

# TOWARDS SUCCESSFUL DIGITAL TRANSFORMATION FRAMEWORK

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## ABSTRACT

Digital transformation (DX) continues to be a topical subject in both academia and practice. There is a need to explore ways to better understand and theorize the phenomenon as well as explore value creation opportunities that come with embarking on such endeavors. The researcher undertook a study aimed at exploring how business organizations can best achieve successful digital transformation. In the study the researcher is looking to design a framework which managers seeking to embark on DX endeavors can adopt as guidelines for their journeys. The study comprises a tetralogy of publications towards a PhD dissertation. The objectives of this current submission are therefore to validate the four-iterations research methodology adopted for the research, validate findings obtained in the third iteration as well as the proposed evaluation process in the fourth iteration. The paper also shares the research progress and disseminates output attained thus far.

## KEYWORDS

Digital Transformation Framework, Success Factors, Design Science Artifact

## 1. INTRODUCTION

Digital transformation (DX) continues to be a topical subject in both academia and practice. Business organizations embark on DX to explore new value creation opportunities, develop solutions to disruption challenges, and protect themselves from digital darwinism (cf. Bharadwaj et. al. 2013, Kreutzer 2014). In academia, researchers explore ways to better understand and theorize the phenomenon (cf. Gebayew et. al. 2018, Gurbaxani & Dunkle 2019, Ismail et. al. 2017, Morakanyane et. al. 2017, Nadkarni & Prügl 2020, Vial 2019). However, it has been established that while many organizations are embarking on DX endeavours, only a few are getting it right (Davenport & Westerman 2018). Mari (2019) revealed that only one in five businesses in the UK managed to deliver DX projects successfully while Morgan (2019) revealed that 70% of DX projects have failed. Research continues to investigate challenges associated with this low success rate (Davenport & Westerman 2018, Mielli & Bulanda 2019). Further, also noted is the lack of support tools – frameworks and models that help managers as they embark on such journeys (Gimpel et. al. 2018, Correani et. al. 2020, Peter et. al. 2020). While there is continued effort to address this research gap, it is still apparent that more is required to theorize and understand the phenomenon towards improving the success of DX undertakings (Baiyere et. al. 2021). To this regard, the researcher embarked on a PhD study aimed at exploring how organizations can best achieve successful DX. The study is looking to design a DX framework which can assist managers as they embark on such journeys. The study comprises a tetralogy of publications towards a PhD dissertation. Two papers have thus far been published as conference proceedings (Morakanyane et. al. 2017 & Morakanyane et. al. 2020) while the third paper is being finalized. The first paper comprises a review of literature aimed at conceptualizing the DX phenomenon. The second paper was aimed at determining DX success factors (see section 3 below). The objectives of this current submission are therefore to share the research progress as well as disseminate the findings attained thus far. Feedback received from the symposium shall be used to refine and improve the rigor of the bigger PhD study, whose objective has been stated above. The remainder of this paper is organized as follows: Section 2 outlines the methodology adopted for PhD research study, Section 3 presents findings of the work done so far and the proposed steps planned to complete the study. Section 4 gives a brief discussion and concludes this paper.

## 2. METHODOLOGY

A qualitative research approach as per Myers (1997) is adopted for this study. Design science approach (as per Peffers et. al. 2007) is adopted to develop a framework for successful digital transformation. A rigorous process of four iterations was adopted, with output for each iteration contributing as a paper towards the four PhD publications. Figure 1 below outlines the four iterations of the study.

Iteration	Description
Iteration 1:	Conceptualization of Digital Transformation (DX) in Business Organization
Iteration 2:	Determining Digital Transformation Success Factors
Iteration 3:	Validating and Theorizing Successful DX
Iteration 4:	Operationalizing the Emergent Successful DX Framework

Figure 1. Four iterations towards developing the successful DX framework

## 3. WORK DONE SO FAR

This section unpacks the process by which the four iterations mentioned above were carried out. Each subsection highlights the objective of the iteration, methodology adopted, findings obtained, and the output produced.

### 3.1 Conceptualizing Digital Transformation

The first iteration towards designing the successful DX framework was Conceptualization of Digital Transformation (DX) in Business Organization. The objectives of the iteration were to unpack understanding of digital transformation in business organizations. The process was carried out through a systematic literature review, as per Webster & Watson (2002), where 60 papers were analysed using constructs such as characteristics, drivers, transformed areas and impacts (cf. Morakanyane et.al. 2017). Figure 2 is an extract of concept centric matrix emerging from this analysis. The iteration established that DX is a complex and difficult to understand process, with multiple dimensions, however with a nascent literature. Further, it also established that while many organizations are embarking on DX, only a few were successfully realizing true benefits of their effort. Challenges associated with the low success rates include a lack of understanding of fundamental issues regarding what digital transformation is, why organizations should transform, what they should transform, as well as how they should go about this transformation. A lack of tools – frameworks and models that guide organizations when embarking DX journeys was also highlighted. As such, there is need to advance further understanding of DX through generating more literature to grow the body of knowledge as well as investigate why only a few organizations are succeeding in DX efforts. The study called out for developing tools that help organization when they embark on DX endeavours. The output of this iteration was published in conference proceedings as Morakanyane et.al. (2017).

### 3.2 Determining Digital Transformation Success Factors

The second iteration of the study was to determine digital transformation success factors. The iteration, attempted to answer the research questions “*What do digital exemplars do that enables them to succeed in their digital journeys, as well as how they do it*”. Documented case studies of 10 digital exemplars were analysed to draw from their stories, how they succeeded in their DX journeys (cf. Morakanyane et. al. 2020). The process adopted Alhassans (2019)’s nine steps, including: 1) Identifying relevant literature, 2) Deciding on the level of analysis, 3) Deciding how many concepts to code for, 4) Deciding whether to code for the existence or frequency of a concept, 5) Deciding on how to distinguish between the concepts, 6) Developing rules for coding the text, 7) Deciding what to do with ‘irrelevant’ information, 8) Coding the text, and 9) Analysing the results. The output of this iteration discovered 7 factors and 23 sub factors towards successful digital transformation (see Figure 3). The factors were used as building blocks towards the successful DX theoretical framework, and prior constructs to the third iteration. Further the iteration established that DX is an experiential journey which is unique and different to each organization. The need for a generic framework to

guide organizations through successful DX journeys also remained relevant. However, while the success factors had been established, there was need to improve the validity of the factors empirically. The emergent DX success factors in this iteration were published in conference proceedings as Morakanyane et.al. (2020).

What is Digital Transformation?		Success Factor (7)	Subfactors (23)
Strategy	Bharadwaj, et.al. (2013); Matt, et.al. (2015); Mithas, et.al. (2013); Hansen & Sia (2015); Grau & Gupta (2013);	Determine Digital Trigger	<ul style="list-style-type: none"> <li>Know the type of trigger (2)</li> <li>Know the type of inducer (14)</li> </ul>
Process	Agarwal, et.al. (2010); Berman & Marshall (2014); Bharosa, et.al. (2013); Janowski (2015); Kreutzer (2014); Loebbecke & Picot (2015); Stieglitz & Brockmann (2012); Tamm, et.al. (2016); Wang, et.al. (2016); Hansen et.al. (2011);	Cultivate Digital Culture	<ul style="list-style-type: none"> <li>Ensure a shared conceptualization of DX (7)</li> <li>Exhibit strong organizational leadership traits (10)</li> <li>Adopt good governance practices (11)</li> </ul>
Business Model Paradigm Shift	Berman & Marshall (2014); Piccinini (2015a);	Develop Digital Vision	<ul style="list-style-type: none"> <li>Carry out a digital present assessment (3)</li> <li>Formulate a digital future (5)</li> <li>Develop a digital strategy (2)</li> <li>Establish a communications strategy (6)</li> </ul>
Radical Disruptive	Liu et.al. (2011); Berman (2012); Berman & Marshall (2014); Westerman et.al. (2011); Berman (2012); Berman & Marshall (2014); Granados & Gupta, (2015); HBR Analytics Sci (2014); Fitzgerald, M. et.al. (2013);	Determine Digital Drivers	<ul style="list-style-type: none"> <li>Determine digital technologies to leverage (12)</li> <li>Determine skills &amp; capabilities required (5)</li> <li>Determine other resources required (3)</li> <li>Exhibit strong digital leadership traits (30)</li> </ul>
Evolutionary/continuous Complex	Loebbecke & Picot (2015); Janowski (2015); Wang et.al. (2016); Liu et.al. (2011); Janowski (2015); Bharosa et.al. (2013); Matt et.al. (2015); Agarwal (2010);	Establish Digital Organization	<ul style="list-style-type: none"> <li>Establish a digital innovation functional structure (12)</li> <li>Create a digital innovation implementation structure (3)</li> </ul>
Digital Technologies	Agarwal, et.al. (2010); Berman (2012); Bharadwaj, et.al. (2013); Bharosa, et.al. (2013); Jan (2015); Kreutzer (2014); Luna-Reyes & Gil-Garcia (2014); Mithas, et.al. (2013); Lucas, (2013); Stieglitz & Brockmann (2012); Setia, et.al. (2013); Wang, et.al. (2016); Berman & Marshall (2014); Loebbecke & Picot (2015); Westerman et.al. (2011);	Determine Transformed Areas	<ul style="list-style-type: none"> <li>Determine transformation opportunities (4)</li> <li>Identify target transforming areas (4)</li> <li>Building the DX initiatives (3)</li> </ul>
Digital Capabilities	Berman & Marshall (2014); Loebbecke & Picot (2015); Matt, et.al. (2015); Schuchmann & S (2015); Tamm, et.al. (2015); Wang, et.al. (2016); Westerman et.al. (2011);	Determine Impacts	<ul style="list-style-type: none"> <li>Define the expected customer facing impacts (4)</li> <li>Determine the realized customer facing impacts (9)</li> <li>Define the expected organization facing impacts (4)</li> <li>Determine the realized organization facing impacts (17)</li> <li>Determine measures of impacts (4)</li> </ul>
Strategies	Berman & Marshall (2014); Bharadwaj, et.al. (2013); Matt, et.al. (2015); Stieglitz & Brock (2012); Tamm, et.al. (2015); Mithas, et.al. (2013);		
Business Models	Agarwal, et.al. (2010); Berman & Marshall (2014); Bharadwaj, et.al. (2013); Janowski (2015); Loebbecke & Picot (2015); Luna-Reyes & Gil-Garcia (2014); Matt, et.al. (2015); Mithas, (2013); Schuchmann & Seufert (2015); Tamm, et.al. (2015); Stieglitz & Brockmann (2012); Agarwal, et.al. (2010); Berman & Marshall (2014); Bharosa, et.al. (2013); Janowski (2015); Stieglitz & Brockmann (2012); Tamm, et.al. (2015); Wang, et.al. (2016);		
Value Chain			
Value Creation: Reshapes, Redefine, Integrate, Collaborate	Matt, et.al. (2015); Mithas, et.al. (2013); Schuchmann & Seufert (2015); Berman (2012); Bharadwaj, et.al. (2013); Luna-Reyes & Gil-Garcia (2014); Stieglitz & Brockmann (2012); Johnson & Lederer (2010); Berman & Marshall (2014); Chen et.al. (2013); Bharosa et.al. (2013); Wang, et.al. (2016); Agarwal, et.al. (2010); Buschmeyer et.al. (2016); Westerman et.al. (2011);		
	What are the Drivers of Digital Transformation?		
	What are the Key Impacts of Digital Transformation?		

Figure 2. Extract from conceptualizing digital transformation concept centric matrix

Figure 3. Digital transformation success factors

### 3.3 Theorizing Successful Digital Transformation

The third iteration towards designing the framework is called ‘Successful Digital Transformation: Theory Building Approach Using Multiple Case Studies’. The iteration extends the research question from the second iteration by asking “What are the factors that enable successful digital transformation?” and “How do organizations achieve successful digital transformation?” In this iteration, the researcher adopted a multiple case studies approach where two organizations considered to be succeeding in their DX journeys were selected to participate in this process. Semi-structured interviews were conducted with DX teams members in these organizations. The interviews were aimed at drawing from experiences of the teams members so as to improve validity of the success factors in Iteration 2. The process adopted Eisenhardt (1988)’s eight steps of Building Theories from Case Studies, which include: 1) Getting started, 2) Selecting cases, 3) Crafting instruments and protocols, 4) Entering the field, 5) Analysing data, 6) Shaping hypotheses, 7) Enfolding the literature, and 8) Reaching closure. The iteration unveiled a revised list of 7 success factors also, as steps towards building theory for successful DX. While iteration 2 revealed that DX is an experiential journey which is unique and different to each organization, iteration 3 revealed the emergence of an underlying generic DX process model (see Figure 4 below). The generic model can potentially guide different DX undertakings across different organizations. The study therefore posits that the model can assist organizations and practitioners to better understand as well as navigate through their DX journeys. However, the researcher acknowledges that the generalization and accuracy of the emergent generic process model may still be premature, needing to be evaluated further. The output of this iteration is currently under review.

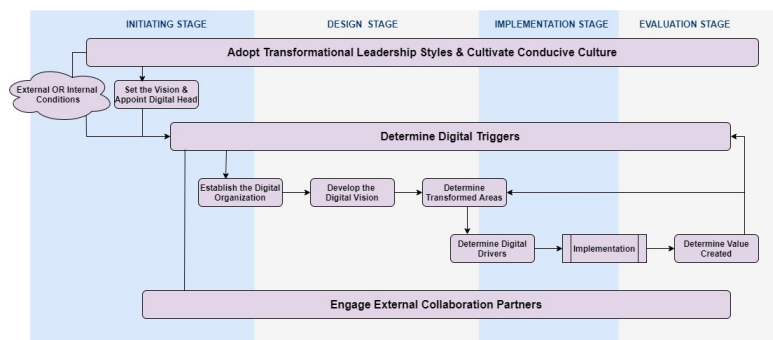


Figure 4. A generic digital transformation process model

### 3.4 Proposed Evaluation Process

The fourth iteration is scheduled to be taken upon publication of the third iteration. In this iteration, the study seeks to evaluate the proposed DX Process model yielded in the third iteration. The objective of the evaluation exercise is to reiterate the validity of the model, improve its generalizability and accuracy from a design science lens (Hevner et. al. 2004, McKay et. al. 2012, Baskerville et al. 2018). Two options proposed for the evaluation are adopted from frameworks for evaluating design science artifacts (Peppers et. al. 2007, Sonnenberg and vom Brock 2012, Venable, et. al. 2016). Figure 5 below outlines the proposed evaluation approach.

Proposed Options	Duration	Approach	Expected Outcome
<b>Option 1:</b> Conduct 2 workshops with 10 DX practitioners to co-iterate and evaluate the proposed success factors and process model	<b>One week:</b> 2 separate full day workshops	Develop a selection criteria of possible participants (DX experts and practitioners) and approach them to take part in evaluation exercise	Revised DX Success Factors and Process Model, codesigned with practitioners
<b>Option 2:</b> Operationalize the proposed Process Model in a DX project	<b>1 – 3 months:</b> depending on the selected project	Identify an organization that is embarking on a new DX journey Request to operationalize the process model in their environment	Feedback on the accuracy and utility of the process model

Figure 5. Proposed evaluation process for the DX framework

## 4. CONCLUSION

A Successful DX Framework has been developed in 3 iterations thus far. The first iteration was developed through a systematic literature review process, the second was developed through analysing published DX success stories from 10 exemplars, while the third iteration was developed using primary data collected from 2 case studies, yielding a DX Process Model. The three iterations were developed by the researcher. However, the artifact has potential to suffer researcher’s bias as the whole design process and contribution is solely from the researcher (Peppers et. al. 2012). To this regard, the fourth iteration is proposed as a way soliciting contribution from experts and practitioners towards reducing bias, improving design rigor and accuracy (Hevner et. al. 2004, Lee & Hubona 2009). As such, Iteration 4 seeks to validate the framework by obtaining feedback from experts, including academia and practitioners, as well as operationalize the framework in an environment. Consequently, the covid pandemic has reiterated the need for developing DX success framework as witnessed by the upsurge in the adoption of DX during and post-pandemic.

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