Tomas Bata University in Zlín
Faculty of Management and Economics

Doctoral Thesis Summary

The Digital Transformation of Business: A Proposed Framework for Achieving Organisational Transformation

Digitální transformace podnikání: Navrhovaný rámec pro dosažení organizační transformace

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Degree course: 6208V038 Management and Economics

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Zlín, June 2021

Published by **Tomas Bata University in Zlín** in the Edition **Doctoral Thesis Summary.**
The publication was issued in the year 2021

Key words: *Digital technologies, digital transformation, digitalisation, digital innovation, Industry 4.0, data, data analytics, business model, value chain, operating model, customer experience, customer journey mapping, organisational structure, business organisations*

Key words in Czech: *Digitální technologie, digitální transformace, digitalizace, digitální inovace, Průmysl 4.0, data, analýza dat, obchodní model, hodnotový řetězec, operační model, zákaznická zkušenost, mapování cesty zákazníka, organizační struktura, obchodní organizace.*

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The full version of the Doctoral thesis is available in the Library of TBU in Zlín.

ISBN 978-80-7678-007-1

ABSTRACT

There is an urgency among business organisations to transform and remain competitive in the face of disruptive threats and rapidly changing business environments. Business leaders are confronted with important questions on the existential threats faced by their businesses, but the right answers continue to elude them on how to benefit from the immense opportunities provided by digital transformation.

The dissertation has both practical and theoretical objectives. The practical objective is focused on the development of a scientifically validated digital transformation framework that would be a valuable resource for industry stakeholders in their quest to digitally transform their business organisations. While the theoretical objective is focused on achieving a thorough and consistent understanding of the phenomenon of digital transformation in industry through rigorous academic research.

The research methodology employs a mixed method approach that involves both Qualitative and Quantitative research methodologies. The quantitative aspect employed data useful in statistical analysis aimed at responding evaluating the proposed digital transformation model. The qualitative aspect of involves a triangulation of the research methods that combines systematic review, grounded theory, bibliometric analysis and design science.

The research identified fundamental elements that make up the essential building blocks of a holistic digital transformation model. This was made possible by a combination of methodological approaches employed in identifying the primary factors that constitute the building blocks of the designed digital transformation model. The structural equations modelling statistical technique was used in evaluating the acceptance of the model by industry experts. The research contributes to theory and practice about digital transformation in business organisations. Further research is recommended in evaluating the significance and fit of the constituent building blocks that make up the proposed digital transformation model.

ABSTRAKT

Mezi obchodními organizacemi je naléhavá potřeba transformace a zachování konkurenceschopnosti tváří v tvář rušivým hrozbám a rychle se měnícím obchodním prostředím. Vedoucí představitelé podniků čelí důležitým otázkám ohledně existenčních hrozeb, jimž jejich podniky čelí, ale správné odpovědi jim stále unikají v tom, jak těžit z obrovských příležitostí, které nabízí digitální transformace.

Disertační práce má praktické i teoretické cíle. Praktický cíl je zaměřen na vývoj vědecky ověřeného rámce digitální transformace, který by byl cenným zdrojem pro zúčastněné strany z oboru v jejich snaze digitálně transformovat své obchodní organizace. Zatímco teoretický cíl je zaměřen na dosažení důkladného a důsledného porozumění fenoménu digitální transformace v průmyslu prostřednictvím přísného akademického výzkumu.

Metodika výzkumu využívá přístup smíšené metody, který zahrnuje kvalitativní i kvantitativní metodiky výzkumu. Kvantitativní aspekt použil data užitečná ve statistické analýze zaměřené na reakci na hodnocení navrhovaného modelu digitální transformace. Kvalitativní aspekt zahrnuje triangulaci výzkumných metod, která kombinuje systematický přehled, zakotvenou teorii, bibliometrickou analýzu a vědu o designu.

Výzkum identifikoval základní prvky, které tvoří základní stavební kameny holistického modelu digitální transformace. To bylo možné kombinací metodických přístupů použitých při identifikaci primárních faktorů, které tvoří stavební kameny navrženého modelu digitální transformace. Statistická metoda modelování strukturálních rovnic byla použita při hodnocení přijetí modelu odborníky v oboru. Výzkum přispívá k teorii a praxi v oblasti digitální transformace v obchodních organizacích. Při hodnocení významu a vhodnosti základních stavebních bloků, které tvoří navrhovaný model digitální transformace, se doporučuje další výzkum.

CONTENTS

1. INTRODUCTION

1.1 Background and Research Context

Digital Transformation has become a subject area that elicits a lot of interest from various stakeholders from a wide range of industries, academia and governments. The reason for the widespread interest in the subject is attributable to the unique position now occupied by digital technologies which have become the primary category of technologies upon which the digital transformation phenomenon is anchored on irrespective of the segment of society where the phenomenon impacts. The increasing rate of adoption and use of digital technologies such as cloud computing, blockchain, artificial intelligence etc. continues to lead to the disruption of traditional models of business, systems, and structures. Digital transformation is a phenomenon with evident impact across various segments of the society and this makes it imperative for any inquiry into the subject to be sufficiently robust as to reflect the contextual diversity of perspectives on the subject (Rogers, 2016; Yoo et al., 2012). Verma (2019) argues that digital transformation leads to the disruption of established business rules. Hence the need for companies to scrutinize their existing business models because new entrants are attacking their traditional areas of business competence in ways that renders them obsolete in the emerging digital economy. Digital transformation, in this sense, is not just about transforming a company through the use of technology, it is about transforming the way technology is used and consumed, morphing into newer business processes and delivery models hitherto unheard of (Gimpel et al., 2018; Ivančić et al., 2019; R. Venkatesh et al., 2019). Many companies and organisations now prioritise digital transformation as a means of remaining relevant within their industry segments. However, the major challenge faced by many companies and organisations is the lack of understanding of what digital transformation entails, thereby leading to the inability to successfully harness the promise and potentials of digital transformation.

2. RESEARCH SCOPE, PROBLEM AND OBJECTIVE

2.1 Research Scope

A review of relevant literature on digital transformation and other related subjects reveals that a lack of conceptual clarity on definitions, ontologies, and taxonomies is a major factor affecting the perceptions and understandings attributed to these subjects, particularly digital transformation. This poses a major challenge for

stakeholders who intend to harness the potentials of digital technologies in achieving digital transformation of their organisations in their pursuit of sustainable growth, improved competitiveness, and long-term profitability. The consequence of this therefore manifests in the form of an absence of a generally accepted and scientifically validated framework that can serve as a guide and template for achieving digital transformation of a business organisation. The need for concerted efforts into research that addresses the epistemological and ontological basis of digital transformation that would also result in the development of a scientifically validated framework or model useful in guiding the process of digital transformation for companies has also become urgent and necessary.

2.2 Research Problem

Business leaders are confronted with important questions on the existential threats faced by their businesses, but the right answers continue to elude them on how to benefit from the immense opportunities provided by digital transformation. Academic research on digital transformation within industry suffers from deficiencies and gaps that makes it imperative for additional scientific inquiry to fill these gaps and enrich the body of knowledge on the subject in ways that would be beneficial to industry, also for academic and public sector stakeholders. In the quest to achieve digital transformation, industry stakeholders are confronted with the absence of a scientifically tested and validated framework that can serve as a relevant tool for business organisations wishing to embark on digital transformation projects. Another issue identified relates to the inconclusive studies conducted on the significance of digital transformation as a positive measurable outcome for companies. This issue leads to challenges associated with identifying standardised and generally agreeable measures of success of digital transformation projects. Finally, industry stakeholders have had to deal with the challenges of identifying the processes and functional areas within their business organisations that would benefit most from digital transformation, evidence for such understanding is limited in scientific literature reviewed so far by the researcher. This research aims to establish a scientific foundation by digging deep into the details to address fundamental issues, which it hopes, would enable a standardised and harmonised understanding of the subject of digital transformation.

The primary research questions which seek to address the basis of this dissertation are:

RQ1: What fundamental elements make up the essential building blocks of a holistic digital transformation model?

RQ2: *What constitutes the most logical interaction pathway for the essential building blocks of a holistic digital transformation model?*

This dissertation also seeks to address the following secondary research question:

RQ3: What is digital transformation?

RQ4: Why do business organisations embark on digital transformation?

The primary research questions intend to resolve the confusion faced by both industry and academic stakeholders on what the meaning of success is for digital transformation initiatives within business organisations; while the secondary research questions will seek to resolve other issues associated with the understanding and conceptualisation of digital transformation, ultimately with a view to develop a proposed framework that would guide industry stakeholders in their digital transformation initiatives.

2.3 Research Objectives

The dissertation is a research inquiry into the nature and dynamics of digital transformation from industry context; it is particularly concerned with how the phenomenon of digital transformation proceeds in business organisations and development of a digital transformation framework that can guide industry stakeholders in their digital transformation initiatives. The research objectives are as follows: identification of the essential building blocks of a holistic digital transformation model; to determine the most logical interaction pathways of the essential building blocks that make up the model such that a seamless operationalisation of the proposed digital transformation model is facilitated; to establish conceptual clarity about digital transformation; and investigate drivers and motivations of digital transformation in companies. The dissertation has both practical and theoretical objectives. The practical objective is focused on the development of a scientifically validated digital transformation framework that would be a valuable resource for industry stakeholders in their quest to digitally transform their business organisations. While the theoretical objective is focused on achieving a thorough and consistent understanding of the phenomenon of digital transformation in industry through rigorous academic research.

2.4 Doctoral Thesis Outline

This dissertation structure covers the following chapters: (1) introduction, (2) research objectives and scope (3) current state of research on digital transformation, (4) relevant theoretical perspectives, (5) research design, (6) findings, (7) is a recapitulation of the research findings, and (8) conclusion and limitations of research. Chapter one covers an introduction and brief summary of the research by outlining the problem statement, research gaps, objectives and questions to be addressed by the dissertation; chapter two focuses on an extensive review of literature on the current state of digital transformation with particular focus on industry; chapter three is an exploration of relevant theoretical foundations upon which the research is developed; chapter four outlines the research design and methodological approach employed in conducting the dissertation research; chapter five lays out the findings based on the analysis of relevant data collected as part of the dissertation research; chapter six will be a discussion of the findings from the previous chapter; and finally, chapter seven concludes the research and lists the limitations and other challenges encountered during the process of conducting the dissertation research, this chapter also provides concluding remarks to summarise the thesis.

3. CURRENT STATE OF RESEARCH

3.1 General Perspectives on Digital Transformation

As companies around the world struggle to make most of digital technologies, this in turn leads to an acceleration of the technological pace of change both within and outside industry, which makes it more imperative for them to find ways of achieving balance in ways that would ensure that they achieve sustainable growth and remain competitive within their industry sectors. Many businesses are struggling to maximise the potentials of these technologies. This struggle is evident across all industrial sectors from financial services to manufacturing, hospitality, entertainment, and utilities. This chapter reviews relevant industry and academic literatures on digital transformation and the current state of research on the subject. It covers the three primary contexts of research on digital transformation – industry, academic, and society. In the book, “From Gutenberg to Google: The History of our Future”, Tom Wheeler explores

how human societies have been impacted and transformed several times in the past by remarkable technological changes[1].

His arguments are aligned with the Kondratiev wave theory which explains the impact of disruptive technologies on societies particularly with such manifestations visible in long-term economic cycles (Kondratiev, 1925). In relations to digital transformation and its impact on society, Bounfour (2016) proposes the adoption of a long-term economic cycles perspective anchored on the Kondratiev wave theory as a basis to gain a much deeper understanding of digital transformation. Oakey (2009, p. 131) comments that the most ambitious attempt of conducting a macro-level industrial performance impact assessment of revolutionary technologies was the explanation offered by Schumpeter using the Kondratiev's 'long wave' industrial cycles, in which upswings in world economic activity were linked to the introduction of pervasive new technologies which had the ability to reduce unit price of items, increase efficiency and be broadly applicable across large sectors of industry. These pervasive new technologies that have proven themselves adept at causing major shifts in how society functions are usually described as "general purpose technologies" (Bresnahan & Trajtenberg, 1995).

4. METHODOLOGY

4.1 Research design

The methodological pathway for traditional research focuses on theory building and theory testing. The guiding principles in academic research are ontology - the philosophical starting point of scientific inquiry aimed at establishing causality or finding explanations that can be said to be true, either by linking cause with effect, or else by seeking an understanding of concepts and ideas; epistemology - which is the study of knowledge, or the theoretical underpinning of the methods that are subsequently adopted; and axiology - which deals with the study of value or, more adequately, theory on the nature of value (Bleiker et al., 2019; Gray, 2014; O'Gorman & MacIntosh, 2015). However, the nature of digital transformation research particularly in how the phenomenon affects business organisations and industry is quite unique and different from traditional research because while the justification for scientific research in most cases is the need to

[1] Don't Panic: The Digital Revolution Isn't as Unusual as You Think. Knowledge@Wharton (2019, April 17). Retrieved from https://knowledge.wharton.upenn.edu/article/tom-wheeler-fcc-book/

understand a phenomenon; however, this research on digital transformation in industry covers both the need for understanding the phenomenon and the need to satisfy a "problem-solution finding" objective.

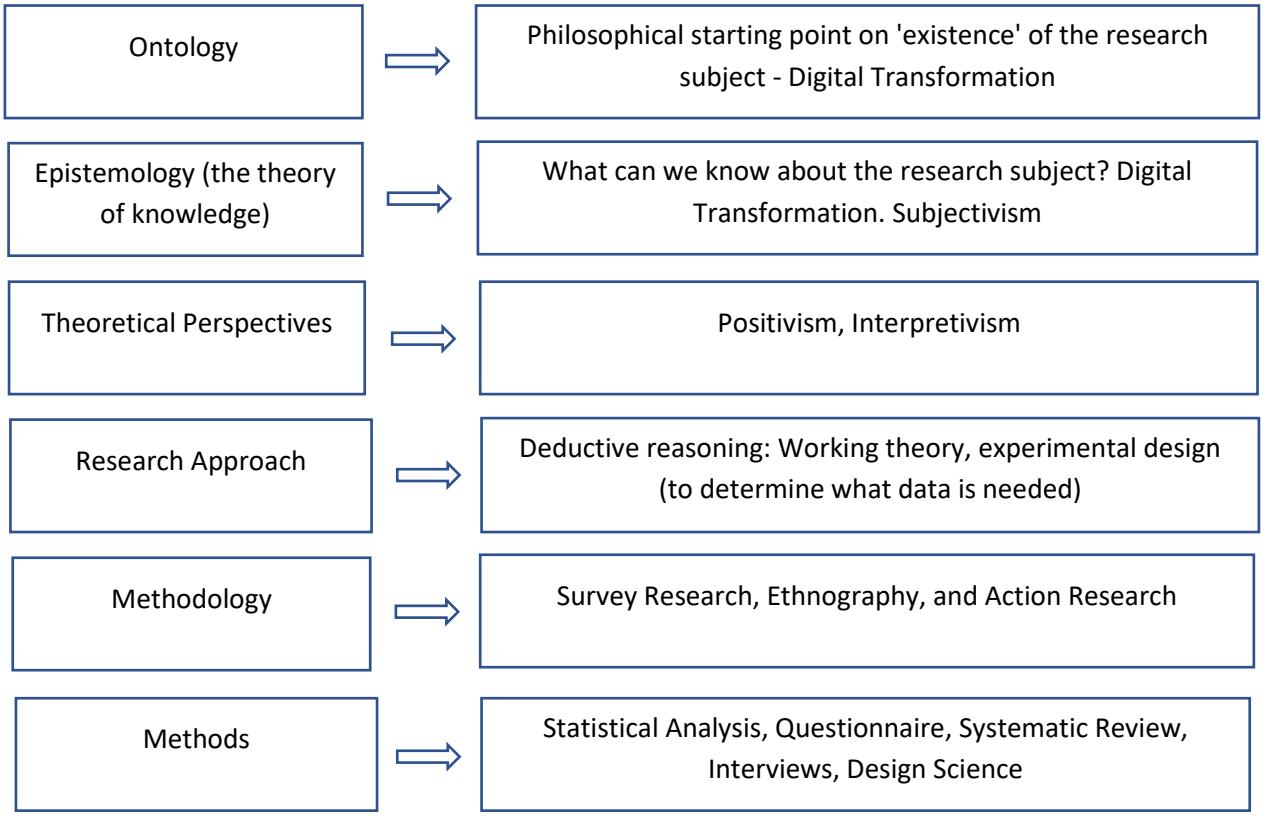


Figure 1:Research design (source: author)

4.2 Methodology

The research methodology employs a triangulation approach that involves both Qualitative and Quantitative research methodologies. The quantitative aspect focused on collecting data with a questionnaire, quantitative data was used for validating the model as an information systems tool. The partial least squares structural equation modelling (PLS-SEM) method enables researchers to estimate complex models with multiple constructs, indicator variables and structural paths without imposing distributional assumptions on the data (Carrión et al., 2017; J. F. Hair et al., 2019). For the qualitative aspect of the research, it combines the systematic review approach used in analysing evidence that would inform the development of theories relevant to the development of a proposed framework on digital transformation; and the design science approach is useful in development of the proposed conceptual framework on digital transformation. It is pertinent to state that the combination of three qualitative methods (systematic review,

grounded theory, and bibliometric analysis) in reviewing academic articles on digital transformation is aimed at ensuring a thorough scientific inquiry into the academic lens on digital transformation by applying complementary research methodologies. The combination is justified by the fact that multiple epistemic lenses make research findings stronger and there are no epistemological or ontological incongruencies among the three methodological approaches, hence making them complementary to each other. Precedence for this has been set in academia and can be seen in the works of previous researchers who combined various qualitative methodologies, and described their approach using various nomenclatures such as non-categorical method of research, interpretive description (Thorne et al., 2004), qualitative mixed method design, multiple method design (Morse, 2010; Morse & Chung, 2003), combined qualitative methodology (Swanson-Kauffman, 1986), multiple methodology (Seaton, 2005), and generic qualitative research (Caelli et al., 2003).

5. FINDINGS

5.1 Systematic Review of Literature on Digital Transformation

The systematic review commenced by first defining and setting the boundaries for the research. This was done within the context of information systems research considering that research on digital transformation of business organisations could be subsumed into the larger context of information systems research. A search was conducted on the academic database of choice selected for the research (SCOPUS and Web of Science) for peer-reviewed journal articles with CiteScore and Impact factor, by using the search term “digital transformation”. The preliminary literature search conducted enabled the researcher to gain a better understanding of the subject of digital transformation across several disciplines which includes business, management, economics, and information systems.

For each of the database included as source for the systematic review, the research criteria were refined iteratively to enable better outcome. This involved fine-tuning various search parameters of both databases to ensure a more robust and thorough search. During the actual search, some of the outputs indicated a conflation of terminologies which often resulted in duplicated outputs, this was resolved by revisiting earlier set sampling and related criteria that required the use of other search terms such as "digital business transformation" and "digitalisation". Consequently, a unique identifier was assigned to each search

result as it enabled the researcher achieve integrity of the data that was collected on the work.

The data was subsequently downloaded in pdf format with the unique identifier as its name for each search result, the metadata was also included where available for the downloads (for example, the year of publication). The metadata were compiled in an Excel spreadsheet using each work's unique identifier. The reference for each search result was also downloaded into Mendeley desktop software; however, this was not used for the purpose of data analysis. This step involves a filtration procedure that enabled the removal of duplicates (articles indexed in both SCOPUS and Web of Science); in addition, other papers were removed because they did not fit into the criteria. The initial sample from the search of both databases yielded a total of 572 articles. Upon the application of the inclusion and exclusion criteria, the number of articles was reduced to 278 (155 in Web of Science and 123 in SCOPUS) articles. The next step involved the extraction of common citation information required for conducting a preliminary backward and forward search.

Table 1: Descriptive statistics on retrieved articles used in the systematic review of literatures on digital transformation (source: author).

Journal database	**Article description**	**DT definition provided**	**DT definition not provided**	**Total**
Web of Science	Articles on digital transformation in business organisations obtained from Web of Science academic database, with study focus areas on Economics, Business and Management	86	69	155
SCOPUS	Articles on digital transformation in business organisations obtained from SCOPUS academic database, with study focus areas on Economics, Business and Management	73	60	123
Total		159	129	278

This was done by reading the titles, abstracts or more of the texts. Forward and backward citations were checked as part of measures aimed at enriching the quality of the data. Both search outputs were retrieved in a convenient format and stored in a folder created on the Mendeley desktop application. This is the stage where the key principles of Grounded Theory are applied in conducting the

systematic literature review, this is done by analysing the texts of the carefully chosen set of separate studies on digital transformation. Grounded Theory is useful in building a thorough understanding of the corpus of literature under review by the application of three main coding techniques - open coding, axial coding, and selective coding. Based on the recommendations of Wolfswinkel et al. (2013), random sources were selected from the sample literature outputs from the search conducted on SCOPUS and Web of Science. The coding process was iterative in nature, which is consistent with the process of grounded theory. The coding process applied in reviewing selected literatures was based on two main types of data - the summarisation of predefined descriptive elements on each paper and the use of open coding to annotate each source. Detailed notes of findings, discussion points and other relevant elements were taken, and a brief summary of the sources was compiled in an Excel spreadsheet.

In addition, open coding techniques were applied in annotating each source, detailed notes were also taken to document findings, and relevant discussion points alongside other elements considered important to achieving a comprehensive review. These were also captured in the Excel spreadsheet. Open coding was also used in analysing and documenting relationships across variables, elements, concepts and constructs contained within the sources. It is pertinent to state that the type of source under review impacted the process of open coding applied. Hence, for a quantitative, empirical paper, the relationships were coded based on the results of the hypothesis tested, while that of a qualitative paper were based on the findings or discussion section of the paper.

The next step in the coding process required the use of axial coding to refine the initial coding scheme and categorise codes according to their meanings. For example, codes used in the first-order categories such as "digital transformation of business models" and "digital transformation of customer experience" were given a higher-level categorisation under labels such as "business process transformation". For traceability purposes, an iterative process that oscillated between raw data and open codes was used to log the coding process. And this was all documented in an Excel spreadsheet for historical referencing purposes of the coding process used for the literature review. As a result of the rigorousness of the coding process, there was a need to add another layer of coding round which subsequently resulted in the emergence of 125 categories.

The final step involved the use of selective coding. This stage resulted in the generation of the framework which provides a visual representation of the coding

data structure from the systematic review of literature on digital transformation. It is pertinent to state that while this process was useful for integration, it also enabled the researcher to explore the systematic literature review contextually to achieve higher level of categorisation which inevitably becomes quite general, with the potential of hiding the rich underlying evidence contained in the reviewed literatures. The application of this technique in combination with the Excel spreadsheet enabled the researcher to achieve a level of data integrity and structure that supports the coding process. Thereby making it possible for easier analysis of the relative coverage of relationships within the sample dataset of collected literatures and highlighting relationships that have received extensive as well as those that have not received extensive coverage in the literature.

A quantitative approach would have made it difficult to study this corpus without studying the relationships among the elements that make up the literature dataset used as source for the review. Based on the comprehensive analysis of the articles selected for the review to determine how researchers within the academic environment conceptualise digital transformation in business organisations, results of the review enabled the research to identify definitions, characteristics, drivers, impacts and outcomes as articulated by the researchers in the papers covered in the review. Consequently, a concept centric matrix (Morakanyane et al., 2017) was employed as a means of documenting the variables for the various constructs that were identified

The result of the systematic review provides a synthesis of the conceptualisation of digital transformation and its practical manifestations in business organisations; particularly the characteristics, impacts and outcomes of digital transformation. This makes it possible to establish evidence from academic literature. Hence, making it imperative to further investigate through a bibliometric analysis of scientific sources to summarise and map the most representative bibliographic documents in peer-reviewed academic literatures. The matrices help in organising the results of the systematic review and links together in a coherent way the fundamentals of digital transformation in an overarching structure that provides conceptual clarity a structured pathway.

5.1.2 Bibliometric Analysis of Publications on Digital Transformation

Bibliometric methods of bibliographic coupling were applied in identifying the intellectual structures of emerging topics digital transformation (Broadus, 1987; Castriotta & Guardo, 2011; Pritchard, 1969). For this, the VOS viewer software was used in the bibliometric analysis, and it provides a low-dimensional

visualisation of the distance between pairs of objects, where the distance captures the similarities in the most accurate way (van Eck & Waltman, 2006, 2010, 2011), fractional counting techniques was were adopted and the results have been presented based on the mapping and clustering of bibliographic data retrieved from SCOPUS and Web of Science. The study is done in compliance with the general process for the bibliographic coupling method: 1) identification of a set of recent papers (in this case, those published between 2010 and 2020; 2) calculation of similarity measures; 3) assignment of papers to clusters by the use of similarity values (Boyack & Klavans, 2010). For the units of analysis, the Web of Science Core Collection and SCOPUS database were used. By combining the bibliographic coupling method with a systematic review of literature on the digital transformation, it is possible to bring together segmental publications from academic research fields on business and management through the combination of robust scientific methods to provide a comprehensive overview of the understanding of Digital Transformation from the perspective of business organisations, thereby revealing the dynamics of concepts and important issues. The bibliographic coupling identified five main research clusters: business model, digital technology, customer centricity, corporate governance, and digital transformation. Based on the systematic review and text coding of literature on digital transformation in business organisations, the result can be taxonomically summarised as falling into three broad categories: those that tend to inquire into the "Motivations" – which covers organisational visioning and understanding of digital transformation; the "Constituents" - conceptualisations, characteristics and components; and the "Procedures" – which maps a pathway to achieving digital transformation and determines the outcome. The bibliometric analysis also generates terminologies consistent with the output of the systematic review and text coding.

5.2 Analysis of Expert Interviews

The interviews were conducted over a four-week period. A total of 15 experts from various industry sectors were interviewed, they were selected based on their professional qualifications, level of seniority in their organisations and years of experience. Professionally, persons in the field of information technology, business transformation and change management were considered. For level of seniority, C-level executives (Directors, heads of digital transformation) and leading consultants were considered. The interview sessions lasted an average of 45 minutes, a total of 11 interview questions were asked to the interviewees and their responses were recording online via a remote video conferencing platform

(Zoom). Using the results from the systematic reviews, text coding and bibliometric analysis, the questions employed covers the three broad categories of “Motivations”, “Constituents” and “Procedures” of digital transformation.

The experts interviewed were from the following countries: United Kingdom (7), Belgium (1), Netherlands (2), Germany (1), New Zealand (1), Spain (1), Kenya (1) and India (1). They provided a variety of perspectives with common themes that represent generalisable perspectives from industry. For analysing the expert interviews, a qualitative interview transcript review (ITR) guideline as outlined by Hagens et al. (2009), ITR is a technique used to improve the rigour and reliability of interview-based, qualitative research. It involves providing interviewees with verbatim transcripts of their interviews for the purposes of verifying accuracy, correcting errors or inaccuracies, and providing clarifications. Interview transcript review is widely used in various forms among qualitative researchers (Hagens et al., 2009).

The grounded theory methodology was applied in combination with studies that facilitate theory development (Corley & Gioia, 2004; Nag et al., 2007) in analysing the interview transcripts. Hence, open coding was first adopted to enable the discovery of concepts, properties, and relationships within the qualitative interview data. Consequently, descriptive codes were assigned the data to reflect peculiar characteristics of each interviewee's language. Subsequently, these quotes were synthetised into more analytical concepts that reflect emerging abstractions; and the abstracted concepts formed the basis for theorisation on digital transformation from the perspectives of the interviewed experts, and its dynamics within business organisations. The participants in the expert interview sessions had a conceptual understanding of digital transformation that covers a broad spectrum of issues techno-deterministic transformation of business organisations, process-oriented transformation, customer focused (customer journey mapping and understanding of the needs of the customer), and leadership based. In addition, their understanding of digital transformation was not limited to one issue, and the diversity of opinions could be attributed to the different industry backgrounds of the respondents.

5.3 Design Science Iterations of Framework Development

An emerging theme from the systematic review of literatures and expert interviews on digital transformation is the predication of digital transformation within the context of business organisations on three fundamental questions of motivations, constituents, and procedures of digital transformation. Evidence

from literature and opinions gathered from digital transformation professions in industry suggests that for any company to embark on digital transformation and succeed in it, it must first ask itself why it needs digital transformation, then it must ask what needs to be transformed, and finally it must decide on how to achieve its transformation objectives. Consequently, the design science iterations process required for the proposed digital transformation framework is anchored on the fundamental questions as suggested by experts and supported by evidence from industry and academic literatures about digital transformation.

Hence, following the basic components of design science, the first step involved the identification of basic constructs as it relates to digital transformation in business organisations. This involved the identification of basic concepts and constituents of digital transformation. Offermann et al. (2009) argue that like what is obtainable in the social sciences, data or evidence to be applied in the design science research process must be derived from complex systems with a significant amount of hidden and tacit knowledge. This makes the evidence obtained from the review of literatures and expert interviews relevant for this part of the dissertation.

Table 2: Framework for the design science research process (source: author).

Research Activities					
Research Outputs		**Build**	**Evaluate**	**Theorise**	**Justify**
	Constructs	Find basic concepts for digital transformation in organisations (i.e. constituents and mechanism)	Conduct assessment of comprehensiveness and understandability		
	Model	Establish an ontological basis that expresses the fundamentals of digital transformation (i.e., the motivations, constituents, and procedures)	Conduct assessment of fidelity within the context of real-world phenomena		
	Method				
	Instantiation	Prototype to capture digital transformation framework. IS, Business Model, Operating Model and Organisational Structure alignment	Test the prototype by applying it to select cases. Apply alignment proposition to cases		

According to Chow and Jonas (2008), designing the artefact is a creative engineering process which unfortunately does not have much guidance in information systems (IS) literature. However, Chow proposes the Matching Analysis, Projection and Synthesis (MAPS) tool that provides methods and guidance for relevant steps required in the design science process. The tool is an assembly of a total of 258 method, some of which are specific for industrial design, and others might be applicable in IS design science, particularly for the synthesis phase used for artefact design. In the problem identification phase (phase one) of the proposed design science research process (see figure 3), the research problems are identified. Considering the practical relevance of the problems (in this case, the digital transformation of business organisations), a

model that successfully helps companies achieve conceptual clarity and navigate the complexities of digital transformation is practically relevant. Hence, the research questions (see figure 5) are inspired by current business problems or opportunities faced by companies in their quest to maximise the benefits offered by new and disruptive digital technologies. As illustrated by figure 5, business organisations are challenged by three fundamental questions on digital transformation: why they need to transform, what needs to be transformed, and how to go about the transformation process. These fundamental questions form the basis of the digital transformation dilemmas faced by companies irrespective of their contextual realities (size, industry segment in which they operate and their current financial health status). In addition, respondents in the expert interview sessions acknowledged that digital transformation exists in a continuum, hence the need for proactiveness on the part of those in charge to ensure that they maintain the momentum of change.

This is a vital point that must be taken into consideration in any design process aimed at developing an artefact for digital transformation in business organisations. The design of the artefact follows an iterative pathway that relies on a feedback loop to ensure that the artefact is routinely reviewed, and improvements made based on the feedback of industry experts who evaluate the artefact to determine if it is fit for the purpose for which it is intended. Hence, by applying the design science research process framework, in combination with the MAPS tool, the product service system (which is the digital transformation artefact) would require an elaboration of MAPS tool components such as the project dimension, domain, constraints, and process types. Firstly, it is imperative to identify relevant "Constructs" and "Models" associated with digital transformation in business organisations. The constructs are basic concepts (constituents and mechanism) for digital transformation in business organisations. While the models constitute the ontological basis of digital transformation in business organisation. This is essentially about the fundamental questions of the motivations, constituents, and procedures of digital transformation for any company. Three iterations of the proposed digital transformation model were developed and subsequently presented for review and evaluation by industry experts with practical experience in digital transformation projects.

Table 3: Instantiation of Model of Digital Transformation in Business Organisations (source: author).

Motivations	**Constituents**	**Procedures**
Organisational leadership		
Customer experience improvements	Customer journey	Customer journey mapping, omni channel strategy
Value chain transformation	Company value chain	Value chain analysis
Value proposition improvements	Customer value propositions	Customer journey mapping, omni channel strategy
Operating model reengineering	Company operating model	Reengineering the organisational structure, culture, and strategy
Business model reinvention	Business model	Reinventing organisational structure, culture and strategy
Digital technologies, Data, Data analytics		

5.4 Digital Transformation Model Validation

The validation of the digital transformation model relies on statistical evaluation of the models based on data collected through an online questionnaire that is used to gather review and feedback from digital transformation professions across various business organisations around the world; the statistical validation measures the willingness to adopt the model as an information systems artefact, the validation also seeks to establish which of the iterations is preferred by the survey respondents.. The online questionnaire was designed to capture the views of industry experts on the various iterations of the proposed digital transformation model. The questionnaire was structured in three sections and had survey instruments that enabled both quantitative and qualitative feedbacks to be obtained. A total of 117 respondents participated in the process of providing feedbacks through the questionnaire. This method of validation is a critical component of the design science research process. It enables the researcher to evaluate the models against the backdrop of feedback from industry practitioners. The review of the models was conducted remotely via the use of an online questionnaire. The questionnaire that was developed for the purpose of collecting feedback from experts was designed to collect both quantitative and qualitative responses. Simple statistical comparison of the three iterations of the digital

transformation models is made based on the perception of the respondents on the following criteria: adequacy of building blocks that make up the model, arrangement of building blocks within the model, and most preferred model.

5.4.1 Building blocks of the models

The comparison of the models based on the constituent building blocks presented interesting results from the feedback provided by the respondents. The survey respondents were asked to evaluate the three different iterations of the digital transformation model as follows: to determine if they consider that the building blocks that make up the model sufficiently account for all the elements of a digital transformation project in a company (constituent building blocks); evaluate if the constituent building blocks of the models were arranged in a logical manner that is appropriate for a suitable digital transformation model (logical arrangement); and which of the three iterations did they consider to be the most suitable for practical and successful implementations of digital transformation projects in companies (preferred iteration). The answers to these three evaluation criteria were either an affirmative or non-affirmative response. For non-affirmative responses, the respondents were requested to provide writing justifications for their answers. Consequently, this approach yielded both quantitative and qualitative dataset for which the result of the analysis is presented in this sub-section. Table 17 is a simple statistical summary of the answers to the questions on adequacy, logical arrangement of constituents of the various iterations of the models, and their choice of the preferred model. It is also pertinent to state that the industry and professional backgrounds of the respondents may have been a factor with significant potential of influencing their perspectives, preferences, and inclinations towards how they viewed the constituent building blocks and their arrangements within the models presented to them.

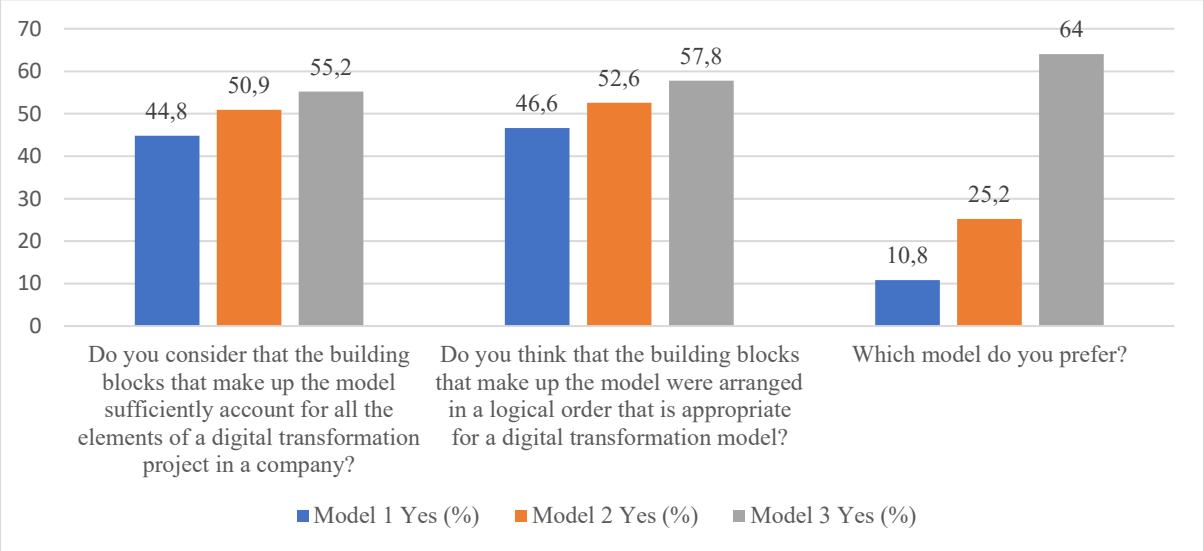
Table 4: Summary of respondents' answers to questions on adequacy, logical arrangement, and preferred model (source: author).

	Model 1		**Model 2**		**Model 3**	
Question	**Yes (%)**	**No (%)**	**Yes (%)**	**No (%)**	**Yes (%)**	**No (%)**
Do you consider that the building blocks that make up the model sufficiently account for all the elements of a digital transformation project in a company?	44.8	55.2	50.9	49.1	55.2	44.8
Do you think that the building blocks that make up the model were arranged in a logical order that is appropriate for a digital transformation model?	46.6	53.4	52.6	47.4	57.8	42.2
Which model do you prefer?	10.8		25.2		64	

For the evaluation of the constituent building blocks, and how they were arranged within the proposed digital transformation model and based on the feedback provided by the 117 respondents, the views of the respondents are captured in the various chats presented below. For model 1, 44.8% opined that the building blocks were sufficient, while 55.2% believed the building blocks that make up the model do not sufficiently account for digital transformation. In addition, 46.6% think that the constituent building blocks of the model were logically arranged, and 53.4% did not believe that the constituent building blocks were logically arranged. For model 2, when asked if they consider that the building blocks that make up the model sufficiently account for all the elements of a digital transformation project in a company, 50.9% affirmed positively, while 49.1% disagreed. For the question about if the building blocks that make up the model were logically arranged, 52.6% affirmed positively while 47.4% disagreed with the arrangements of the constituents of the model. For model 3 which is the third iteration, when the respondents were asked if they consider that the building blocks that make up the model sufficiently account for all the elements of a digital transformation project in a company, 55.2% responded positively, while 44.8% responded negatively. For the second question about if the building blocks that make up the model were logically arranged, 57.8% affirmed positively while 42.2% disagreed with the arrangements of the constituents of the model. It is evident that there is a progressive acceptance of the models based on the different

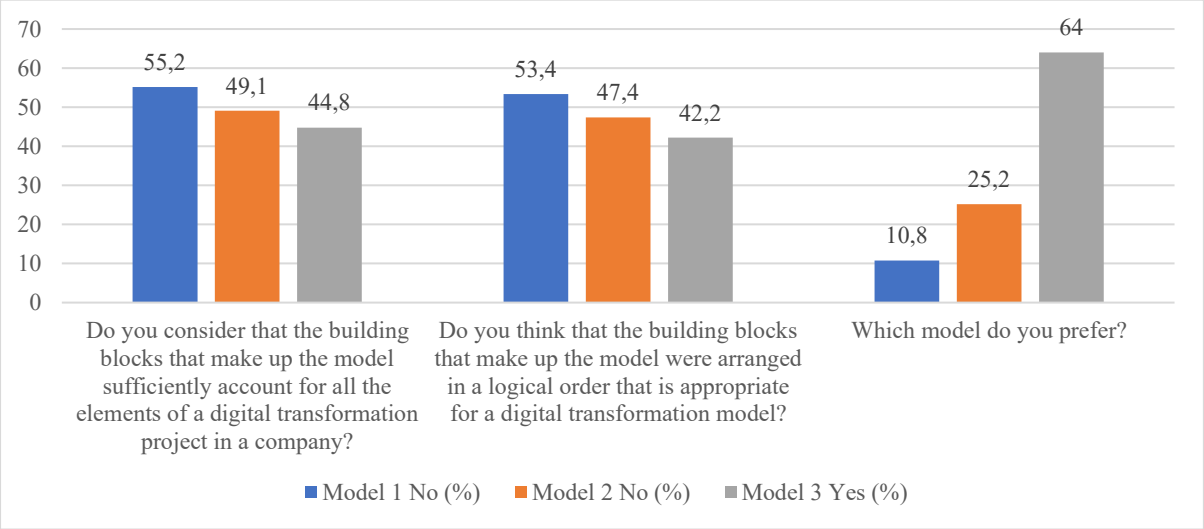
iterations of the constituent building blocks and how they were arranged within the models. Firstly, it went from a negative perception of model 1, to a slightly positive perception of model 2 and a significantly higher positive perception of model 3. Consequently, the implication is that model 3 presents a more acceptable tool for industry stakeholders based on the feed, even though the positive perception of model 3 is quite higher than that of models 1 and 2, there is still need for further modifications of the models which takes into considerations the qualitative feedbacks provided by the respondents.

Table 5: Summary of respondents' affirmative evaluation of the three iterations (source: author).



Hence, the perceptions of the respondents on the constituents and logical arrangement of the building blocks were also reflected in the penultimate choice of preferred digital transformation model from the three iterations presented for evaluation. In addition, it is pertinent to state that respondents were also given the opportunity to state their reasons for disagreeing with sufficiency and logical arrangements of the constituent building blocks that make up the various iterations of the digital transformation models presented to them for their professional evaluation based on industry experience.

Table 6: Summary of respondents' non-affirmative evaluation of the three iterations (source: author).



Respondents who participated in the survey had a variety of reasons for disagreeing with the adequacy of the constituent building blocks in the various iterations presented to them. An example was the opinion by a respondent whom while acknowledging that the models captured all areas for a digital transformation project in a company, disagreed with the role of organisational leadership by stating that "in most scenarios the leadership are involved only in the motivations and constituents not the procedures." Others argued for the explicit inclusion of factors such as "business model", "operational innovation", and "strategic intent" because they believe that the inclusion of these factors as building blocks in the model would make it more relevant to companies. Several respondents also suggested that "governance", "Stakeholder Impact", "Innovation", "Human Resources" and "IT strategy" as other distinct building block components that should have been included in the various iterations of the models. In response to the feedback on how the building blocks that make up the models were logically arranged; the respondents also expressed a wide variety of opinions and perspectives which would be taken into consideration in subsequent efforts to achieve a fit for purpose digital transformation model.

A respondent argued that the models may not be suitable for large business organisations because of how the constituent building blocks were arranged. Another opined that leadership does not directly influence the customer journey and digital technologies by themselves do not directly influence the internal factors of an organisation. Whereas there were respondents whose opinions were

contrary to these. They stated that leadership was a critical factor in determining the entire direction of the organisation both internally and how it functions externally. A respondent argued for the importance of taking into consideration the current processes of the company in relations to the customer because of the need for a "transition" between its current state and a complete digital transformation as such transition includes internal automation of tools and processes. Quite a few of the respondents argued for a rearrangement that places value Proposition, followed by business model and operating model, and that customer experience should be positioned last supported just above the technology building block. They justified their opinion by arguing that it is difficult to define customer experience first and then define the operating model and business strategy.

While various issues were identified, alongside several concerns, a fundamental opinion expressed was that the core drivers for transformation should determine how the sequence is constructed. That is, if the premise for transformation is customer experience, the pathway would be different as opposed to efficiency or cost drivers. This is the reason why policy driven transformation appears to be a more stable architecture and why it is essential to use this as a key connect, resulting in changes in the organisation which are sustainable, can by systematically rolled out and driven by technology; focused on people interaction with technology. There is a direct correlation to organisational culture and behaviours and the overall efficiency and efficacy within the organisation, its governance and compliance structures and ultimately customer experience. However, it is pertinent to state that some of the respondents expressed a lack of clear understanding of some of the building blocks and why they were included or why they were in the positions where they were in the various iterations of the models. Hence, it can be argued that the constituent building blocks and the order of arrangement of there were largely dependent on the perspectives of the individuals and their professional or industry backgrounds.

5.4.2 Modelling the Acceptance and Usefulness of the proposed Digital Transformation Model

Considering that the proposed Digital transformation model is an information systems artefact developed from a design science research process, the applicability of the model can be simulated and further validated through traditional statistical methods used in evaluating the perceptions of the prospective users of information systems artefacts. Hence, one approach that

readily comes in handy is the application of information systems theories such as the Technology Acceptance Model - TAM or the Unified Theory of Acceptance and Use of Technology – UTAUT (F. Davis, 1986; Koul & Eydgahi, n.d.; Tamilmani et al., 2017; V Venkatesh, 2008; Viswanath Venkatesh et al., 2003) that simulates how users come to accept and use a technology. For this dissertation, a modified version of the TAM will be applied in evaluating the perception of the 117 respondents covered in the survey. Originally proposed by Davis (1989), the Technology Acceptance Model has been one of the most influential information systems theories that has been applied in understanding the psychological persuasion that explains the adoption and use of technological artefacts by users.

In the research model, perceived usefulness (PU) refers to the degree to which the user believes that the proposed digital transformation model will them achieve successful digital transformation within their business organisations, perceived ease of use (PEU) refers to how convenient or easy they perceives the proposed digital transformation model will be when operationalised, while the willingness to use (WU) is their desire to adopt the proposed digital transformation model which is partly influenced by the PU and PEU. These three factors are considered distinct factors influencing the user's attitude towards use (ATU) of the technology. Finally, such attitude towards using the technology determines the behavioural intention to use that technology. Consequently, the research hypotheses based on the diagram of the modified TAM model in the context of the proposed digital transformation model:

H1: Perceived Ease of Use is positively correlated to the Attitude towards use of the users to adopt and use the model.

H2: Perceived Ease of Use is positively correlated to the Willingness to Use the model.

H3: Willingness to Use is positively correlated to the Attitude towards use of the users to adopt and use the model.

H4: Perceived Usefulness is positively correlated to the Attitude towards use of the users to adopt and use the model.

H5: Perceived Usefulness is positively correlated to the Willingness to Use the model.

H6: Model Adequacy is positively correlated to the Attitude towards use of the users to adopt and use the model.

H7: Model sufficiency is positively correlated to the Attitude towards use of the users to adopt and use the model.

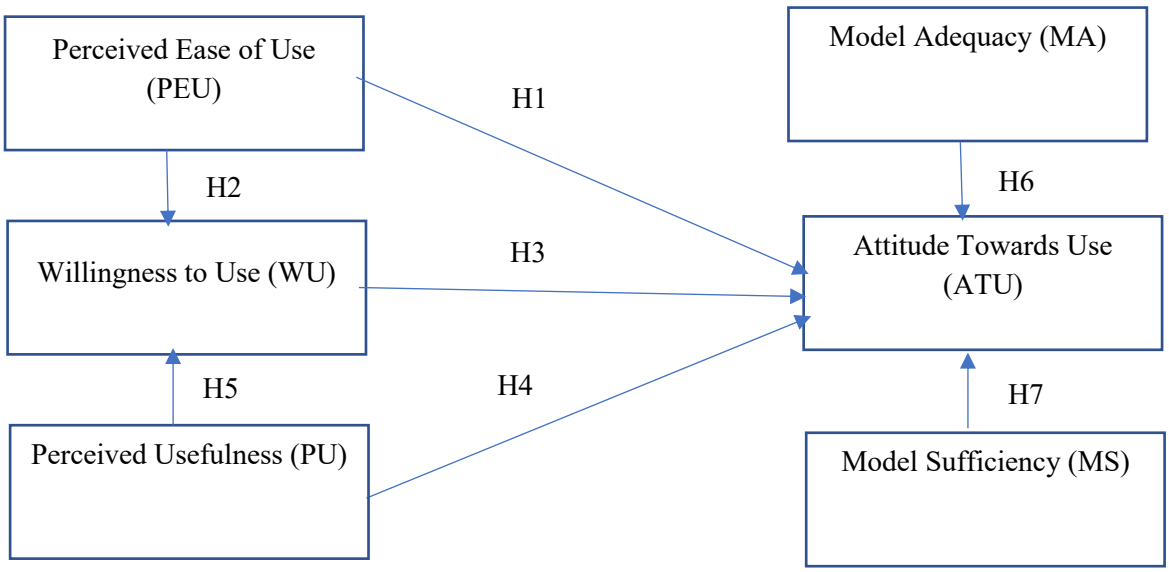


Figure 2: Research model for assessing survey respondents' desire to adopt the proposed digital transformation model (source: author).

Respondents for the online survey were selected based on their levels of seniority within their organisations and years of experience in leading or participating in major digital transformation oriented towards industry and business organisations. A total of 117 high level industry experts participated in the survey and evaluation of the different iterations of the proposed digital transformation models. They were asked to fill out a four-section online questionnaire which was used in collecting both qualitative and quantitative responses. The qualitative responses were separated into a different analysis while the quantitative responses were designed to capture the respondents' perception of the proposed digital transformation models. Each question used in the online questionnaire represents a component in the research model used for testing and validating the proposed digital transformation model iterations. The questions were developed based on their conceptual significance and potential relevance to the research. All the constructs used in the research model were measured on a 5-points Likert type scales ranging from 'strongly disagree' to 'strongly agree'. Most of the construct items were adapted from the existing TAM scales, for which high reliability have been established from previous research. However, the existing TAM model was

modified by adding some newly developed construct items to fit into the purpose of the research (F. D. F. Davis, 1989).

5.4.3 Structural Equations Modelling Results for Model 3

In determining how the respondents perceived the model as an information systems tool that could be employed in achieving digital transformation of their respective business organisations, a decision was made to narrow the statistical assessment down to model 3 since it was the model that was overwhelmingly preferred by most of the respondents (see Figure 16). Consequently, the PL-SEM statistical technique was employed in evaluating model 3. Partial least squares (PLS) path modelling was used to simultaneously estimate both the measurement and structural components of the model. Furthermore, the approach is consistent that of Podsakoff et al. (2003) regarding the minimisation of common method variance.

Analytical Approach

The study uses variance-based (VB-SEM) as the appropriate data analysis tool to test the causal relationships between the exogenous and the endogenous variables stemming from the fact that VB-SEM handles more complex models with ease and more efficient in exploratory study of this kind, and hence the method of partial least square structural equation modeling is recommended for use (J. F. Hair et al., 2019). Therefore, an execution of the study's analyses was implemented via SmartPLS 3.3.2 software (J. F. Hair et al., 2019; J. J. F. Hair et al., 2017). Finally, a test of the measurement model was conducted via bootstrapping procedure with 5,000 resample (Hair et al., 2020; Ramayah et al., 2018) to derive a valid standard error for the t-value calculation.

Measurement model

The model assessment was first initiated by determining model fit using the saturated model indices/metrics considering the recommendations found in the literature (Henseler, Hubona and Ray, 2016). To this end, the standard root means square residual (SRMR) was established with a value of 0.07 below the minimum baseline of 0.08, indicating a good model fit for PLS path models (Henseler, Hubona and Ray, 2016;). Second, the psychometric properties of the reflective scales assessed with Mode A algorithm was established, consequently, the reliability was established with the following non-exclusive and common thresholds: Cronbach's alpha (α) (all values were all above 0.7; Dijkstra & Henseler, 2015), composite reliability (CR) (all values were higher than 0.8; (Nunnally & Bernstein, 1994; Fornell & Larcker,1981; Raykov & Marcoulides,

2019), and average variance extracted (AVE) (factor loadings were higher than the critical 0.5 ; Bagozzi & Yi, 1988).

Table 7: Descriptive statistics and convergent validity assessment (source: author).

Constructs	Items	Mean	Factor loadings	Std. Err	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
	ATU31 <- ATU	0.480	0.966	0.362			
ATU	ATU32 <- ATU	0.284	0.601	0.389	0.776	0.799	0.584
	ATU33 <- ATU	0.242	0.735	0.320			
	MA31 <- MA	0.416	0.929	0.399			
MA	MA32 <- MA	0.543	0.941	0.366	0.857	0.933	0.875
	MS31 <- MS	0.383	0.886	0.448			
MS	MS32 <- MS	0.542	0.961	0.394	0.838	0.921	0.854
	PEU31 <- PEU	0.360	0.901	0.016			
PEU	PEU32 <- PEU	0.410	0.935	0.010	0.886	0.930	0.815
	PEU33 <- PEU	0.336	0.870	0.025			
	PU31 <- PU	0.353	0.901	0.016			
PU	PU32 <- PU	0.391	0.945	0.010	0.899	0.937	0.833
	PU33 <- PU	0.350	0.891	0.023			
	WU31 <- WU	0.502	0.952	0.007			
WU	WU32 <- WU	0.544	0.960	0.006	0.905	0.955	0.913

	Saturated Model	Estimated Model
SRMR	0.078	0.078
d_ULS	0.725	0.733
d_G	1.334	1.344
Chi-Square	690.221	694.458
NFI	0.669	0.667

At the climax of the measurement model analysis, we verified the discriminant validity using Fornell Lacker (1981) criterion to significantly assess the discriminant validity of the constructs and that of the latent variables (Henseler et al., 2015; Haseeb et al., 2019). From the table 3 of the Fornell-Lacker's criterion, AVE's efficiently measured the constructs in the model indicating a distinction of the constructs in the model as recommended by the pioneer scholars (see Hair et al., 2019; Henseler et al., 2015), hence, its values are indicated diagonally (in bold) where the values of 0.5 suggesting sufficient discriminant validity.

Table 8: Fornell-Larcker Criterion (source: author).

	ATU	**MA**	**MS**	**PEU**	**PU**	**WU**
ATU	**0.764**					
MA	0.244	**0.935**				
MS	0.165	0.789	**0.924**			
PEU	0.248	0.862	0.811	**0.903**		
PU	0.244	0.886	0.896	0.926	**0.913**	
WU	0.206	0.840	0.796	0.866	0.871	**0.956**

Structural model

The hypotheses were evaluated by inspecting the variance explained (R^2), whiles a multicollinearity test was conducted using the value inflation factor (VIF) as well as the path coefficients and their significance (see table 4). To it, the f^2 examines whether an independent variable has a functional contribution to the explained variance of the dependent variable(s) to which it is directly linked (Hair et al., 2013). Also, noteworthy is the explained variances, i.e. adjusted R-squares for attitude towards ATU and WU, which are approximately 8%, and 78% respectively. Reporting from Table 4a, there was statistical support for variables that express relationships between PEU and ATU (H1), WU and ATU (H3), PU and ATU (H4), MA and ATU (H6), MS and ATU (H7), which are direct causal hypotheses. Whereas no statistical support was found for hypotheses expressing relationships between PEU and WU (H2), and that for PU and WU (H5).

Table 9: Results of the hypotheses (source: author).

Relations	Std. Beta	Std. Err	t-value	P- Values	Decision	VIF	Effect size (f2)
MA -> ATU	0.126	0.245	0.515	**0.607**	Accepted	1.547	0.000
MS -> ATU	-0.248	0.349	0.711	**0.478**	Accepted	2.322	0.013
PEU -> ATU	0.117	0.357	0.326	**0.744**	Accepted	3.115	0.002
PEU -> WU	0.418	0.120	3.476	0.001	Rejected	2.283	0.115
PU -> ATU	0.308	0.374	0.823	**0.411**	Accepted	2.283	0.002
PU -> WU	0.484	0.117	4.127	0.000	Rejected	2.087	0.154
WU -> ATU	-0.071	0.241	0.293	**0.770**	Accepted	2.087	0.001

Endogenous Variable	R Square	R Square Adjusted	
ATU	0.079	0.038	
WU	0.783	0.779	

Notes: MA- Model Adequacy; ATU – Attitude Towards Use; PEU- Perceived Ease of Use; -; PU- Perceived Usefulness; WU – Willingness to Use. INST – *p < 0.1; **p<0.05; ***p<.01

6. RECAPITULATION AND CONTRIBUTIONS

The dissertation concluded by addressing the research questions and achieving the objectives outlined. A proposed digital transformation model was developed using design science research process as the primary method. The interconnected nature of the customer and a company's value proposition informed the positioning of the customer focused layers and the value propositions layers. The interplay of both factors combines to determine how the customer's journey is mapped. Considering that a company's value proposition is essentially what is offers to attract and retain customers, any company that seeks to create memorable first impressions required to deliver differentiated buying experiences to its prospective clients, customer journey mapping is an indispensable tool required for creating the right value propositions for the customer. It provides a powerful method for understanding what motivates customers - their needs, inhibitors, and concerns. The importance of the relationship between the

customer focused layers and the value proposition layers were highlighted by the expert interviews and online questionnaire survey participants.

Based on the feedback obtained from participants in the expert interview sessions in combination with evidence obtained from peer reviewed scientific literatures about digital transformation in business organisations, several iterations of the proposed digital transformation model were developed and validated. The basis for iterative tweaking of the model was to develop various configurations to be evaluated by industry experts. The iterations consisted essentially of different rearrangements of the model based on different logical considerations. For the secondary research questions, evidence obtained from this research indicates that there is a variety of perspectives on what successful digital transformation initiatives in business organisations means to various stakeholders. Results from the research shows that several factors need to be considered as evidence of success, and they cover a broad range of areas and outcomes. However, it may also be argued that determinants of successful digital transformation initiatives are largely based on the perceptions of the stakeholders which is subject to the influence of the peculiarities as determined by the environmental context in which they made their observations.

While drivers serve as external or internal triggers for why organisations chose to engage in digital transformation, determinants of successful digital transformation are the evidence of success for such initiatives. Organisations report a need to keep up with digital shifts occurring in their industry segment. Hence, Digital Transformation is found to often be triggered by factors such as changing customer behaviors and expectations, digital shifts in the organisation's industry, and changes in the competitive landscape. This is in addition to new competitive challenges faced by these companies alongside expanding range of rivals and non-industry entrants. Also, companies have been noted to experience digitalisation pressure through competitors' demonstration of digital advances, new market entrants with disruptive digital business models, and technological progress in general, which, in turn, drives companies to engage in organisational transformation as a means of remaining relevant and competitive in the market (Osmundsen et al., 2018, p. 5).

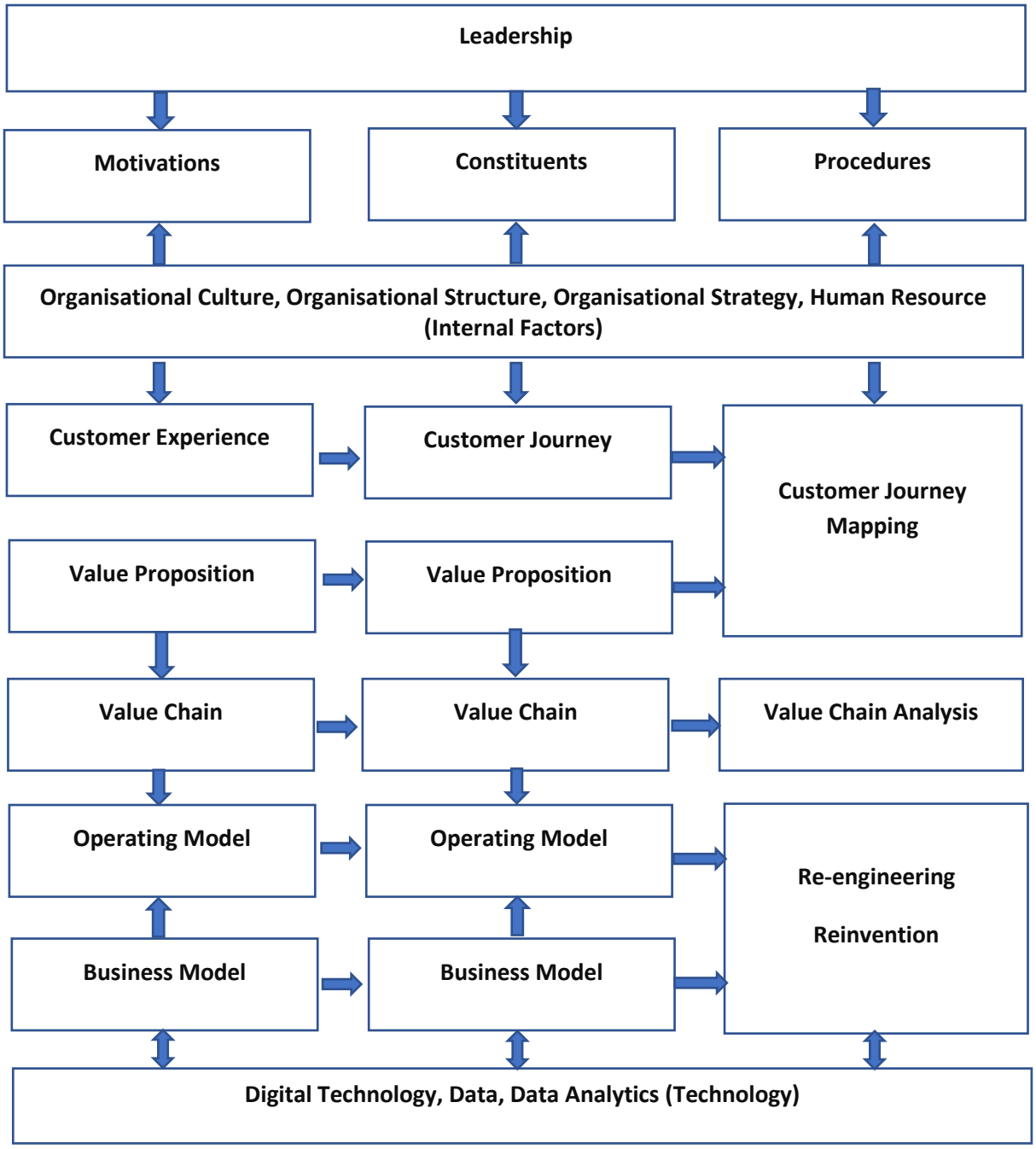


Figure 3: Final iteration of the proposed Digital Transformation model (source: author).

In the final iteration of the proposed digital transformation model, a major change that is reflected in the rearrangement of the building blocks is the collaborative role between an organisation's leadership team and other internal members of the organisation across all levels in determining and shaping the motivations behind the organisation's quest for digital transformation, the constituents of such transformation, and the procedures by which the organisation intends to achieve digital transformation. This is consistent with the views expressed by many of the

experts who participated in the research that a top-down leadership approach is detrimental to the quest of achieving successful digital transformation initiatives. In addition, majority of the respondents suggest a bi-directional relationship between the technology layer and the business model layer of the organisation. This implies that in as much as the emergence of new disruptive technologies can lead to the emergence of new business models, so also does the business model of a company determine what technological assets it will acquire to realise its business model designs.

7. CONCLUSION

7.1 Theorising on Digital Transformation of Business Organisations

The need to investigate digital transformation as a form of organisational transformation stems from the immense opportunities offered by the unique class of general-purpose technologies (Bresnahan & Trajtenberg, 1995; Korzinov & Savin, 2018; Magistretti et al., 2019) called digital technologies. Hence, it is imperative to ensure that the discourse of the subject of digital transformation within the context of business organisations must take into cognizance the relevant theoretical foundations within the fields of organisational dynamics and management research, alongside other relevant theories within the field of information systems research. This is the approach which this research has followed in achieving the objectives of the scientific inquiry. While information systems research has a reputation and longstanding tradition for exploring how information technologies have been adopted and implemented in achieving organisational change, IT systems have largely been perceived as tools designed to benefit organisations in achieving information management, automation, coordination and control of systems and processes in ways that enable the organisations realise their stated objectives. Information technologies have largely been used for process innovation with the objective of improving the operational efficiencies of organisations. On the other hand, organisational change is often attributed to processes and managerial innovations which in some cases are independent of technology, while in other cases, technology has been an indispensable driver of organisational change particularly in ways in which it affects the value chains, business models, and operating models of various business organisations.

7.2 Practical Implications

As a subject that arouses major interest of stakeholders both in industry and the academia, digital transformation has proven to have significant implications both in theory and in practice. Particularly as it relates to various industrial sectors. One noticeable area in which its significance is evident is in how it has become a useful resource in helping business organisations achieve productivity gains, reduce wastages, and turn around their operations in ways that leads to them becoming sustainable and profitable in the long-term. Consequently, digital transformation is a process that requires complex and holistic thinking in achieving the desired organisational changes that would translate to successful transformation initiatives. This tends to lead to digital transformation being significantly expensive and challenging for business organisations to successfully pull off. Hence the reluctance of organisational leaderships to embark on digital transformation initiatives just for the purpose of transformation without clear cut definitions of key performance indicators and expected outcomes that are tangible and measurable. This makes it imperative for such initiatives to be anchored on clearly identified challenges facing the organisation or opportunities which the organisation will benefit from if such transformation initiatives are executed. In addition, the digital economy which has largely emerged because of innovations centred around digital technologies tends to be on a constant path of change which is both rapid and fundamental in ways that are often difficult to accurately predict, thereby making it difficult for companies to put in place contingency plans for their future. Hence, this makes the need for agility a prerequisite for organisations that desire to keep pace with the fast-changing technological trends of this era. The need for a proactive approach is an essential survival attribute that has become necessary for companies that want to remain relevant and thrive in a world that is increasing becoming digital and data driven. In addition, it is imperative to also gain an understanding of the dynamics of the external business and technological environment that is relevant to an organisation's digital transformation ambitions. This must be done by examining the context within which the company desires to operate especially as it relates to its vision and mission, this would enable it to identify the relevant digital technologies and process innovations that would enable it to create and capture value through which it would achieve its sustainable growth and profitability objectives. Another relevant issue relates to the ability of the company to identify emerging threats within its market segment. The emergence of digital technologies has created opportunities for business model innovations that have disrupted

traditional industries and led to new ones. This evolutionary pattern within industries makes it important for companies to be forward thinking in their approach as it would enable them to prepare and protect themselves against such disruptions. A proactive step that could be pivotal to protecting against such disruptions within their market segment would be to review the perception of various groups of stakeholders within their organisation towards the organisation. If the organising logic that emerges from this seems limited and rigid, then it should be expected that only a partial transformation of products, services and processes will be accepted, while more fundamental organisational transformation will most likely be resisted. It is also important to pay attention to other rival companies and their products and services, while not forgetting the unique position occupied by the customers, within digital ecosystem. This is because a business organisation exists primarily to serve the interests of the customers through the value proposition contained in the products or services it offers to the customers for which they offer monetary compensation in return to the company. Hence, it is imperative for companies to remain vigilant to changes in the behaviors and preferences of their customers as pointers to the need for the company to reinvent itself. In conclusion, evidence presented in this dissertation points to the fact that digital transformation of business organisations is not restricted solely to an issue of technology alone, as it is evident from the proposed digital transformation model, there are layers, constituent building blocks and logical interaction pathways that should be explored in other to ensure success of transformation initiatives.

7.3 Limitations and Opportunities for Future Research

The research presented in this dissertation has its own peculiar limitations consistent with an emerging field of scientific research. The dissertation strived to achieve conceptual clarification of digital transformation and develop a model that has practical significance for industry stakeholders. Validation of the model was done by applying theories within information systems research in assessing the willingness of industry experts to adopt and use the proposed digital transformation model for digital transformation initiatives. The framework validation did not assess or validate the constituent building blocks of the models to determine their fitness and appropriateness. This limitation was because of limited time and resources available. This provides opportunity for future research. In addition, the variations in interpretations the parameters by which success or failure of digital transformation is measured, it is necessary to state that the characteristics of the filtering process applied naturally comes with a

certain bias of the respondents which may affect the objectivity of their responses. This limitation also provides opportunity for future research that would address this and other methodological issues that may be associated with this research.

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APPENDICES

APPENDIX A:

CURRICULUM VITAE

Fortune Nwaiwu

fortune.nwaiwu@gmail.com, +44 7436503287

Professional Experience

Intels Nigeria Ltd.
Service Delivery Manager January 2016 – September 2017

- Led the commercial operations, maintained existing client relationships and developed market opportunities for the ICT business which translated to a 20% year on year increase in revenue for the business unit over a 2 years' period.
- Implemented procedures within the Service Delivery department that significantly reduced response time for clients' request bring down the lead time by 50% for third party requests.
- Led a transition from the Navision ERP software to Microsoft Dynamics AX, supported by the cloud-based ticketing system Go-To-Assist in providing IT support to customers within and outside the organisation.
- Developed and implemented a standardized procedure with templates for preparing quotations and proposals for the ICT items, and through coordination and follow-up with other departments.

Jack Links – EMEA
Project Consultant: April 2015 – November 2015

- Developed an assessment framework used in conducting market analysis to identify the top 20 markets within the EMEA region with secondary data in Microsoft Excel format that showed various countries and their viability for the company.
- Worked on extensive field market research on the French FMCG retail sector, including a consumer pilot study.
- Developed a Route-to-Market strategy for Jack Links in the French market that was implemented by the company in their bid to expand their footprint across the French retail sector.

Nigerian Economic Summit Group
IT Manager July 2008 – September 2014

- Managed IT equipment including computer systems and network equipment.
- Implemented social media marketing and client engagement initiative that led to a 30% reduction in marketing and advertising.
- Supervised and coordinated a process of redesign the corporate website of the organisation.
- Implemented general analysis and social media marketing integration across multiple social media platforms.
- Modelled the overall social media strategy development and execution as well as coordinated the daily monitoring and provided insight analytics to management.

Education and Credentials

- PhD in Management and Economics, Tomas Bata University, Czech Republic — Sept 2017 – Aug 2021
- MBA, Nyenrode Business Universiteit, Netherlands, — Oct 2014 – Sept 2015
- MSc. Security and Risk Management, University of Leicester, UK, — March 2012 – Sept 2014

Fortune Nwaiwu, Ph.D.

The Digital Transformation of Business: A Proposed Framework for Achieving Organisational Transformation

Digitální transformace podnikání: Navrhovaný rámec pro dosažení organizační transformase

Published by: Tomas Bata University in Zlín,

nám. T. G. Masaryka 5555, 760 01 Zlín

Edition: issued electronically

1st edition

Typesetting by: Fortune Nwaiwu

This publication has not undergone any proofreading or editorial review.

Publication year: 2021

ISBN 978-80-7678-007-1