



Strategic Alignment During Digital Transformation

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Abstract. The extant literature on digital transformation, as an emerging phenomenon, has grown in volume during the last decades. As organisations continue to embrace digital transformation, in pursuit of improved efficiency of their business processes as well as provision of better services and products to their customers, managing the necessary changes have become challenging for leaders. One of these challenges is the alignment between the IT strategy—including the introduction of new digital technologies—with the overall organisational strategy, also referred to as strategic alignment. Even though both digital transformation and strategic alignment have attracted the attention of IS researchers, there is a paucity of research exploring how strategic alignment issues play a role in the digital transformation processes undertaken by today’s organisations. To address this gap, in this study we present the findings of an empirical qualitative study conducted in two countries. Our results indicate that the action organisations take to improve their strategic alignment is dependent on how far they have come to introduce new technologies, reconfigure their business processes, and redefined their overall organisational strategy. The study provides insights on how leaders plan and implement changes in response to the changes in external environment as well as the internal organisational dynamics.

Keywords: Digital transformation · Strategic alignment · IT alignment · Public organisations

1 Introduction

Digital transformation, “...*technology induced change on my levels in the organisation that includes both the exploitation of digital technologies to improve processes, and the exploration of digital innovation, which can transform the business model*” [1, p. 2] has become one of the hot topics garnering unprecedented interest among practitioners, researchers as well as policy makers and elected officials. Regardless of industries and sectors, digital transformation is seen as an enabler for innovation and a source of competitive advantage. However, from the leaders’ point of view, digital transformation has brought about a challenging task of articulating and implementing simultaneous changes that touches upon multiple areas within an organisation. Among these

challenges, the alignment between IT strategies with the overall organisational (business) strategy has been brought to the fore [2].

Business-IT alignment (referred to as ‘strategic alignment’ in this study), defined as “...*the application of Information Technology (IT) in an appropriate and timely way, in harmony with business strategies, goals and needs*” [3, p. 3], has been recognised as one of the most researched topic in the IS and cognate disciplines. Even though the phenomenon has constantly ranked as one of the top concerns among practitioners [4], digital transformation has made the issue even more important. However, the widespread attention among researchers and practitioners, strategic alignment is still a challenging task for many organisations [2]. Moreover, the new trend of digital transformation coupled with the dynamic business environment has made strategic alignment more challenging. Given the relevance of strategic alignment for successful digital transformation [5, 6], researchers call for empirical studies that examine the relationship between the two constructs [5, 7, 8]. Thus, this study examines how organisations plan and implement strategies that could improve their strategic alignment while undertaking digital transformation.

The findings of prior studies indicate that IS studies focusing on both digital transformation and strategic alignment focus on private and commercial organisations [9]. However, the significant differences between private and public organisations that are relevant to IT management practices have been identified [10]. To address the lack of studies in the public organisations’ context, this study is conducted in five public organisations.

To meet the objective of this study, the following research question is formulated: “*How can organisation pursue strategic alignment to successfully complete their digital transformation journey?*”

The paper is structured as follows. First, a brief review of the extant literature on digital transformation and strategic alignment is presented together with a theoretical framework underpinning the study. Next, the research strategy as well as the data collection and data analysis methods are described. The subsequent section presents the results and analysis of the study, starting with the description of the case organisations where the study was conducted. Finally, we conclude by summarising the findings of the study, research and practical implications and put forward suggestions for future research.

2 Prior Studies

2.1 Digital Transformation

Digital transformation, which has emerged as an important phenomenon among researchers and practitioners, has become an essential part of improving organisational performance in the literature [11, 12]. In addition to the recognition among academics and practitioners, the topic has also mobilised policy makers and elected officials [13]. Even though the concept has been around for a while, the literature does not clearly articulate what constitutes as digital transformation. For instance, according to Vial

[11], digital transformation has been characterised in more than 20 different ways in the literature. However, some common themes have also emerged in the recent years.

To start with, scholars agree that digital transformation calls for changes in the use of technologies where new and emerging digital solutions (e.g., Internet of things, cyber-physical systems, mobile technologies, big data) are introduced with the aim of improving the production and delivery of products and services. As we have noticed from prior studies in digital transformation, there are different views on which technologies are considered to be relevant to digital transformation. However, the introduction of digital tools and methods to exploit data (e.g., using business analytics and machine learning) is among the most important considered to be the most important benefit of digital transformation, particularly in the fast-paced business environment [11].

Second, digital transformation is seen as an organisation-wide change of great magnitude affecting the business processes, employees and strategy in response to new developments. The new developments might come as a result of new business environments, or emergence of new digital technologies. According to Wessel [13] organisations undergoing digital transformation are simply rethinking how they configure the use of internal and external resources to further organisational objectives. Even though the new configurations require making adjustments to the whole aspects of organisations, in prior IS studies have ignored issues not directly related to new technologies [14]. Thus, scholars [1] argue that studies on non-IT organisational changes are also equally important for the success of digital transformation. Unfortunately, organisations still view digital transformation as an entirely technology phenomenon detached from organisational factors [2]. Most recent studies, on the other hand, have identified several factors that are important for successful digital transformation, such as organisation structure [15], and organisational culture [16].

In sum, the digital transformation process involves formulating strategic directions, identifying activities that could lead to the realisation of overall organisational vision, and configuring resources appropriately. According to Berghaus and Back [1], and Kahre [2], organisations are struggling to align their business and IT strategies as the proliferation of IT increases where it is embedded with all aspects of organisations. Thus, identifying the stages of digital transformation is useful to help leaders prioritise the different activities that need to be acted upon. The digital maturity model we adopted [1] consists of five maturity stages—promote and support (stage 1), create and build (stage 2), commit and transform (stage 3), user centred and elaborated processes (stage 4), and data-driven enterprise (stage 5). These stages are characterised based on the strategic importance of IT for organisations, the familiarity of employees to existing digital solutions, involvement of leaders as well as flexibility of work processes. Accordingly, those at the first stage have basic digital services that are designed to support existing support and products. On the higher end, organisations that managed to achieve stage 5 digital maturity are users of the most advanced data analytics for planning, real-time analysis, personalising interactions as well as identifying future opportunities and meet challenges of the dynamic environment.

2.2 Strategic Alignment in the Digital Transformation Era

The evolution of digital transformation, often presented in three generations (transformation to paperless procedures- generation 1, transformation to automated procedures- generation 2, and transformation to smart procedures- generation 3 [17]) calls for radical changes in organisations operational and strategic model which affects the IT and other functions. One of the challenges for leaders is the issue of IT management [2, 5, 16]. According to prior strategic alignment studies, the continuous introduction of digital technologies needs to be appropriately managed in such a way that organisations have made the necessary adjustments to accommodate the exploitation of new technologies. In other words, IT strategies need to be reformulated, and leaders have to make sure the organisational structures as well as the employees are ready for the transformation. Thus, aligning the IT strategies as well as overall organisational strategies requires leaders to comprehend the magnitude of organisational transformation.

A brief overview of prior strategic alignment studies might reveal how the digital transformation has brought about new approaches towards strategic alignment. For more than four decades, the IS as well as strategy and management literature adopted a consistent view of strategic alignment acknowledging the important role it plays to realise the value derived from IT, which in turn is reflected on organisational performance [3, 18]. Despite this rich volume of literature, several limitations have been noted. For instance, one criticism of prior studies is discussed along with digital transformation. According to these studies, there is a lack of acknowledgement of the dynamic business environment and its influence on strategic alignment [2, 11]. Accordingly, there were prior recognition that organisations might be able to find optimal arrangements where strategic, operational as well as tactical plans are formulated and implemented. This view assumes that strategic alignment is a function of well-articulated plan that might be sustained to improve organisational performance for a long run by applying IT solutions. This presupposition, however, has been labelled as ‘outdated’ [19].

On the other hand, new propositions acknowledging the environmental dynamics where both organisational as well as the emerging technological changes are inevitable, are gaining acceptance as appropriate approach towards reaching strategic alignment [2, 16, 20, 21]. Thus, strategic alignment researchers recognise the relevance of such contextual factors as environmental uncertainties and current trends and best practices when they attempt to reach strategic aligned position during digital transformation. It is also worth noting that there is a growing consensus among scholars that strategic alignment is a process, not as an outcome as previously thought [5]. One of the widely adopted model, Strategic Alignment Maturity Model (SAMM) places organisations in four different stages of maturity—(i.e., initial/ad-hock process- level 1, committed process- level 2, established focused process- level 3, improved/managed process- level 4, or optimised process- level 5) based on how well it has managed the six dimensions [3, 22]. The six dimensions of alignment assess Communications between IT and other units; Value Analytics (measuring the contribution of IT as understood by the IT and rest of the organisation); IT Governance (the IT decision-making arrangement); Partnering; Dynamic IT Scope (flexibility in terms of emerging technologies and provision of tailored solutions); and Business and IT Skills Development.

Benbya et al [23] argue that the IS studies still overlook the multi-faceted and co-evolutionary nature of strategic alignment and the relationship it has with various internal organisational aspects that might change over time. Digital transformation is one of the changes organisations undertake to help them exploit opportunities and meet challenges, particularly in the turbulent times. It is worth noting that the different stages of digital transformation require different levels of investment in IT infrastructure and setup, integration of IT, and changes in business processes. According to Vial [11], finding the right fit, between the adoption of new technologies and making adjustments gets complicated as organisations graduate to the next generation of digital transformation.

In sum, the findings of recent studies seem to suggest the invaluable role strategic alignment plays in the digital transformation process [2, 5, 11, 16]. Haffke et al [24] argue that, given the significant developments in terms of digital transformation, the pursuit for strategic alignment in the literature is no surprise. The fact that IT is now embedded with all aspects of organisations makes the alignment attempt more challenging. In the very early studies of strategic alignment [25], the message for organisations was to align their IT strategy subsequent to their business strategy. However, in the digital transformation era, as the adoption of new digital technologies drive organisational strategic directions, novel approaches to plan strategic alignment is of paramount importance. Accordingly, leaders are reminded the significance of paying attention to such areas as *organisational structure, organisational culture, skills development, organisational agility* [26, 27], *infrastructure flexibility*, and *rapid business process management* [5, 26–30].

2.3 Conceptual Research Framework

The conceptual framework shown in Fig. 1 is used to illustrate the research process. Based on the findings of prior studies, we attempt to examine how organisations prioritise activities related to strategic alignment to pursue successful digital transformation.

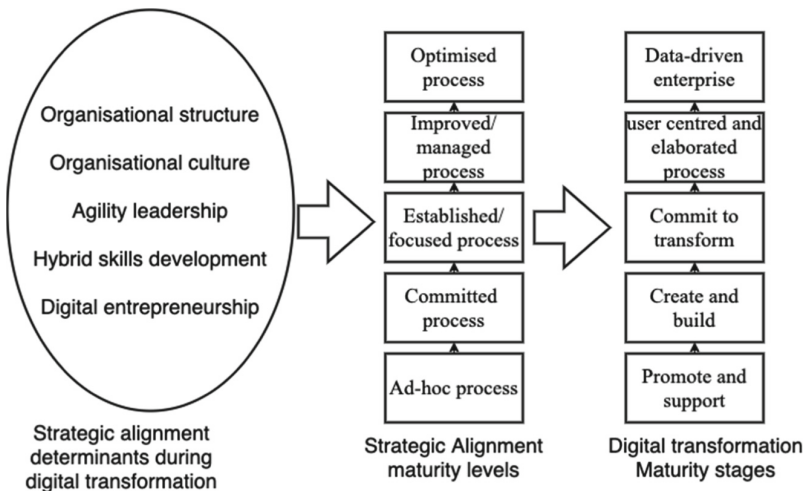


Fig. 1. Conceptual research framework

As the findings of recent studies suggest, for instance [5, 26–30], organisations undergoing digital transformation need to focus on specific organisational and managerial factors to improve their strategic alignment maturity [31]. Strategically aligned position, in turn, is considered to be invaluable to reach higher stage of digital transformation maturity [1].

3 Research Methodology

We chose an exploratory approach to investigate current developments in digital transformation and strategic alignment in the public sector. Among the exploratory research approaches, case study is one of the widely adopted research strategy in the IS research domain [32]. Particularly, strategic alignment studies in the public sector have been conducted applying single or multiple case study research approach [20]. According to Yin [33], case studies are best suited to explore a phenomenon in a complex natural setting. A multiple case study strategy, rather than a single case study, was deemed appropriate after assessment was made following the critical appraisal guidelines [34].

A qualitative case study is well established in IS research as that it provides a researcher with various forms of data collection methods improving the credibility of the findings [33]. In addition to interviews, observations, as well as internal organisational documents, as well as publicly available online materials were used to collect data. The documents obtained include meeting protocols, organisational charts, strategic plans (IT, and overall strategic documents), process description, role descriptions.

Attempts were made to examine organisations with similar organisational characteristics (size in terms of number of employees, stages of digital transformation, and organisational structure). Organisations participating in our study had at least 275 employees, have relatively centralised organisational structure, and report to their respective regional governments. In the first instance, one of the researchers approached CIOs of fifteen public organisations out of which four responded with confirmations for interview appointments with at least one CIO and two administrative leaders holding equivalent positions. The interview was conducted at the premises of the organisations. After the interview, the respondents were asked to refer us to more administrative leaders who are particularly assigned to work with areas related to digital transformation. We managed to get help from the respondents in recruiting other participants in additional one public organisation. Interviews with one of the participating organisations were conducted by video conference. In total, we gained access to five public organisations (three in Kenya and two in Ethiopia). Except in one of the organisations, we interviewed two respondents from IT and three from the administration side. In one organisation, we obtained three interviews from the IT side (CIO, CDO, and deputy CIO). Table 1 lists the role of respondents and provides information on the number of interviews from each of the departments represented.

Table 1. Respondents with their roles and department affiliations.

Departments	Role of Respondents	No. of Interviews
IT Department	CIO	5
	CDO	1
	Deputy CIO	4
<i>Subtotal</i>		10
Administration Departments	Administrative Head	5
	Logistics Head	1
	Finance Head	5
	HR Head	5
<i>Subtotal</i>		16
Total		26

Interview guides were used to conduct the semi-structured interviews with respondents from the administration and IT departments to ensure reliability and ease of comparing the results of the interviews. However, the interview questions were formulated differently taking the functional roles of the respondents into consideration. For instance, the CIOs were asked to provide their insights and opinions on the role of IT in their respective organisations, how their counterparts view IT and how they collaborate with other departments as well as how their relationship with the whole organisation plays a role in the success of the digital transformation. The interviews were conducted between November 2019 and March 2020. On the other hand, leaders of from the administration departments responds to questions pertaining their perception of the role of IT for their organisation and how they view the interaction between the IT unit and the rest of the organisation.

Even though all of the respondents were scheduled for an hour interviews, the actual interviews took between 45 and 70 min. Right after the interview, complementary quantitative data was collected from the respondents using questionnaires. The questionnaires were formulated to determine the level of strategic alignment and digital transformation maturity stages. The strategic alignment maturity in each of the participating organisations was measured according to the SAMM instrument [22, p. 40]. The assessment asks the respondents to rate the different criteria related to what Luftman et al [22] referred to as alignment dimensions. For instance, for the first dimension, i.e., communications, the respondents from the IT department assess how they understand their organisation's customers, processes, and partners. On the other hand, their counterparts from administration departments score the extent they understand the IT environment, its capabilities, etc. In total, the instrument contained 39 questions. The strategic alignment maturity level is then calculated as the average of the sum of the scores of the dimensions which were assessed using a 1 to 5 Likert scale. To determine the various stages of digital transformation, we formulated our questionnaires based on the Digital Maturity Model (DMM) [1].

The recorded interviews were transcribed by respective researchers who conducted the interviews. Seven of the interviews which were not in English, were translated into

English before coding the data. Prior research on digital transformation and strategic alignment was used as a basis for coding (i.e., inductive coding). Two of the researchers carried out the coding independently. Where inconsistencies were observed the literature was consulted and the data was recoded after discussions. We took sample of coded interview data and tested for objectivity and inter-coder reliability according to Krippendorff's alpha [35] and Cohen's kappa [36]. The test suggested that the reliability and objectivity of our coding was sufficient.

According to Yin [33], triangulation improves the reliability of case studies. Thus, we complemented the interview and questionnaire data with secondary data (the internal organisational documents we obtained, and publicly available data from websites). The data collected through the questionnaires was coupled with the thematically coded interview data from our respondents. Analysis was also made to compare participating organisations in terms of their similarities about the strategic alignment as well as strategic alignment maturity. Our justifications for the conclusion drawn came from the level of alignment and digital maturity with the coded responses from our interviews.

4 Results and Discussions

The result of the study is based on the empirical data we collected from five different public organisations. The section starts with the description of the case organisations.

4.1 The Case Organisations

The five case organisations investigated for this study are the mid-size municipalities and counties in Ethiopia and Kenya respectively. In Kenya the three counties selected are in the Eastern province in the former administration arrangement. The population size of these counties range between 250,000 and 350,000. The counties were selected from others due to the digital transformation they have been working on for the last few years. All of the counties, except one have centrally run IT department responsible for the provision of IT services for the different departments in the respective counties. The CIOs oversee the digital transformation projects together with steering committees selected from various departments. In one of the counties, the office for digitalisation is established to supervise the digital transformation. In Ethiopia, the data collection took place in two municipalities with the population size of about 250,000 each. Unlike the counties in Kenya, these municipalities work under the framework of the federal government to digitalise the public sector. However, the IT departments are responsible to provide IT services to other departments in the municipality, but also to other public organisations in the vicinity of the respective cities. The same criteria were used to select these municipalities—the digital transformation they are undergoing. We have also tried to examine organisations of similar size.

4.2 Digital Transformation- and Strategic Alignment Maturity

Using the responses from the questionnaire, we assessed the strategic alignment as well as the digital transformation maturity in the participating organisations. In the first glance, the average overall scores of the strategic alignment seems to suggest higher maturity value of digital transformation maturity. As shown in Table 2, three of the organisations seem to have reached the third stages in the digital transformation maturity stage. The result is not surprising given the late entry of public organisations to digitalisation. Previous empirical studies of digital transformation in well performing industries stands at about stage three [1]. As stated in the literature, organisations in this digital transformation maturity have organisational cultures and organisational structure that undergo considerable alterations.

Table 2. Results of the questionnaire assessing the strategic alignment maturity levels and digital transformation maturity stages

Maturity Assessment	ET1	KE1	ET2	KE2	KE3
<i>Strategic Alignment</i>					
Communications	2.3	2.3	4.0	3.1	3.2
Value Analytics	2.7	1.9	2.3	3.0	1.8
IT Governance	3.8	3.7	3.7	3.8	3.8
Partnering	2.0	3.2	1.3	1.9	3.0
Dynamic IT Scope	1.8	3.1	2.7	3.1	4.2
Skills Development	2.0	1.8	3.0	2.0	3.2
Average Score	2.4	2.7	2.8	2.8	3.2
<i>Strategic Alignment Maturity Level</i>	Committed process				Established/ focused processes
Digital Transformation Maturity Score	2.5	2.4	3.2	3.1	3.0
<i>Digital Transformation Maturity Stage</i>	Create and build		Committee and transform		

According to the responses obtained from the three organisations (ET2, KE2, and KE3) digital transformation is put forward as the top priority. One of the respondents (CDO) says “...the private sector has already gone so far in transforming their businesses, so the pressure on us from our politicians and the citizens is overwhelming. That is why we have made it a top priority”. A closer look into the strategic alignment assessment seem to reveal higher score in three of the strategic alignment dimensions (communications, IT Governance, and Dynamic IT Scope).

On the other hand, the analysis shows that two of the organisations (ET1, and KE1) appeared to be at stage two in the digital transformation maturity scale. According to the literature [1], organisations that did not pass the stage of experimenting with digital innovations. Our interviews with the CIOs and department heads also confirm the characterisation. For instance, in the word of the CIO “...I can confidently say that the

municipality understands digitalisation is something we have to do. However, you also need to appreciate that we have to consult with our staff and see what works and what not. As a public organisation, we do not have the big budget for RD". The two organisations are also concerned about the digital competencies they have in house. As reflected in the skills development dimension, it is no surprise that the organisations exhibit the characteristics of stage 2 digital transformation maturity out of 5.

4.3 Determinant Factors for Strategic Alignment in the Digital Transformation Era

As shown in Table 2, organisations with relatively higher value on several dimensions of strategic alignment seem to do better in digital transformation maturity. Even though generalisations could not be drawn due to the sample size, prior studies acknowledge the important role of strategic alignment for digital transformation. Our respondents also confirm the association between the two constructs. However, our interviews have revealed several challenges that have influenced the levels of strategic alignment maturity which, in turn, is reflected on lower digital transformation maturity.

Organisational Agility: Recent literature reviews [18] show that strategic alignment as a construct has shifted from being an outcome at one point in time to a dynamic position that needs to be adjusted continuously to respond to the changes in the dynamic environment. One of such changes might be the emergence of new digital technologies or business processes. Our respondents acknowledge that they are faced with volatile market and uncertainty. However, according to two of the finance heads (ET2, KE1), public organisations are huge bureaucratic machines that are not flexible to meet the necessary changes. In his own words, "*I have to turn down requests to make purchase in the fear that the procurement process alone takes long time that by the time we get the orders, it might be already obsolete*". Even though scholars agree that organisations need to develop the ability to detect and respond to change, in practice, this is easier said than done. Even though the respondents seem to agree organisational agility is difficult to maintain given the red tapes and centralised planning, the response to the questionnaire indicate that three of the organisations scored above 3 out of 5 points. It is also worth noting that KE3 which appears to have reached level three in strategic alignment scale have also managed to reach a digital transformation that is integrated with the county's overall strategic plan.

Organisational Culture: Consistent with the findings of previous literature, the response from our interviews reveal that organisational culture has important implication on how strategic alignment is pursued. According to the HR head at ET2, their top management has made it a point to embrace a culture of less hierarchy and open communication across departments and ranks. This has been reflected in the SAMM assessment where the organisation scores high in communication, IT governance and skills development. The literature is also clear on the significance of organisational culture in a formation of favourable mindset among leaders and other employees to embrace change [16, 37]. Besides, organisations with culture recognising IT as an essential element is likely to result in a relational leadership where the IT and the remaining units consider themselves as partners [38]. According to the CIO from KE3,

the county has become a role model for others for mobilising the whole organisation under the slogan of ‘digitalisation now’ only made possible by the exceptional leadership skills of top management. Unfortunately, none of the organisations seems to have encouraged to their leaders to promoting an organisational culture which rewards employees with digital affinity, and digital commitment, digital entrepreneurship which is of paramount importance for digital transformation [39, 40]. Organisational cultures that encourage employees and leaders to engage in entrepreneurial behaviour bring flexibility and taking responsibility for transformations that benefit the organisation [41].

Organisational Structure: Strategic alignment and how it influences strategic alignment has been debated in the literature, particularly in relation to agility and adaptation of new digital technologies that have implication on business processes [26]. The respondents, even though acknowledge the important role of organisational structure on strategic alignment and digitalisation seems to be powerless in making changes. For instance, respondents from ET1 and KE1 argue that the communication between IT and other departments is being affected due to the unnecessary hierarchies and rigid structures at their respective departments. This may also be seen from the low score for skills development. On the other hand, respondents from ET2 and KE3 say that they have had the leeway to informally go around formal structures when time is of essence. The figures show that these organisations have better communications, IT governance, dynamic IT scope and skills development.

Skills Development: All of the organisations that participated in the study have raised concerns on the availability of skilled staff at different levels. This is consistent with prior studies that have identified the issue of access to trained personnel that could make the alignment of new technologies in the existing business processes [31]. Even though several internal and external factors determine how organisations manage their human resources, ET2 and KE3 indicate that their respective organisation requires those joining to possess both IT and other expertise. As the HR head puts it *“There is little we could do to attract talented experts. IT graduates are very popular in the private sector ... we have attempted to train our staff”*. The CIO from ET2 adds *“we no longer hire IT guys and expect them to have comprehension for our processes...it looks waste for them. We hire MBA graduates with some IT background”*. Recent strategic alignment studies have also recognised the benefit of having leaders and other staff with hybrid expertise. As IT becomes embedded with every aspect of an organisation undergoing digital transformation, some skill sets are becoming indispensable. For instance, leaders need to possess adaptive skills to new digital technologies such as digital security, rapid business design and management [24, 42]. Since external environment have influence on strategic alignment, in addition to managing the internal organisational factors, leaders should be able to identify both threats and opportunities and react accordingly [24].

5 Conclusion

This study was set out to explore how strategic alignment is pursued in public organisations where digital transformation is undertaken. The results of our study indicate that strategic alignment is still an important area of IT management during the digital transformation era. Our case studies suggest that organisations will be in a better position to make appropriate adjustments to their organisational as well as managerial factors when the various factors related to strategic alignment are appropriately dealt with. The analysis of our data has identified list of factors that improve strategic alignment as organisations undertake digital transformation.

In response to our research question, we argue that it is in organisations best interest to focus on activities that improve strategic alignment. Among others, designing organisational structure that can accommodate swift changes in technology and business processes as well as encourage organisational culture that embraces change and rewards entrepreneurial mindset were found to be important precursors. As the pace of change in technology and business environments, several sets of skills are also necessary to be possessed by leaders and employees.

The research findings are constrained by the small number of samples and case organisations represented. Even though case studies provide the benefit of in-depth observations, our results might not be generalised for other organisations. Future studies might explore the how strategic alignment is planned and executed to realise the objectives of digital transformation initiatives in more organisations. On the other hand, the data collection time frame might not be appropriate to provide a better insight on how the strategic alignment dimensions have evolved through time in response to the digital transformation processes in the selected organisations. As indicated in the literature [30], strategic alignment is a continuous process that changes over time. Future studies might take a longitudinal research approach. Quantitative research approach with large sample size might also be carried out to provide an overview of the developments across sectors and industries.

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