpose of this study is to empirically identify the drivers of DT in Indian context. Hence, this study attempts to address the following research question: *what are the factors driving Indian organisations toward digital transformation?*

The rest of the paper is structured as follows: the theoretical background is presented in the next section, followed by the research methodology adopted for this study. This is followed by the findings section, where deliberation upon the empirical analysis is done. Subsequently, in the discussion section, the study's results are discussed in light of the literature are presented. Finally, the implication and future research directions are outlined.

2 Theoretical background

Liere-Netheler et al. (2018, p.1) describe the drivers as "preliminaries, *expectations about future benefits*, that positively trigger and influence the preadoption processes". Further, Osmundsen et al. (2018, p.6) defines drivers as "external or internal triggers for why organisations engage in digital transformation". On similar lines, Morakanyane et al. (2017) define drivers of digital transformation as "the attributes that influence and enable the process of digital transformation to take place" (p.7). For the remainder of this paper, the terms 'driver' and 'DT driver' are used interchangeably in this study as the context of this study is identifying driver of DT. Evidently, many researchers have described the drivers of DT with their own understanding. Thus, to formulate a consistent understanding, for this research, drivers are considered as "the perceived organisational expectations that motivate and influence the organisations to innovate, orient and adopt the digital technologies". In this regard, it is important to demarcate the drivers from success factors. While the success factors denote "few things that must go well to ensure success" (p.10) (Boynton and Zmud, 1984), drivers are seen as expected or anticipated benefits that occur from the deployment of technology rather than actual outcomes (Morakanyane et al., 2017). Having defined the understanding on drivers, this section discusses specific drivers found in extant literature. Table 1 presents a detailed summary of drivers of DT, their corresponding studies that identify the specific driver, technology adopted or the related transformation aspect (wherever technology adopted is not exclusively mentioned in the study) along with the driver source and country of study.

For better understanding these DT drivers are classified by scholars in various manners. Liere-Netheler et al. (2018) classify the drivers in three categories *individual*, *external* and *organisational* based on the effected organisational levels. They note that the organisational drivers represent the motivation of the organisations to go digital, with internal drivers emerging from employees and external drivers emerging outside organisational boundaries. The organisational drivers emerge from internal organisational motivations and innovation push to bring workplace efficiency. These are virtually the forces which pressurise the organisations to act *for innovation*, *cost reduction*, *revenue increase* or *information integration* for various organisational needs. Building strategic competencies (Yoo et al., 2010), and better firm performance (Zhai et al., 2022) have been noted as key driver of DT. Wan and Cheng (2019) emphasise digital revenue increase as a prominent push to digital adoption. Similarly, Bienhaus and Haddud (2018) and Bockshecker et al. (2018) mention setting up of new business model as a push for DT. Such digital business models enable new revenue streams (Pagani, 2013). Hence, organisations generate revenue from core streams and associated digital non-core streams.

Organisational innovation is also a key driver of DT in organisations. Zhao et al. (2022) elaborate that DT improves innovation capability of the organisations through mediating effect on cost controls, innovation mechanisms and profit guarantee mechanisms. Lusch and Nambisan (2015) discuss two prominent ways through which innovation happens via digital technologies. First, digital technologies enable digital connectivity, increasing data transfer and communication speed. Second, digital technologies enable novel products and services through innovation.

Table 1 Driver centric matrix

Driver	*Author(s)*	*Technology adopted*	*Transformation aspect*	*Driver source*	*Country of study*
Cost reduction and revenue increase	Pagani (2013)		General digital technologies (digital business strategy)	Case study (survey)	Europe and USA
	Westerman et al. (2014)	Analytics, mobility, social media and smart embedded devices		Interview	USA
	Wan and Cheng (2019)		General digital technologies (logistics enterprises)	Literature review and interview	China
Organisational innovation push	Lusch and Nambisan (2015)	Big data and analytics (digitally enabled service innovation)		Literature review	USA
	Leischnig et al. (2017)		General digital technologies (digital business models, digitised operations, customer centricity)	Literature review	Germany
	Zhao et al. (2022)		General digital technologies (business model)	Literature review	China
Information and business integration	Yoo et al. (2012)		General digital technologies (product enhancement, innovation and customer engagement)	Literature review	USA
	Hildebrandt et al. (2015)		General digital technologies (information integration)	Literature review	Germany
	Bilgeri et al. (2017)	Software, data analytics and digital services, IoT		Interview	Switzerland
Establishing new business models	Karimi and Walter (2015)		General digital technologies (dynamic capabilities)	Literature review	USA
	Haffke et al. (2016)		General digital technologies (business IT alignment)	Case study (interview)	Germany
	Mocker and Fonstad (2017)		General digital technologies (product enhancement)	Case study (interview)	USA
	Bienhaus and Haddud (2018)	Industry 4.0 (digitising procurement and supply chains)		Online survey	Switzerland
	Bockshecker et al. (2018)	Internet of things (IoT) for enterprise architecture		Literature review	Germany

Table 1 Driver centric matrix (continued)

Driver	*Author(s)*	*Technology adopted*	*Transformation aspect*	*Driver source*	*Country of study*
Operational process and workplace efficiency improvement	Leischnig et al. (2017)		General digital technologies (digital business models, digitised operations, customer centricity)	Literature review	Germany
	Liere-Netheler et al. (2018)	Artificial intelligence (AI)		Interview	Germany
	Morakanyane et al. (2017)	Cloud technologies, social media, big data analytics		Literature review	Botswana
Product enhancements and personalisation	Piccinini et al. (2015)		General digital technologies (IT enabled business transformation)	Interview	Germany
	Mocker and Fonstad (2017)		General digital technologies (product enhancement)	Case study (interview)	USA
Servitisation	Huang et al. (2017)	Machine learning, connected technologies (supply chain optimisation)		Literature review	China
	Dombrowski and Fochler (2018)	Internet of things (IoT), big data in servitisation		Literature review	Germany
Competitive pressures and market dynamics	Downes and Nunes (2013)		General digital technologies	Literature review	USA
	Haffke et al. (2016)		General digital technologies (business IT alignment)	Case study (interview)	Germany
	Berghaus and Back (2017)		General digital technologies	Case study (interview)	Switzerland
	Bughin and van Zeebroeck (2017)		General digital technologies (strategic applications)	Literature review	Belgium
Partner alliances	Bilgeri et al. (2017)	Software, data analytics and digital services, IoT		Interview	Switzerland
	Huang et al. (2014)	Smart operations and service digitalisation		Survey	Taiwan
	Wang et al. (2018)	Big data analytics, smart operations, service digitalisation		Literature review	USA

Table 1 Driver centric matrix (continued)

Driver	*Author(s)*	*Technology adopted*	*Transformation aspect*	*Driver source*	*Country of stu*
Customer expectations and experiential offerings	Barrett et al. (2015)	Internet-based communication technologies in service innovation		Literature review	UK
	Roumani et al. (2016)	Secure IT applications		Literature review	USA
	Leischnig et al. (2017)		General digital technologies (digital business models, digitised operations, customer centricity)	Literature review	Germany
	Haffke (2017)		General digital technologies (business IT alignment)	Case study (interview)	Germany
Employee engagements and workplace demands	Brynjolfsson and McAfee (2014)		General digital technologies (employee centric)	Literature review	USA
	Liere-Netheler et al. (2018)	Artificial intelligence (AI)		Interview	Germany
	Mueller and Renken (2017)		General digital technologies (employee centric)	Literature review	The Netherlan
	Grotherr et al. (2019)	Internet crowdsourcing		Case study (interview)	Germany
	Mihailescu et al. (2017)		General digital technologies (electronic healthcare record)	Case study (interview and field observations)	Sweden
	Blanka et al. (2022)	Human-centred view of digital transformation		Literature review	Austria
Standards and IT security concerns	Kagermann (2015)	Industry 4.0, secure IT applications, big data and analytics, artificial intelligence (AI)		Case study (survey)	Germany
	Feng and Wang (2019)	Secure IT application		Literature review	USA

Table 1 Driver centric matrix (continued)

Driver	*Author(s)*	*Technology adopted*	*Transformation aspect*	*Driver source*	*Country of study*
Data driven decision making, IT security	Kagermann (2015)	Industry 4.0, secure IT applications, big data and analytics, artificial intelligence (AI)		Case study (survey)	Germany
	Lusch and Nambisan (2015)	Big data and analytics (digitally enabled service innovation)		Literature review	USA
	Vial (2019)		General digital technologies (dynamic capabilities and strategic applications)	Literature review	Canada
Regulatory changes	Berghaus and Back (2017)		General digital technologies	Case study (interview)	Switzerland
	Liere-Netheler et al. (2018)	Artificial intelligence (AI)		Interview	Germany
	Feroz et al. (2021)	Artificial intelligence, big data analytics, cloud computing, and the internet of things (IoT)		Literature review	Korea
	Xiong et al. (2021)		General digital technologies (pandemic impacts)	Case study (survey) and literature review	China

Leischnig et al. (2017) discuss digital operations as prominent drivers of DT. Operations is one of the most critical aspects of manufacturing organisations that is potentially impacted from digital technologies. Therefore, the process i*mprovement* is one of the most important driver of DT in manufacturing industries. The organisations target to bring *flexibility to their manufacturing* operations through digitalisation (Liere-Netheler et al., 2018). The operational expectations of *reduction in* turnaround time, and quality enhancement and improvement along with process flexibility also push the organisations for adoption of digital. The digital processes also reduce the error rates that organisations target. Mocker and Fonstad (2017) mention digitally enhancing the products is the foremost consideration for the organisations. Consequently, smart products are increasingly getting customised and adopted (Porter and Heppelmann, 2015). Similarly, Berghaus and Back (2017) mention *digital shift in the competitive landscape of industries* forcing to adopt digital technologies to innovate new ways to compete with rivals and new entrants. Haffke et al. (2016) note the digitalisation *pressure emerging from competitor's adoption and demonstration of new digital capabilities* and disruptive business models, consequently influencing the move towards DT. Karimi and Walter (2015) in the context of the newspaper industry mention that organisations *build dynamic capabilities* by reconfiguring their business and by building digital capabilities to respond to business pace opportunities and challenges. On the same lines, Dombrowski and Fochler (2018) describe digital driving new servitisation-based distribution channels in manufacturing industries.

The increased pace of industrial digitalisation has impacted the competitiveness. Lyytinen and Rose (2003) elaborate on technological disruption as transformative changes that alter the existing rules of competition. DTs are disruptive by nature. Consequently, enhancing the value proposition through digital motivates organisation for adoption of DT. Consequently, organisations emphasise to *enhance their core competencies* through DT. As a result, DT is applicable almost everywhere in the business and social spheres via diversified digital technologies and their applications (Chawla and Goyal, 2021). Digital applications offer easy and cost-effective scalability facilitating to establish edge over competitors. Bilgeri et al. (2017) elaborate that for better organisational performance greater business unit collaboration and building external alliances are critical. Therefore, organisations leverage digital applications such as an ERP for building customer and vendor alliances. Roumani et al. (2016) suggest that with the progress of digital transformation, an organisation achieves higher customisation and customer satisfaction while lowering selling costs through efficient partnerships and alliances. *Customer expectations* may also act as a push for DT. Haffke (2017) notes that the digital has influenced customers expectation and organisations must devise novel strategies for customer fulfilment and retention. For instance, Barrett et al. (2015) discuss that ICT-enabled customer self-service allows businesses to gain better efficiency, lower costs, and improve consumer experience. Piccinini et al. (2015) highlight the necessity of exploiting customer and end-user information to create personalised, up-to-date digital products and services. In a similar context, Vial (2019) mentions the general availability of utilising data form digital technologies for strategic decision making as the drivers of DT to address customers' needs analytically. The online platforms facilitate digital technologies to create novel digital applications with many possible variations (Yoo et al., 2010).

The *employee push* is also considered as an important driver of digitalisation. Grotherr et al. (2019) discuss DT becoming a prominent prerequisite for employee

engagement. The employees expect workplace digitalisation and tools that enable their better efficiency and bring a positive experience (Liere-Netheler et al., 2018; Dehkordi and Khani, 2021). In the similar context, Brynjolfsson and McAfee (2014) describe employees as information source driver to digitalisation as they emphasise and narrate the risks related to digitalisation and its adoption. Employees also leverage the digital technologies to innovate at their workplace (Mueller and Renken, 2017).

Just as internal organisational factors, external environmental regulations also lead the organisations towards DT (Wessel et al., 2020). They note that the external environmental factors are multidimensional and can emerge from numerous reasons beyond organisational controls. Liere-Netheler et al. (2018) mention that external drivers are foremost to come up and readily get adopted because of their compliance requirements. Similarly, Berghaus and Back (2017) discuss organisations facing regulatory changes are forced to transform their business models through the adoption of digital technologies. Wessel et al. (2020) note the *multidimensional environmental factors* emerging from numerous reasons that are beyond organisational controls become the drivers of DT. Li et al. (2018) also argue that the drivers as mostly externally driven.

From the discussion above, it may be concluded that driver of digital transformation are represented in the broader span and present the opportunity to evaluate DT initiatives from multiple perspectives, such as changing customer behaviours and demands, competitive landscape, industrial shifts towards digital in general, employee push and legal regulations. Further, the drivers represent the facets businesses must consider before implementing new technology. However, despite the above-stated importance of drivers, holistic insight is yet to be established in the literature that covers the subject empirically and holistically to address the multidimensional and complex phenomenon of DT. Table 1 also suggests that the majority of the studies are conducted in the Western or Chinese context. Less is known about how Technology is employed in enterprises in developing countries than in developed economies (Nissen et al., 2018). Moreover, many studies are conducted via a literature survey without empirically examining the drivers. This study aims to fill the gap by conducting an empirical study in Indian context to identify drivers of DT. The following section presents the research methodology adopted in this study.

3 Research methodology

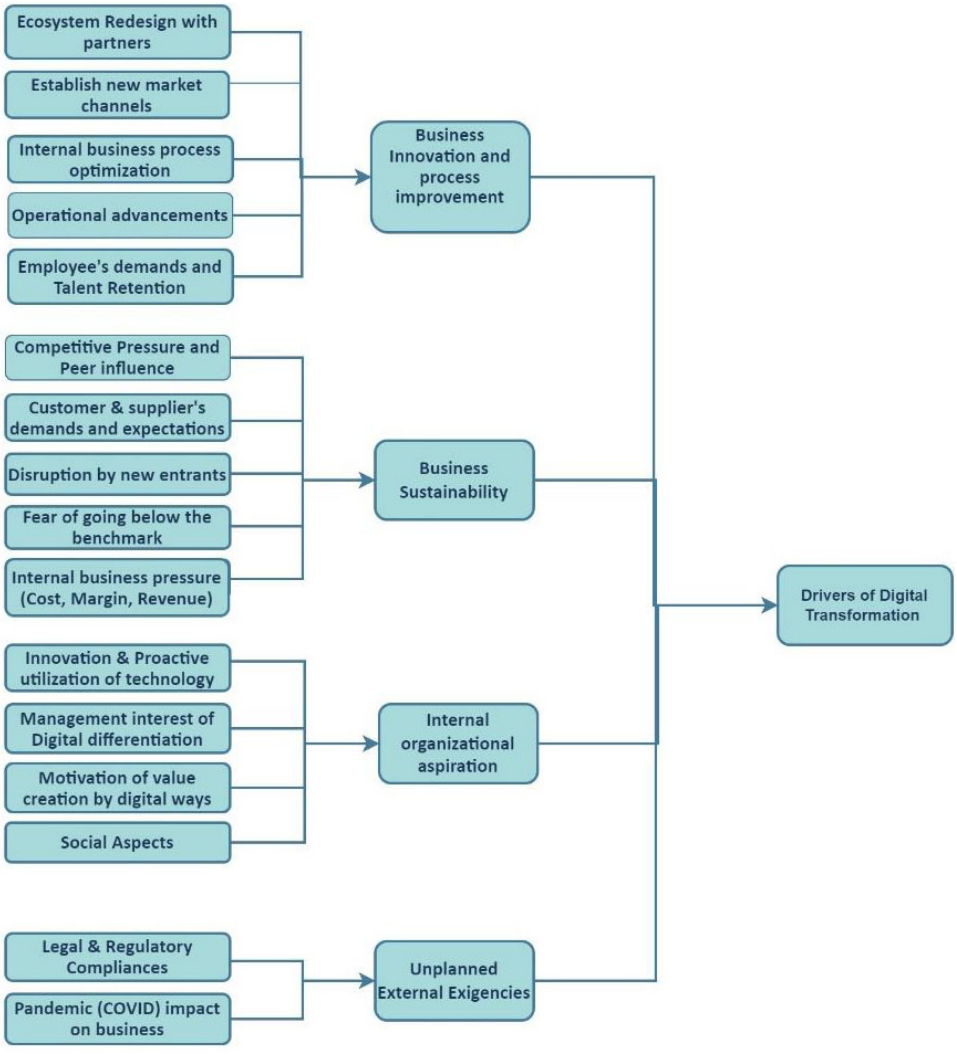
The objective of this research is to empirically investigate the drivers of DT with the following research question: *what are the factors driving Indian organisations toward digital transformation?* A qualitative exploratory approach using multiple case studies to study the phenomena in real-world context was chosen (Yin, 2009; Saunders et al., 2018) to answer the research question.

For the selection of case organisations, publicly available information was examined to evaluate the organisations who have done significant work in DT. The initial list was then narrowed down to large, well-established organisations with existence of more than ten years in business and with revenue of 10 M USD or more. A total of 12 organisations were shortlisted based on this criterion, out of which six agreed to participate in the study. This forms a good base for investigation as, according to Eisenhardt (1989), inference from four to ten cases provides a sound foundation for theory development and generalisation.

Table 2 Summary of participating organisations

S. no.	*Organisation pseudo name*	*Sector/industry*	*Number of interview participants*	*Employees (thousands)*	*Revenue (USD)*
1	AutoCo	Automobile ancillary	3	1–5	78 Mn
2	CementCo	Cement manufacturing	3	1–5	555.2 Mn
3	HealthCo	Hospital	3	<1	14 Mn
4	ChemCo	Chemical manufacturing	2	1–5	1,077 Mn
5	BuildCo	Roofing solutions	3	1–5	440 Mn
6	TextileCo	Textile processing	3	5–8	80.00 Mn

Figure 1 Dimensions of drivers of digital transformation (see online version for colours)



The information about the case organisations is included in Table 2. To preserve the confidentiality, the names of the organisations are anonymised. A set of interview questions encompassing many facets of drivers that promoted DT were created as interview guideline. Within the case organisations, interviews with chief information officers (CIOs), business leaders, and their technology partners (consultants) were conducted to gain a comprehensive picture.

A total of 17 semi-structured interviews were conducted from April to November 2021. The mean duration of interviews was 55 minutes. Every interview was taped and then documented to text. Gioia method (Gioia et al., 2013) was used for qualitative coding during analysis. After the data transcription and coding, first-level codes (informant-centric codes) were extracted from the transcripts. These codes were then further examined and categorised into second-level themes (researcher-derived themes). Finally, for concept building, the second-order themes were condensed into the overarching dimensions (see Figure 1). Here, it is important to clarify that some themes were impacting or overlapping with multiple dimensions, for all such cases more prevalent overarching dimensions were considered. For instance, Employee's demands and Talent retention is considered under 'business innovation and process improvement' because to trigger and sustain innovation, continued access to talent is a key criterion. However, it could also have been considered under 'business sustainability' as loosing key talent might impact sustainability. However, the most relevant mappings were retained to avoid any confusion. The dimensions and underlying themes are discussed next.

4 Findings

This section presents the derived drivers of DT. As noted in Section 3, the informant-centric codes were analysed and clubbed under the second-order themes. These second-order themes represent the factors that drive the organisations toward digital transformation. The derived drivers of digital transformation were categorised under four dimensions, *business innovation and process improvement*, *business sustainability*, *internal digital aspirations*, and *unplanned external exigencies*. These dimensions and the underlying drivers are further elaborated below.

4.1 Business innovation and process improvement

This dimension presents the fundamental attempt of the organisations to innovate and improve business processes with digital technologies and to perform the business activities in a better and more efficient way. The business processes were not confined to any specific department, rather observed to be holistically present across organisational verticals. The drivers underlying this dimension are presented below.

4.1.1 Ecosystem redesign with partners

The case organisations realise the importance of leveraging digital more effectively to scale up and improve their functions. At the same time, they also seem to understand that it could not be done in isolation. Therefore, they devise mechanisms to digitally collaborate with partners (customers, suppliers, or employees) to leverage the collective

synergies for mutual benefits. As an AutoCo executive mentions, “we wanted to do collaborative efforts…[]…connecting the suppliers in a very efficient way, on the same digital platform, this would save a lot of coordination effort... everyone will be benefitted”. Similarly, a HealthCo executive comments, “we wanted to quickly scale our business and at the same time focusing to provide the healthcare to more people. We designed the mobile app and onboarded fellow clinics and hospitals as channel partners”. On the same lines, CementCo CIO mentions, “we’ve tried both integrating forward and backward for spinning off something…”. Hence, it is evident that organisational focus on creating collaborative synergies motivates them to form creative alliances and devise new methods of conducting business via digital technologies.

4.1.2 Establish new market channels

Beyond their partners, the case organisations are strongly motivated to create new digital ways to reach their customers. The major reason is the cost effectiveness and scalability of digital distribution channels. This motivation is also influenced by the customers’ affinity and shift towards digital channels from traditional business channels. In some cases, it was also due to existing business channels becoming unviable due to internal or external reasons. A strong need was observed in the CementCo, where sales executives were not able to efficiently manage the market due to reduced interactions with customers due to COVID-induced restrictions. Therefore, CementCo attempted to establish a new online channel to connect their dealers. As the CIO of CementCo mentions, “we established a secured virtual communication channel with our dealers. Using this each salesperson now covers 10 to 12 dealers per day against 3 to 4 dealers earlier. Additionally, they don’t have to travel amid COVID restrictions”. Similarly, AutoCo launched the digital loyalty schemes to incentivise their customers for the aftermarket sales. At TextileCo, the CIO deployed new social media channel to engage with the customers and analyse their feedback through a data analytics application. Similarly, BuildCo designed a new app where customers could customise their own product mix and choose the delivery times. Hence, it is noted that businesses are deploying novel strategies for connecting with their clients digitally.

4.1.3 Internal business process optimisation

The case organisations anticipate digital technologies to improve their internal business processes. The optimisation of processes is either being planned or attempted across multiple business verticals. Further, the case organisations are establishing more analytics-based decision-making systems. As a ChemCo executive comments, “We are looking at technology for removing Inefficiencies in operations, supply chain and quality control..[]. I know that it can be done effectively and efficiently”. Similarly, the HealthCo executive elaborates, “… Our existing patient care system does not capture most of the details of patients, so we do not have adequate historical information to offer him better next time. We need to digitalise these records; better patient experience is our priority”. Interestingly, even within the information technology department, a strong need is demonstrated for digitalisation despite usually being at the forefront of technology within the organisation. As AutoCo CIO mentions, “it is difficult to monitor and maintain many legacy applications, now we are planning to have a single digital connector, universally

applicable". Hence, it is evident that the case organisations are very actively adopting technology to improve their internal business processes.

4.1.4 Operational advancements

The case organisations seem to realise that their traditional ways of operations were getting non-competitive in digital times. Hence, operational redesign has become both a necessity and priority for them. Specifically, the manufacturing organisations are focusing upon adopting advanced operational practices such as Industry 4.0. As a BuildCo executive comments, "Our business ten years from now will be completely different…prebuild products to customised assemblies. Operational processes will need a high level of precision; therefore, new operational processes must be digitally supported". Similarly, TextileCo consultant mentions, "they were looking at reducing the wastage of textile yarn. We proposed sensor-controlled AI utility to reduce wastage to a good extent and to improve quality also, simultaneously".

To summarise, it was observed that case organisations emphasise on revamping their operational process through technological advancements. These advancements are aimed to increase the operational efficiency, quality control, new product designs and building of connected systems that are more analytics oriented and provide better control over the business processes.

4.1.5 Employee demands and talent retention

It was observed that push for DT also emerged from employees who are becoming more tech-savvy under the influence of digital technologies. Employees expect digital gadgets and workplace applications for increasing their workplace efficiency. Interestingly, the interview participants also mention that employees' workplace expectations rose prominently due to their personal state-of-the-art devices and their interaction on tools like YouTube, Facebook and Twitter. As a business executive of CementCo comments, "The employees now want to work for the digital employer, they are cautious of every gadget that impacts their workplace efficiency". Similarly, the consultant at the TextileCo comments, "TextileCo has multiple units; employees specifically at HO have to interact with all offices for design approvals, production planning and marketing activities. They often demand digital tools and online platforms to quickly share their communications and discussions".

To deal with talent flight, the organisations are planning for digitalisation for talent retention. As a CementCo executive mentions, "We want to make it a place to retain our talent". And on similar lines, AutoCo executive shares, "….at the same time, we want to focus on better employee Connect, engagement and experience". Apart from workplace digitalisation, it was observed that the technology-savvy employees were also narrating the particular requirements for their projects to their IT department representatives. As ChemCo CIO comments, "the employees are digitally savvy; they sometimes drive technicalities with my team on their demands". This demonstrates that employees are now becoming more prone to digital technologies alongside their functional responsibilities, and hence they expect a digitally enabled workplace.

4.2 Business sustainability

This dimension captures the factors posing challenge to the relevance of business practices or the critical necessity to shift in prevailing business models. These forces primarily originate from competitive pressures, peer influence, customers' or suppliers' demands and expectations, disruption by new entrants, and also because of internal business reasons towards the cost, revenue or margins. The detailed observations on this dimension are presented below.

4.2.1 Competitive pressure and peer influence

In all case organisations, interviewees mention the changes in the competitive landscape that pressure organisations to change. The organisations look at digital technologies as a way to withstand this pressure. For TextileCo, for example, the pressure was created by the emerging small players offering real-time designing and printing to customers through digital printing techniques. As the TextileCo executive mentions, "When it comes to competition from digital, it's all or nothing. We all know that businesses are under pressure from a rising number of internet enterprises competing in new markets". For HealthCo, it emerged from the new labs offering low-cost health checkup packages. For CementCo, the industry is adopting digitalisation to be more customer-centric, and hence all major competitors are implementing digital initiatives. Similarly, a BuildCo executive mentions, "all our major competitors are building digital platforms enabling customer's collaborations to co-create designs and then deliver the builds as per the exact specifications demanded. We are also planning customer app on the same lines". On the same lines, an AutoCo executive observes, "our OEMs have stated that in the future, they will sell directly. This could indicate how digital rivalry will evolve in the future. We must prepare ourselves in this manner".

Digital technologies cause disruption, enable agility and reduce entry barriers resulting in disruption by new entrants. This was most visible in the HealthCo case where the new healthcare labs emerged offering low rates on the healthcare packages. As a HealthCo executive elaborates, "we have a strong competition emerging from the start-up labs. They set up their labs at low scale, cost effectively and start targeting customers through SMS or WhatsApp. We too have to find a technology-oriented solution for this, we are digitalising the records of patients and starting more engagement-oriented communications". Similarly, the disruption in the market by start-ups was also visible in TextileCo also. A TextileCo executive observes, "There are newcomers that are providing on-demand designs to our consumers by purchasing fabric from us, but our printing business is suffering as a result. We need to offer customised printing as soon as possible, or we will lose that part of our business".

Overall, case organisations believe that their failure in adopting digital technologies would give an advantage to their competitors.

4.2.2 Customer and suppliers' demands and expectations

The case organisations also acknowledge the customers getting digital savvy. Consequently, customers' expectations are also influenced. This was specifically visible in BuildCo and HealthCo. As a business executive of BuildCo comments, "we are radically thinking of complying to customer's demands (globally), which is moving

towards prebuild assemblies. It is important to know what is being demanded and use technology to be more customer-centric". Further, HealthCo executive comments, "Amid the COVID risk, our customers (Patients) do not want to visit hospitals, instead, they prefer to digitally connect with doctors. We are starting to offer E-consultations". Just like customers, suppliers' expectations also create the pressure for digitalisation. The suppliers are also leveraging technology and, in turn, expecting their lower-tier suppliers to be completely competent, compliant, and participative in their digital initiatives. As an AutoCo executive comments, "we are auto ancillary, and our business prominently gets driven through OEM. They are creating a common supplier portal. We must accordingly build our capability to onboard". In addition, digitalisation is also being used to reduce the turnaround time of processing and facilitate the suppliers for faster payments. For example, In the TextileCo case, the consultant mentions, "TextileCo has many MSME (Medium and small-scale enterprises) suppliers with shorter payment terms. We are designing a new payment utility to reduce payment time and clearance of pendency for supplier invoices".

Further, it was observed that the digital initiatives were also motivated by the consortium of industries. These consortiums are connected digitally through customised web portals. CementCo executive mentions about a collaboration portal that was used to set prices in different geographical markets. Hence it is evident that the push from customers and suppliers acts as a prominent driver toward the digital transformation of case organisations.

4.2.3 Fear of going below the benchmark

Unlike the positive side of DT, case organisations considered the lack of digital also as a negative motivator. They had a fearful notion prevailing that they would lag and might go out of business if they didn't digitally transform themselves. A BuildCo executive quotes his instance at one of the board meetings, "… The entire management understood that, without this digital aspect, your survival will be at stake". A HealthCo executive mentions, "the trends are changing in healthcare, from in-hospital care to personalised patient services. We must timely leverage technology for remote monitoring". Further, it was evident that the fear of underperformance was a strong concern for the organisations, and to mitigate this risk of underperformance, the organisations were planning to go digital.

4.2.4 Internal business pressure (cost, margin, revenue)

The pressure for digitalisation did not only emerge from external factors. Internal business pressure is also observed to be quite influential in all cases. The participants emphasise the pressures emerging from the cost, margin and revenue. As a BuildCo executive comments, "we are operating on EBITDA of x percent, which is less than industry average. We need something radical and new digital technologies are the important dimensions to that". Further, the TextileCo consultant elaborates, "during pandemic their revenues came drastically down raising cost concerns. To that we are implementing project on waste minimisation through AI application". In the aspect of digital infrastructure investment, a ChemCo executive explains, "you get tax savings out of it". The Healthcare consultant elaborates, "cost of printed reports is high, we are making them digital which apart from being easily accessible is cost-effective also".

Hence, it was evident that internal pressures across cost, margin and revenue are driving the organisational push to digital technologies. The organisations adopted their own ways and mechanisms to cater to these.

4.3 Internal digital aspirations

The case organisations were also observed to have a strong hunch to do something innovative leveraging technology as facilitator. Altogether, they were motivated internally for the proactive utilisation of technology. The top management interest in pushing digital and the socialisation aspect were also observed as key contributors to this motivation. This dimension elaborates more on this aspect of drivers of digital transformation.

4.3.1 Innovation and proactive utilisation of technology

The case organisations seem to be oriented toward novel use of technology. They have a unique instinct toward leading digital which reflects in their proactive actions. As a BuildCo executive mentions, "our sales model so far is through distributors to institutional customers. With technology making it feasible, we are planning to build direct ties with major account customers". Similarly, a TextileCo executive recalls, "we are exploring technology in many dimensions. We target to be an early adopter of technology".

Further, elaborating on the context of innovation and effective utilisation of technology, an AutoCo executive mentions the workforce's orientation towards digital innovations to make their work efficient, "people started working from home, and they had a lot of time spent on the projects, digital got focused. That has in a way inherited innovation to our culture". In a similar way, a ChemCo executive mentions the organisational instinct of innovation holistically across all the business verticals, "we want to use technology effectively with new applications for our landscape. Hence, we are exploring holistically".

Hence, it is clear that the organisations are continuously thinking on many dimensions to effectively innovate with technology. They are finding ways to innovate and proactively utilise digital technologies to make their functions more efficient and competitive.

4.3.2 Management interest in digital differentiation

In all case organisations, it was observed that the top management team (TMT) had a strong inclination toward leveraging digital technologies. This inclination was being cascaded down the line by the TMT as strategic initiatives. The TextileCo executive highlights the top management focus on increasing digitalisation, "we want to induce digital as DNA into the organisation". Further, CementCo consultant mentions about the directive coming from board meeting to ensure on-time completion of digital projects, "It was a push rather than a pull from the board". Further, ChemCo executive explains top

management's vision for digital business models, "also digital being the new way of doing business, well understood by management. Hence, they promote new ways of doing business through digital".

Evidently, there is a clear inclination of management towards the adoption of digital, and this is being cascaded down the organisation for promoting digital.

4.3.3 Motivation of value creation through digital ways

Case evidence suggests that the organisations have a strong internal urge to create value using digital technologies. This urge motivates the employees of the organisations for continuous innovation with digital technologies. As the CementCo executive mentions, "there is something prompting the organisation to offer big ideas faster… towards addressing a business need or solving a business problem… suggestion of an automation, say bank reconciliation". Similarly, a ChemCo executive views it as a, "…hunch of digitally solving a problem, the problem of either convenience or you can say value creation". Likewise, the HealthCo consultant emphasises the responsiveness to reduce the time of patients to the healthcare professional. As he mentions, "then… because at hospitals every time they're firefighting, so they are their selves finding better ways for agility through digital". Similarly, an AutoCo executive notes, "… So we've found that there are so many areas where AI (artificial intelligence) (and) ML (machine learning) can enable our operations to handle in a better manner. we walked through how we are going to build capability on analytics".

Therefore invariably, it was observed that organisations are sensitised about innovating with DT, and it is becoming a feedback loop wherein they are assessing the benefits that could be derived from digital initiatives and taking up next initiatives.

4.3.4 Social aspects

Specifically in HealthCo, it was observed that the organisation had a social consideration too for adopting digital. This was during the COVID times, the pressure on HealthCo was more, and they tried to provide healthcare at maximum capacity to patients. The organisation looked at digital technology to facilitate to support social causes. As the executive of HealthCo narrates, "the doctor-to-patient ratio is wide. Unless we use technology effectively, we will not be able to reach out to a maximum number of patients that need healthcare". The HealthCo quickly responded to this need and launched a digital app where the patients could connect with doctors without coming to the hospital. Further, as HealthCo CIO mentions, "… being a medium-size city, a lot of the patients came from nearby district areas. And during the lockdown, it was very difficult to reach out to the patients. Our health care app was an initiative to facilitate this to the masses".

Similarly, AutoCo collaborated with an online health advisor through a digital app to enabled online consultation for its employees. As the AutoCo executive mentions, "in this need of hour, we want to facilitate employees and their family to consult the doctor. We encourage all to use the app for their families. The expenses will be billed to the organisation". Further, BuildCo introduced a mobile app where people could collaborate

for donations of food and other items for social causes. Hence, societal aspects were also observed to be a prominent driver of digital transformation as the organisations looked at digital technology as a reliable option to support social outreach.

4.4 Unplanned external exigencies

In the case organisations, the push for digitalisation also comes from mandatory organisational compliances. These factors primarily emerge from legal and regulatory conformities or uncontrollable circumstances. This dimension is discussed in the below section.

4.4.1 Legal and regulatory compliances

In all case organisations, the need for digitalisation also emerged from the compliance requirements from the government, legal or environmental agencies. In some cases, the regulatory agencies themselves suggested digital compliances, whilst in some others the organisations used digital technology to address these regulations. For example, in CementCo and AutoCo, compliance to new goods and service tax (GST) was a complete change to the prevailing tax structure, resulting in complete revamping of business processes in their ERP systems. Moreover, in HealthCo, ChemCo and TextileCo, regulations played a role beyond the tax system. For example, the handling and disposal of the chemicals is guided through a regulatory process. ChemCo was using customised digital applications for auditing. Similarly, HealthCo has similar regulations for the medical waste disposal system, "we have stringent regulations for waste disposal norms. Our systems are designed to keep a record of these up to six years as per norms".

4.4.2 Pandemic impact on business

The pandemic pressurised the organisations to adopt novel ways of doing business. All case participants unanimously acknowledged that the pandemic brought forward many unforeseen and unique challenges such as shut down of plants, reduction of manpower, inventory management and remote work. This pressed the organisations to scale down their physical operations while quickly scaling up online collaborations as a workaround to workplace discussions. This unplanned situation left no choice but to push the organisations to radically adopt digital. This reflects in HealthCo, where the business executive comments, "we have increased our digital budget by five times". Similarly, as a TextileCo executive comments, "working from home was a very different aspect for us. But we quicky adopted to this. Almost in two weeks we were able to do all meetings online just as earlier business practices".

In conclusion, diversified reasons drive digital transformation in organisations. These reasons were found to be internal and external to the organisations. Adoption of digital was seen either as a proactive approach in same cases or as a reactive response in others. Table 3 summarises the prominent technologies and key adoption drivers of DT in case organisations.

The next section discusses these observations in light of the literature.

Table 3 Nature of digital transformation initiatives in the organisations

S no.	*Organisation pseudo name*	*Business unit/ department**	*Key technologies and projects undertaken***	*Key adoption driver*
1	AutoCo	IT, PP	Cloud-based supplier portal (U), common digital connector (P), IoT-based advanced manufacturing (U), AI/ML-based utilities (P), analytics (I)	Partner collaboration, promoting aftermarket sales through customer loyalty, technology integration, peer pressure, social aspects
2	CementCo	IT, MA, HR	Information and communication technology (ICT)-based app (U), customer and supplier portal, Industry 4.0-based manufacturing practices	Establishing new business channel, employee centricity, revenue improvement
3	HealthCo	IT, CS	Mobility solutions (U), advanced analytics (U), advanced patient care system (P)	Increasing customer reach, partner collaboration, better patient care through advanced analytics, competitive pressure, digital as a counter measure to revenue impacts, threat of new digital entrants, legal and regulatory compliances
4	ChemCo	IT, LE, MA, HR	Mobility solutions for sales (U), cloud-based integrated portal for real time compliance (U), analytics (U), batch management application (I), other customised applications (P)	Improving business process efficiency, employee centricity, competitive pressure, legal and regulatory compliances, management push for digital
5	BuildCo	IT, PP, MA	Mobility solutions (U), Industry 4.0, customised customer collaboration portal (U)	Customer engagement, faster delivery and reduced time to market, operational improvements, peer pressure, revenue improvement, establishing new market, social aspects
6	TextileCo	IT, MA, PP, HR	Social media (U), IoT-based manufacturing (U), AI/ML-based utilities (U), analytics (I), ERP reimplementation/ upgrade (P)	Customer engagement, data analytics for efficient decision making, wastage reduction and operational control, employee centricity, competitive pressure, threat of new digital entrants, supplier and management push

Notes: *Information technology – IT, production planning – PP, marketing – MA, customer support – CS, human resource – HR, legal – LE.
**Planning – P, implementing – I, in use – U.

5 Discussion

Findings suggest that the organisations are motivated and influenced by many factors for adopting DT. The findings strengthen the observation in literature that there are external or internal factors for why organisations engage in digital transformation (Liere-Netheler et al., 2018; Morakanyane et al., 2017; Osmundsen et al., 2018). These factors can be broadly classified into four categories – *business innovation and process improvement*, *business sustainability*, *internal digital aspirations*, and *unplanned external exigencies*. As Haffke (2017) and Leischnig et al. (2017) argue, changing customer demands and behaviours enable initiation of DT. The case organisations are observed to be influenced by customers' demands to initiate digital transformation. AutoCo's customers (OEMs) required implementing a supplier portal, HealthCo's customers needed e-consultations, and similarly, BuildCo's customers demanded online designs for prebuild assemblies. Apart from customers' demands, the case organisations were proactively engaged in providing new offerings to their customers and employees (Nambisan et al., 2017; Yoo et al., 2010). CementCo enabled a new communication channel with their dealers to aid better and faster communication. The HealthCo enabled a new 'digital connect' mobile app to provide the direct connectivity of patients (their customers) with doctors. Similarly, AutoCo created a new web portal to connect with OEMs (their suppliers) to foster collaboration. Moreover, as digital technologies are getting increasingly integrated with products after sales support is becoming a key differentiator for customers. Bockshecker et al. (2018) mention that organisations promote servitisation through digital technologies for better customer retention and satisfaction. This aspect was specifically evident at BuildCo and CementCo, where both organisations guided their field teams using digital tools to build stronger customer connections and address customer complaints with agility.

The eagerness of organisations for ecosystem redesign with partners for their internal business process improvement was apparent in the case organisations. Huang et al. (2014) mention partner collaborated supply chains for modern industrial operational processes. Alongside customers and employees, the case organisations are also attempting collaborative synergies through digital applications with other channel partners. CementCo established a new digital portal to forward and reverse integrate both their customers and suppliers for price negotiations. AutoCo designed a new portal where all the suppliers could be onboarded on a single portal to bring complete visibility across the entire supply chain. Similarly, HealthCo collaborated with local clinics as their channel partners.

The organisations were observed to be oriented towards achieving operational improvements and advancements through the applications of digital technologies (Holmström, 2022). The intent behind this is to achieve overall system efficiency, precision, and effectiveness through operational advancements. CementCo deployed AI-based track and trace application on an online analyser for quality control of raw material. AutoCo implemented an IoT-based manufacturing execution system at their new facility for advanced manufacturing. Not only limited to operations, the organisations also employ digital technologies to complement and enhance their overall business practices with novel technological offerings (Barrett et al., 2015). The HealthCo decided to implement an integrated patient information system to offer personalised service. Similarly, ChemCo replaced its manual hazardous material tracking process with a digitally advanced application to enhance reporting to authorities.

Developing employee competency is the core aspect of DT (Blanka et al., 2022). In all case organisations, employee centricity was observed as a potent driver of DT (Brynjolfsson and McAfee, 2014). The employee-centric push emerge prominently from two directions – first, from employees themselves, who demand a digitally enabled workplace and second, internally within organisations for employee retention and as an attempt to make the workplace efficient. These observations support Kissmer et al. (2018) who find that knowledge workers have a preference towards digital workplace. Employees seek digital tools for innovation at their workplace to contribute in a better way to their organisations (Liere-Netheler et al., 2018; Mueller and Renken, 2017). On the other side, the organisations, too, are keen on building digital competency to favour employees' demands (Wan and Cheng, 2019). Their main interest was to retain, groom and utilise the internal talent to support their future business model and build a digital-centric organisational culture (Mihailescu et al., 2017).

Next, business sustainability was observed to be one of the critical considerations for businesses to adopt digital. The pressure emerging from the competitors was observed as a strong influencer of DT in all case organisations (Faro et al., 2019; Morakanyane et al., 2017). The organisations were concerned about competitors' moves toward digitalisation. This induced anxiety about lagging with respect to their peers. As a countermeasure, the case organisations categorically took up digital initiatives.

Like competitive pressure, the anticipated disruption by new entrants also stressed the case organisational adoption of DT. As Berghaus and Back (2017) mention, a shift in the competitive landscape forces adoption of new digital technologies for innovation to compete with new entrants and established market rivals. Most case organisations were concerned about future competitive pressure emerging from new digital entrants. For instance, TextileCo was concerned about the new printer start-ups that were performing both designing and cutting work on customers' designs. To counter this, TextileCo purchased high-precision machines that could print customers' designs in multiple formats. This evidence supports Haffke et al. (2016), who mention that the digitalisation pressure coming from competitors' adoption and demonstration of newer digital capabilities bring disruption to established business models, consequently influencing the move toward DT.

Davenport (1993) mentions complying with customer requirements versus controlling costs as two conflicting aspects organisations attempt to attain through technology. It was observed that the organisations have internal business pressures (of cost, revenue, margins), and digital is seen as a remedial countermeasure to that. HealthCo focused on cost saving and revenue improvement by bringing transparency in the operations, understanding that many stakeholders, including patients, will like a transparent system. This observation is in line with Roumani et al. (2016), who note that digital transformation brings cost efficiencies to organisations.

Beyond incremental changes, a substantial shift in the organisational business model itself was observed to be emerging due to DT (Berman, 2012; Rachinger et al., 2019; Tavoletti et al., 2021). This was specifically evident for HealthCo, where the business model was shifting from therapeutic to preventive analysis. To this, the new laboratories were digitally connecting (via WhatsApp) with customers more proactively resulting in lesser operational costs with respect to HealthCo's traditional ways. This threat of changing market dynamics posed a potential threat to HealthCo. As a countermeasure to this pressure, HealthCo scaled itself digitally to WhatsApp, emails, and SMS from traditional phone call follow-ups. Similarly, during the pandemic restrictions, HealthCo

was facing lesser footfall of patients under specific healthcare categories resulting in lower revenues. As a remedial action, HealthCo attempted to create a new patient connect app (Barrett et al., 2015) to enable remote appointment booking and consultations of patients with doctors. This way, HealthCo generated a new and sustained revenue stream through its operations.

As noted by Nambisan et al. (2017) and Yoo et al. (2010), it was also observed that the organisations had their internal aspiration to move towards digital. The organisations aspired to explore what technology could bring to them towards digitally enhancing their products, and services or building new digital offerings (Mocker and Fonstad, 2017). Further, the organisations leapt ahead to experiment with digital technologies for generating new offerings or automating existing business practices (Proctor, 2017). This proactive utilisation of technology was simultaneously being planned to complement the business strategy (Kane et al., 2015). For instance, AutoCo production engineers utilised AI and ML at welding workstations to bring accuracy, efficiency and flexibility to the fabrication processes (Porter and Heppelmann, 2015; Liere-Netheler et al., 2018).

As Berghaus and Back (2017) mention, the key aspect of adopting DT is enabling organisations to be digitally ready for quick adoption of environmental changes. The unplanned external exigencies had a significant impact on promoting DT across organisations. The external exigency was prominently observed in all the cases where the organisations facing regulatory changes were pushed to modify their business practices through digital technology (Wessel et al., 2020). The regulatory guidelines positively impact the adoption of digital tools for organisational compliance (Feroz et al., 2021). For example, the case organisations had to comply with electronic invoicing (e-invoice) and its reconciliations as a part of goods and service tax (GST). They adapted to application programming interface (API)-based systems for real-time data integration with the GST portal. Thus, organisations reorient and enhance their dynamic capabilities (Karimi and Walter, 2015) using digital technologies. Due to COVID-19 pandemic as well, the organisations had to radically change their mode of working (Xiong et al., 2021). Consequently, there was a sudden emergence of a strong need for online collaboration platforms and digital infrastructure. The social aspects also motivated organisations to adopt digital (George and Paul, 2020). This was most evident in the HealthCo, where the doctor-to-patient ratio was quite high as the HealthCo executive emphasised being digital to reach the masses efficiently. Similarly, it was observed that the other case organisations also had social initiatives as part of their corporate social responsibilities (CSR). For these initiatives also, digital technologies were aimed at conducting the programs more effectively.

In line with the observations that organisations utilise digital technologies to acquire real-time data from digital technologies to restructure their business models (Bharadwaj et al., 2013; Proctor, 2017), the demand for data analytics appeared as the driver for DT. Using real-time analytics for tracking and tracing vehicles from the transportation management system, CementCo improved the efficiency and control of the fleet in the field. Similarly, as Yoo et al. (2010) and Vial (2019) mention, digital technologies can be used as a common platform for hosting multiple digital applications to cater strategic business needs through data analytics simultaneously. HealthCo integrated multiple legacy applications through a common digital connector and created a data lake for building its analytical capability.

Fostering greater collaboration among the business units is essential to achieving success through digital initiatives (Bilgeri et al., 2017). The analytics demanded and

presented to TMT in CementCo and TextileCo consolidated business vertical highlights. This way the demand for information integration became the driver behind the deployment of digital applications. However, with the increased digital presence in their own and external space, the organisations had concerns over data exposure and application security. As a preventive measure, case organisations were rolling out compliance with information security and data sharing policies (Kagermann, 2015) to safeguard their organisations against perceived risks in their suitable ways.

Apart from the above, the study also has some novel observations. The internal organisational inspiration for digitalisation was also observed to be motivated by TMT's interest in digital differentiation. Consequently, digital got importance and more digital options were evaluated at multiple levels within the organisations. The AutoCo executive mentions management's vision to introduce digital to the 'DNA' of the organisation. TextileCo consultant mentions digital as a push rather than a pull from the board. The management's push in DT is not much discussed in academic literature yet. Moreover, not only limited to TMT but the affinity towards digital was also observed at lower organisational levels.

Overall, the culture of the organisations was getting adopted where employees were motivated to solve their business problems using digital technologies (Singh and Hess, 2017). Another peculiar driver of the internal motivation of digital transformation was work-from-home culture, a new concept to all case organisations. As the TextileCo executive mentions, working from home gave people more time. This way work from home culture led to idea generation by employees, which in turn fostered innovation and became driver of digital transformation. Next unique observation emerged from HealthCo, where the executive mentioned tax savings on the purchase of Digital Assets. Therefore, to avail this benefit, HealthCo decided to invest in digital infrastructure. The implementation of DT and inspiration of tax-saving by investing in digital infrastructure was a new observation, which is not discussed in academic literature yet to best of our knowledge.

To summarise, it was observed that, emerging from a variety of factors, the organisations are under immense pressure to adopt DT. The drivers for the digital transformation emerge from a lot of organisational perspectives, such as making better customers connect, operational process automation, efficiency improvement through advanced manufacturing processes, establishing real-time partnerships, enabling analytics-based decision making, improving product quality, making the workplace employee-oriented, reduce costs, improving margins and regulatory compliances. The phenomenon was not just limited to distinct technology strategies but rather emerged as much broader combinations of unique business strategies to effectively exploit the opportunities presented by a combination of digital technologies (Chawla and Goyal, 2021; Hai et al., 2021).

The organisations realise that customer interactions have changed from linear to multichannel in the digital era (Seth, 2021). Consequently, their focus is shifting to identifying newer ways to lure customers and distribute consistent offerings and experiences throughout the customer's journey (Lemon and Verhoef, 2016). To achieve this, they rely upon digital technologies as the platform enabler and integrator for multilevel interactions. Similarly, value is created through real-time interaction of suppliers through digital portals. In all case organisations, the organisations relied upon digital technologies to improve their core competencies and scale, while in one case

(HealthCo), the organisations also went ahead to complement their existing revenue streams with new digital initiatives (Verhoef et al., 2021; Chawla et al., 2022).

Further, as digital technologies are known for their interlinking architecture, organisations focus on targeting multiple uses from the same set of digital applications. This interlinking flexibility aids the organisations in customising and scaling the achieved benefits across multiple departments simultaneously with the very low marginal cost of implementation. This way, the organisations can successfully integrate siloed functions using digital technologies. An interesting observation was that unlike traditional times when the organisations relied on labour and resources only, the synergies now are being attempted via the exchange of information through connected digital networks. This aspect further aggravates the need to adopt digital. Further, the organisations attempt to improve their decision-making capabilities with reliable and resilient analytical systems. By gathering, integrating, and commercialising complementary and heterogeneous technological expertise, the organisations were becoming better prepared to master the digital transformation of their businesses (Hildebrandt et al., 2015).

Table 4 Drivers of digital transformation (consolidated summary)

Driver	*Driver from reviewed studies*	*Findings from this study*
Cost reduction and revenue increase	Y	Y
Organisational innovation push	Y	Y
Information and business integration	Y	Y
Establishing new business models	Y	Y
Operational process and workplace efficiency improvement	Y	Y
Product enhancements and personalisation	Y	Y
Servitisation	Y	Y
Competitive pressures and market dynamics	Y	Y
Partner alliances	Y	Y
Customer expectations and experiential offerings	Y	Y
Employee engagements and workplace demands	Y	Y
Standards and IT security concerns	Y	Y
Data driven decision making, IT security	Y	Y
Regulatory changes	Y	Y
Establishing new market channels	N	Y
Peer influence	N	Y
Suppliers' demands and expectations	N	Y
Fear of going below the benchmark	N	Y
Management interest of digital differentiation	N	Y
Social aspects	Y	Y

Note: Shaded cells represent new drivers found in this study.

Finally, to assist in overall sense making, Table 4 presents consolidated drivers of DT from the reviewed studies as well as findings from this study.

6 Research implications, limitations and future research directions

This research has several academic implications. The study enriches the literature under the domain of DT by consolidating and empirically examining the drivers of DT in Indian context. It brings out some important and influential drivers of DT such as, peer influence and top management's interest in digital differentiation which are not yet been discussed in the prevailing literature. Further, as most of the prevailing drivers are derived from literature reviews, this study presents a distinct contribution by providing empirical evidence of the drivers of DT which is based on in-depth case-based analysis. Acting as a ready reckoner, the study delineates on various factors that instigate DT initiatives at the organisations. More elaboratively, the study empirically demonstrates the 'Why' part of DT with a diversified mix of industries. It is tempting to discuss the reasons why organisations prepare for their DT journey. Although the organisations have certain similarities, each organisation is different on the ground. The variances come from the countless different circumstances that surround each organisation in its regulatory and competitive environment (Davison et al., 2023). It is possible that other organisations won't experience the same particular collection of circumstances as India. However, the diversity of the case organisations chosen for this study enables the possibility of drawing parallels with other groups of a similar character, which the researchers can further expand.

This research has a number of organisational and managerial implications as well. This is crucial since to drive and ensure success in DT, it is foremost imperative for organisations to build a thorough understanding of underlying factors and set the right expectations from technology. A consolidation of underlying factors is also important to ensure that these are holistically considered to provide appropriate direction to strategic initiatives, digital project selection and governance. Examining what has prompted the case organisations to embrace digital will provide useful information to organisations initiating their DT journey. More importantly, the evaluated drivers can also be referenced to stimulate organisational thinking, as when it comes to DT, the organisations often find the challenge of 'where to start'.

To succeed in the digital era the organisations have to keep up with lot of factors, such as changing customer demands, product and service customisations, operational advancements and supply chain optimisations. All these aspects demand astute managerial interventions. A thorough understanding of drivers will enable managers to start in the right direction and address the anticipated challenges more confidently. More importantly, managers can strategise their action plans to achieve success in DT initiatives by knowing the drivers appropriately. Further, planning according to the driving forces in practice will facilitate organisations to avoid errors and achieve better success in their digital endeavours. Furthermore, the study presents investigations on the organisations representing broader business domains. The managers in similar business domains can baseline, substantiate, and contextualise the drivers to their organisations, resulting potential time saving, accurate and efficient identification of drivers along with strategising their DT roadmap.

However, limitations of this study are to be noted. This study presents the conclusions based on semi-structured interviews. As a result, it is possible that certain insights are still being overlooked. There is also a chance of participant and hindsight bias even though we have triangulated the results using functional participants across the cases. Our study is also based on the selected industries; other industry types may offer different insights.

For a more thorough explanation and generalisation of results, future researchers may use a larger sample size covering a wide variety of businesses. Due to the high failure rate of DT projects, analysis of what went wrong and recommendations for prevention are required. Hence, studies can be performed to determine if the drivers vary based on industry type, size and geography. For this study large organisations were selected. Similar investigation can be performed on small and medium size enterprises (SMEs) to evaluate and compare their drivers. Since DT is a practice-oriented phenomenon, more empirical studies are suggested. Longitudinal studies can be performed to evaluate how the drivers themselves change longitudinally. Further, interrelationships among the drivers is not evaluated, future studies can examine the relationship between the drivers. Since contextual factors and legal regulations can influence the adoption of DT, we suggest more studies based on developing economies. There can also be studies to analyse novel aspects such as drivers emerging due to newer business roles or amid the consolidation of businesses, leadership directions, IT security and cloud infrastructure aspects or organisational motivation in adopting new technologies.

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