

EXAMINING THE ADOPTION OF DIGITAL TRANSFORMATION INITIATIVES IN  
HIGHER EDUCATION INSTITUTIONS: A MIXED-METHODS INVESTIGATION  
OF EMPLOYEE PERCEPTIONS AND DECISION-MAKING PROCESSES

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## ABSTRACT

Digital transformation refers to the strategic integration of innovative technologies, which include mobile devices, artificial intelligence, and cloud computing, to name a few. These digital technologies weave into business processes to drastically enhance and ultimately improve the customer experience, optimize operational efficiency, or forge new revenue streams (Beach, 2021). This mixed-methods study investigated the dynamics of digital transformation in higher education from the perspective of information technology professionals. There were four primary research questions:

- Research Question 1 (RQ1): Does one or more demographic factor predict an employee's level of decision-making in higher education as it relates to digital transformation?
- Research Question 2 (RQ1): What is the relationship between perceived organizational support and the decision-making process in higher education as it relates to digital transformation?
- Research Question 3 (RQ1): What themes contribute to an employee's negative or positive perceptions of their organization's capacity for digital transformation?
- Research Question 4 (RQ1): What challenges contribute to an organization's agency for digital transformation initiatives?

The quantitative portion of the study leveraged a survey instrument to collect data in five areas: demographics, general experience with digital transformation, sentiment and decision-making, work environment, and digital transformation efforts. Regression analysis determined a

model of combined demographic information had no significance in predicting digital transformation decision-making, except with job roles. In addition, a Pearson's correlation was performed between perceived support and digital transformation decision-making, resulting in a positive correlation between the two. Interviews were performed and analyzed through coding and categorizing, and they were evaluated for emergent themes. These findings highlighted the importance of administrators understanding and acknowledging the complexities of digital transformation by establishing supportive frameworks that empower IT professionals and non-IT staff across the organization. Potential recommendations include establishing funding specific for digital transformation, fostering a culture of collaboration, and promoting adaptability across the institution.

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## LIST OF ABBREVIATIONS

CIO, Chief Information Officer

COVID-19, Coronavirus Disease of 2019

IT, Information Technology

SPSS, Statistical Package for Social Sciences

## CHAPTER I

### INTRODUCTION

Prior to the diffusion of the Internet as an innovation, society leveraged primarily paper processes to complete daily tasks and business processes. The conception of the Internet has created a paradigm shift, turning knowledge and information into its currency (Dumont & Istance, 2010). Merriam and Bierema (2014) reported the information available on the Internet is rapidly growing, nearly doubling every 90 days. Developments in science and technologies, especially in the communication sector, drive the advances and shifts in how we access, share, and utilize knowledge on a global scale (Dumont & Istance, 2010; Merriam & Bierema, 2014). Businesses realized customers in modern society have different needs; thus, they implemented cutting-edge digital technologies to automate and streamline business practices through digital transformation (Heavin & Power, 2018).

Branch, Burgos, Serna, and Ortega (2020) indicated transformative digital processes could increase competitiveness, reduce costs, increase agility, and improve user experience in the higher education sector. The strategies for implementation can either contribute to or hinder the adoption of a digital transformation process (Branch et al., 2020; Jackson, 2019). The method of introducing these new technological advances into our lives has put pressure on traditional perspectives of collaboration, which has, in turn, "irrevocably affected how we work, carry out our daily lives, and interact with other people" (Merriam & Bierema, 2014, p. 5). Integrating technologies into daily life has been expedited by the changes imposed by the global coronavirus

disease of 2019 (COVID-19), where individuals have embraced digital transformation to access services and communication (Bonnet & Westerman, 2021).

Dumont and Istance (2010) indicated in our knowledge society, teamwork, social, and communication skills are vital for long-term fitness, and individuals must prioritize being adaptable and flexible to new information. The speed at which things change in this knowledge society are swift, creating challenges for individuals to adapt (Merriam & Bierema, 2014). Several researchers propose various pathways and focus areas for moving digital transformation initiatives forward in higher education (Housewright & Schonfeld, 2008; Kähkipuro, 2018; Loonam, Eaves, Kumar, & Parry, 2018; Sandkuhl & Lehmann, 2017). Pressure for change has come from the constant evolution of technology and the global pandemic, disrupting traditional business processes for institutions (Branch et al., 2020; Christensen & Eyring, 2011). Pucciarelli and Kaplan (2016) indicated higher education institutions have been historically behind the adoption and innovation curve for many business practices and entrepreneurial approaches. With the pressures of a changing and connected global information economy, higher education institutions might seek strategic organizational change initiatives to adapt to such demands (Merriam & Bierema, 2014; Selingo, 2016).

### **Statement of the Problem**

Higher education institutions are traditionally slower in adopting digital transformation (Branch et al., 2020; Buller, 2014; Caruth & Caruth, 2013; Rogers, 2003). Warner and Wäger (2019) described the accomplishments the corporate sector has achieved with digital transformation, emphasizing its ability to enable major enhancements in how business is done and simplify operations. However, higher education has often lagged in the adoption cycle of

innovation (Branch et al., 2020; Caruth & Caruth, 2013). The innovation adoption curve organizes those who partake in innovation into specific categories, placing them on a spectrum from the innovators and early adopters to the late majority and laggards (Rogers, 2003). A collection of elements dictate the feasibility of an innovation diffusing across a population successfully, such as the idea itself, the communication channels and social systems that comprise a unit, and the time scale allocated for diffusion to occur (Rogers, 2003). The rate at which a particular innovation is adopted can be measured by examining the length of time required for a given percentage of the population to embrace innovation (Rogers, 2003).

In addition, evidence has shown there is more behind the diffusion of the innovation than the innovation itself. Rogers (2003) elaborated upon this, indicating the same innovation has been shown to diffuse at a different rate across different populations. The social structures of the given population have been shown to impact this rate specifically, which is comprised of interconnected individuals who take part in the problem-solving process (Rogers, 2003). When looking at higher education institutions, for example, these social structures can often be unique when comparing institutions to each other and their corporate counterparts (Powers & Schloss, 2017). Institutions of higher learning have historically been at odds with the external pressures placed upon them, slowly reacting when presented with multifunctional problems (Burke, 2018; Schein, 2017). These institutions have often been criticized for lacking cost-effective processes and spending exorbitant amounts of money to maintain archaic functions and preserve tradition (Burke, 2018; Caruth & Caruth, 2013; Schein, 2017). This is also true for those innovations considered technological, as these organizations are hesitant to digitize (Kopp, Gröblinger, & Adams, 2019). The society these institutions inhabit is becoming more technologically mature,

leaving a growing disparity between their capacities and those of the outside world (Kopp et al., 2019).

Higher education is not immune to this influence, where pressures from a digitally connected society bring innovative change to the higher education organization (Grajek, 2020; Selingo, 2016). Going through a digital transformation is described as the transition, weaving, and adoption of organizational practice into a digital process (Heavin & Power, 2018). Digital transformation describes the movement organizations go through to replace traditional manual or physical processes with digital or automated ones (Sandkuhl & Lehmann, 2017). Those embarking on digital transformation initiatives aim to improve the end user's experience, daily operations, and business models (Gruman, 2016; Heavin & Power, 2018). Digital transformation has evolved to encompass these shifts in how organizations do business (Grajek, 2020; Jackson, 2019; Kähkipuro, 2017).

Gebauer, Fleisch, Lamprecht, and Wortmann (2020) warned that organizations face a potential paradox when investing in digital transformation processes, where organizations of higher learning cannot simply leverage available capital to advance their technological maturity. Their study provided evidence that investment does not guarantee strategic benefit. Adopting and implementing digital transformations often requires an extensive investment from the organization. Frequently, these investments come in human capital, strategic planning, and a shift in culture (Heavin & Power, 2018). In addition, the organization's current and future customers are students who will be enrolling with digital expectations, which university administrators have historically had to react retroactively to (Elliot, Kay, & Laplante, 2016). The knowledge society these students are submerged in puts pressure on the university administration to evolve and adopt updated business models to survive (Grajek, 2020). There is more than just

meeting the student body's demands when it comes to benefits to the organization. Branch et al. (2020) reported institutions that embrace digital transformation could successfully improve their staff experiences, reduce organizational costs, and expedite processes on campus.

Higher education institutions must undergo what Branch et al. (2020) described as a structural metamorphosis to stay relevant in an evolving society. Though relevancy may be one goal for a university to seek ways to embrace digital transformation practices, other drivers include the ability to be competitive on a global scale, increase agility, reduce costs, and enhance the experiences of all stakeholders (Branch et al., 2020). With the copious benefits of integrating digital competencies into its infrastructure, higher education institutions have continued to lag on the adoption curve (Branch et al., 2020; Buller, 2014; Caruth & Caruth, 2013). This is in contrast to the foundation and mission of these institutions, according to Buller (2014), who stated instead of being a center of innovation, higher education had been seen to repress it. There have been a variety of authors who have proposed pathways or models for institutions to consider as they look to weave digital transformation competencies into their business models and facilitate its diffusion (Jackson, 2019; Kähköpuro, 2017; Perez Gama, Vega Vega, & Neira Aponte, 2018; Tekic & Koroteev, 2019). In a post pandemic society, the nature of higher education places more pressure on these institutions as they are being looked at as playing a vital role in the post-pandemic economy that is even more digitally mature (Márquez-Ramos, 2021). In summary, higher education has been slow to react to change from the external pressures placed upon it (Márquez-Ramos, 2021). Therefore, there is a need to further examine the impact time has on the innovation-decision-making process for digital transformation in higher education.



## **Purpose of the Study**

This study examined digital transformation efforts undertaken by higher education institutions through the perspectives and lenses of those administrators who take part in the adoption of an innovation on campus. The primary purpose of this mixed-methods study was to examine higher education's adoption of digitization initiatives as work is being done globally to implement sustainable digital transformation architecture. With higher education's role to prepare and nurture learning, there has been a systematic lag in implementing successful digital transformation innovations on college campuses (Branch et al., 2020; Buller, 2014; Caruth & Caruth, 2013). As digital transformation is an emerging field without a holistic implementation strategy, this study is designed to better understand how institutions approach and interact with digital transformation innovations. First, the study explored those demographic factors that may predict levels of decision-making process. Furthermore, the study examined those who are implementing digital transformation on a college campus to investigate if there is a relationship between perceived organizational support and decision-making process when implementing digital transformation initiatives. These were further examined by an exploration of the factors that contribute to perceptions of one's organization's capacity for digital transformation and what might drive the agency of initiatives. Through these explorations, this research aimed to enhance the theoretical explanation and conceptual framework that exists for higher education administrators as they progress through the adoption curve for digital transformation initiatives and innovations on their campuses.

## **Research Questions**

RQ1: Does one or more demographic factor predict an employee's level of decision-making in higher education as it relates to digital transformation?

RQ2: What is the relationship between perceived organizational support and the decision-making process in higher education as it relates to digital transformation?

RQ3: What themes contribute to an employee's negative or positive perceptions of their organization's capacity for digital transformation?

RQ4: What challenges contribute to an organization's agency for digital transformation initiatives?

## **Rationale for the Study**

Digitally mature organizations are cited as being more flexible and have the capacity to respond more rapidly to external pressures placed upon them (Fletcher & Griffiths, 2020). Within the higher education ecosystem, digital transformation is a pathway to which the values and operations of the organization can naturally evolve (Valdés, y Alpera, & Cerdá Suárez, 2021). In a survey conducted by Licka and Gautschi (2017), the majority of respondents from higher education institutions expected substantial increases in digitalization on their campuses, with no indication of a decline. Castro Benavides, Tamayo Arias, Arango Serna, Branch Bedoya, and Burgos (2020) noted this increase through a systematic literature review, concluding there are still some variables not being considered, causing a lack of a holistic understanding of digital transformation in higher education. The demand for digital transformation on college campuses will increase in the coming years, and institutions that have embraced it are expected to hold a competitive advantage in the marketplace (Jackson, 2019; Kopp et al., 2019). These

organizations understand this need; however, there are possible unforeseen disruptions that may occur when racing to compete in this climate (Branch et al., 2020; Grajek, 2020; Jackson, 2019). Without a plan or holistic understanding, opposition to change is often present when there are high levels of uncertainty (Rogers, 2003; Valdés, y Alpera, & Cerdá Suárez, 2021).

Digital transformation is more than purchasing a piece of technology and installing it on campus. Instead, it is an institutional and cultural change that requires considerations for sustainability and cultural fit (Branch et al., 2020; Heavin & Power, 2018; Kopp et al., 2019). Institutions that have reported successful digital transformation have done so through smaller compartmentalized and local changes in the institution in what Elliot et al. (2016) described as "small projects for small wins" (p. 4). Though these small projects contribute to the needed literature in the emerging field of digital transformation (Tekic & Koroteev, 2019), the COVID-19 pandemic has demonstrated the fragility of digitally immature organizations and the flexibility provided by digital competencies (Bonnet & Westerman, 2021; Fletcher & Griffiths, 2020). Consequently, additional research is warranted to understand the factors contributing to the phenomenon of higher education institutions trailing behind in digital transformation, thereby earning the label of laggards on the innovation curve (Branch et al., 2020; Buller, 2014; Caruth & Caruth, 2013; Rogers, 2003).

### **Theoretical and Conceptual Framework**

Higher educational institutions are technologically immature compared to organizations in other sectors (Branch et al., 2020; Kopp et al., 2019). In other sectors, administration has leveraged digital transformation as a way to further integrate technology to better enable communication and strengthen the connection to services (Bonnet & Westerman, 2021).

Research into the approaches to integrating digital transformation into the higher education domain is considered an emerging field (Castro Benavides et al., 2020). This study will utilize the diffusion of innovation theory, originally developed by Rogers (2003), to better understand the decision-making process on college campuses when embarking on digital transformation initiatives. The diffusion of innovation theory is a system of ideas that explains the principles of how a product spreads through a social system (Rogers, 2003).

This study will use the theory's four elements to frame the research: innovation, communication channels, time, and social systems (Rogers, 2003). The theory, as outlined by Rogers (2003), is succinctly summarized and graphically represented in Figure 1. Furthermore, the social systems and structures within higher education are unique, which can be explored and noted when examining the diffusion of digital transformation initiatives across the higher education setting (Powers & Schloss, 2017; Rogers, 2003). According to this theory, the more complex the innovation is to understand, the slower it is to be adopted into a population (Rogers, 2003). Digital transformation is a complex and multifaceted endeavor for any business, further confounded by the uncertainty of innovation success (Heavin & Power, 2018; Liu, Chen, & Chou, 2011). With levels of uncertainty in the population, this theory assists in further exploring the variables that may contribute to enhancing or diminishing further diffusion (Rogers, 2003).

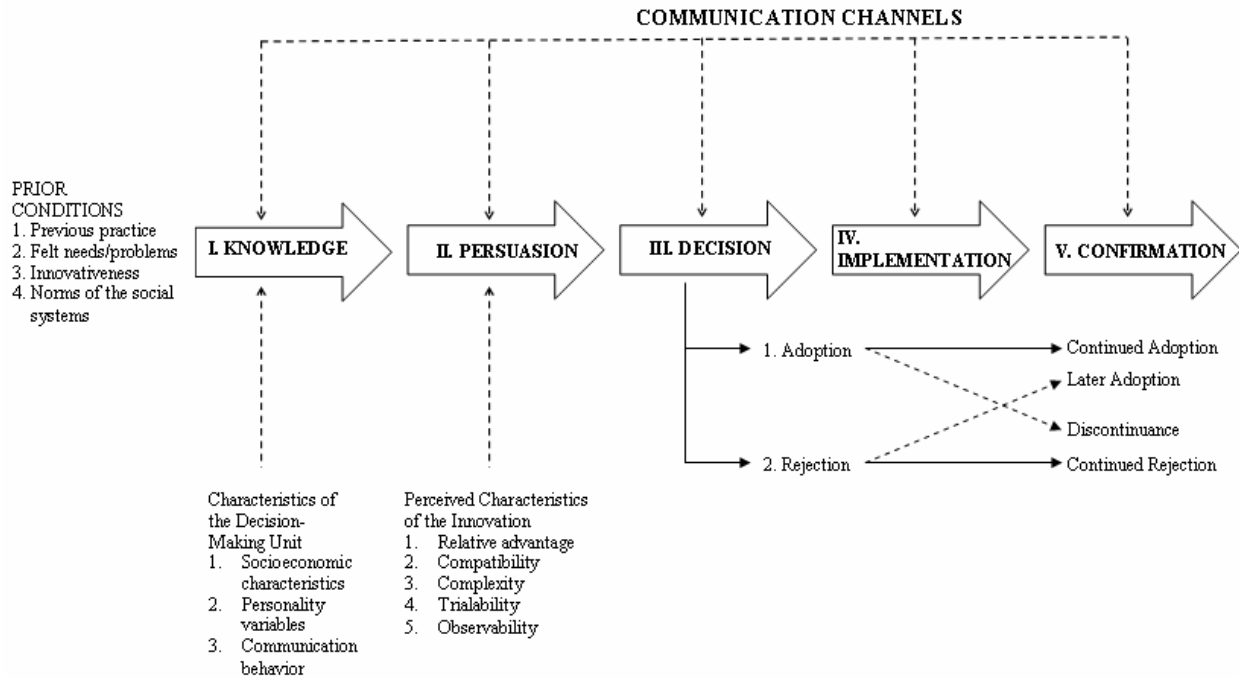


Figure 1

The Five Stages in the Innovation Decision-Making Process Model (Rogers, 2003)

### ***Innovation Theory Criticism***

Lyytinen and Damsgaard (2001) provided evidence of the difficulties that arise when applying the diffusion of innovation theory to complex technologies. They warn of the pitfalls of not including all stakeholders in an analysis, as a lack of understanding of the organizational structure can cause key insights to be missed (Lyytinen & Damsgaard, 2001). It should also be noted that additional accounts of the diffusion process can be gleaned by looking at problems through multiple timescales that are not linear in nature (Lyytinen & Damsgaard, 2001). Ultimately, Lyytinen and Damsgaard (2001) warned against leveraging simplicity and generalizability when exploring diffusion as it can reduce accuracy. Though Rogers' (2003) theory may not completely encapsulate the multidimensional aspects of complex innovation

diffusion for technology, MacVaugh and Schiavone (2010) indicated subsequent theory development also has some limitations. Therefore, the research conducted in this study will ensure multiple dimensions are explored and analyzed when applying the diffusion of innovation theory (Rogers, 2003). Subsequent discussion and analyses of these dimensions will further ensure there is an opportunity for the researcher to investigate potential related reasons or variables that could be overlooked by not considering the whole organizational structure (Lyytinen & Damsgaard, 2001; MacVaugh & Schiavone, 2010).

### **Importance of the Study**

Though digital transformation occurs in various corporate organizations, the higher education organizational structure is unlike a corporation (Caruth & Caruth, 2013; Powers & Schloss, 2017). The difference is derived from the higher concentration of highly educated and decision-making power held by the autonomous professorate (Caruth & Caruth, 2013; Powers & Schloss, 2017). This produces conflicts as successfully identified digital transformation pathways for corporations are not viable or applicable to the higher education structure (Kähkipuro, 2018). This is compounded by a commonly held misconception that digital transformation does not affect higher education (Kopp et al., 2019). Through digital transformation, organizations can increase their digital maturity, creating a more flexible and enabled system capable of reacting to changes in the ecosystems in which they exist (Fletcher & Griffiths, 2020). Specific to higher education, Branch et al. (2020) provided evidence that digital transformation can reduce business costs, increase the organization's agility, and increase the potential for improving the experience of faculty, staff, and students.

Despite evidence supporting the need for higher education to embrace innovative technologies, according to Kopp et al. (2019), few studies have been conducted on how digital transformation can be successfully carried out in a higher education setting. In the absence of literature on the successful implementation of digital transformation, Elliot et al. (2016) reported that institutions have only engaged in small projects that have allowed them to have small successes. The small scale of these successes has limited the scope of the current literature available, where a holistic dimension has not yet emerged (Castro Benavides et al., 2020). The COVID-19 pandemic put additional pressure on these organizations to evolve and adapt at an accelerated rate (Bonnet & Westerman, 2021; Cutlip, Richardson, Vidwans, Ladd, & Lundy, 2020). Therefore, attention must be paid to how strategic and operational decisions around digital transformation can sustainably progress the organization forward (Valdés, y Alpera, & Cerdá Suárez, 2021). Consequently, this study is designed to explore how time interacts with the innovation-decision process for digital transformation and to better understand the role time plays when an organization engages with a given innovation. Through this exploration, this research may contribute to understanding how higher education institutions can progress their digital maturity and contribute to the needed holistic dimension for this field (Castro Benavides et al., 2020).

### **Definition of Terms**

Adoption - Adoption is a process described by Rogers (2003) as occurring in five stages that can occur at a variety of speeds. The adoption stages occur linearly based on the actions of a decision-making unit and are labeled as knowledge, persuasion, decision, implementation, and confirmation.

Knowledge Stage - The knowledge stage, also known as the awareness stage, encompasses the initial exposure to an innovation and begins the decision-making unit's discovery of how the innovation functions. The initial exposure to the innovation may be due to need, sourced from a dissatisfaction or frustration with current processes or systems (Rogers, 2003).

Persuasion Stage – The knowledge stage is followed by the persuasion stage, where the decision-making unit is influenced by social perspectives, forming a positive or negative attitude toward the innovation. Rogers (2003) stated that all innovations carry with them some uncertainty, which at this stage the individual may leverage hypothetical scenarios in application to their current or future situations. They may also seek social reinforcement to reinforce their new ideas.

Decision Stage - The decision stage takes the pros and cons into consideration and leverages them to decide on whether to embrace the innovation or not. Decision-making units do not often fully reject or adopt at this stage but instead adopt it on a probationary basis (Rogers, 2003).

Confirmation Stage - Proceeding the decision stage is called the implementation stage of adoption, which can be situational to the innovation itself as it is worked into the culture and leveraged by the decision-making unit. Finally, the adoption cycle concludes with confirmation, which may also be referred to as the continuation stage. Here, the decision-making unit continues the transmission of the innovation but may further examine the decision-making process behind the innovation adoption (Rogers, 2003). Cognitive dissonance and exposure to conflicting messaging about the innovation at this stage can either cause the decision-making unit to decide to continue adoption, adopt the



innovation at a later date, continue adopting and reject the innovation at a later date, or reject the innovation entirely (Rogers, 2003).

Diffusion - When framed around innovation, Rogers (2003) defined diffusion as a form of communication, in which a particular idea moves through channels at various speeds to members of a social system. In this context, it is seen as an aspect of social change within a social system, as a new idea is distributed across social channels and enacts change in a given population. Specifically, it is "the process by which an innovation is communicated through certain channels over time among the members of a social system" (Rogers, 2003, p. 11).

Digital transformation - Terminology surrounding digital transformation has existed since the invention of the vacuum tube computer, where one innovation reverberated into another and progressed an organization's ability to make decisions and increased the speed of their accounting practices (Heavin & Power, 2018). Digital transformation is often seen to encompass the shift away from traditional physical or manual processes to the use of digital technologies that may replace or enrich them (Sandkuhl & Lehmann, 2017). Bonnet and Westerman (2021) indicated the foundations of digital transformation are built upon technology, data, and applications that work in tandem to support an organization's operations.

Holistic dimension - Tekic and Koroteev (2019) described digital transformation as being an emerging field. Many studies are attempting to describe the constructs of digital transformation and make connections between them; however, according to Tekic and Koroteev (2019), these attempts ultimately failed to solidify a firm dimension that captures digital transformation fully. In higher education specifically, Castro Benavides

et al. (2020) stated a variety of routes to accomplish digital transformation have been described, but because of the emerging nature of the field, more research is needed to understand how institutions can more broadly confront the requirements of a digitally maturing economy and society.

Knowledge society - The Internet and other technologies have increased the rate at which individuals can communicate and share ideas. In this global economy, knowledge is an economic driving factor, where companies are leveraging human and intellectual capital in their business practices (Dumont & Istance, 2010).

Technology innovation - Breakthrough products and technological innovations have assisted individuals living in the 21<sup>st</sup> century pursue a quality of living not imaginable for those who occupied the centuries prior (Morris, 2011). Technological innovation only exists if an individual can apply it to practice (Eveland, 1986).

Time - Rogers (2003) described four elements that dictate how a given innovation may diffuse. One of these elements is time, which is a dimension that can measure when a decision-making unit first interreacts with a given innovation all the way to either their adoption or rejection of the innovation.

### **Methodological Assumptions**

The researcher of this study relied on several methodological assumptions to conduct the research successfully. The first assumption is that the higher education organizations examined continue to face pressures from a digitally connected society, which drives a need for digital transformation initiatives. This assumption is supported by an understanding that there is a digital landscape that is constantly evolving that organizations need to adapt to in order to remain

competitive (Grajek, 2020; Selingo, 2016). In addition, it is also assumed that challenges will be faced by higher education institutions in their digital transformation journey, including the need to meet student expectations, evolve their business models, and reduce organizational costs which can be addressed through successful and sustainable digital transformation initiatives (Branch et al., 2020; Elliot et al., 2016).

The researcher assumed the adoption of digital transformation initiatives diffuse and follow a non-linear innovation-decision-making process. The adoption curve, as proposed by Rogers (2003), is used as a framework to explore the decision-making process across institutions and individuals with varied levels of experience in the industry. In addition, it is assumed that a higher education institution needs to progress along the adoption curve to stay relevant and competitive. The importance of these progressions is through the potential of having these initiatives enhance agility, reduce costs, and improve stakeholder experiences (Branch et al., 2020; Buller, 2014).

### **Delimitations of the Study**

The University of Tennessee System is comprised of six educational units, with primary campuses distributed throughout the state of Tennessee. This study is delimited through cluster sampling University of Tennessee System employees across the University of Tennessee System who work in Information Technology (IT) departments. Survey requests and consent was sent to each organizational units' Chief Information Officer (CIO), the participant, as well as the Institutional Review Board (IRB). To narrow the scope of the study and increase validity for the research questions, employees who were in IT roles were asked to participate.

## **Limitations of the Study**

The population who participated was not randomly selected due to the nature of the scientific exploration. Therefore, the researcher ensured the sample size allowed for a proper representation of the target population. When interacting with this target population, certain aspects of this study were introduced and explained through the consent process (Gliner, Morgan, & Leech, 2017). It is therefore assumed that participants answered the survey questions honestly. Confidentiality ensured responses remained private, thereby mitigating the influence of social desirability bias, which is the tendency for participants to provide answers that conform to societal norms rather than their genuine beliefs (Larson, 2019). In addition, employees may be hesitant to share information about their current employer, even if their responses are confidential. Furthermore, the scope of this study was to examine higher education institutions' perceptions of digital transformation; therefore, the findings of this study may not be applicable or may not be replicable outside of these contexts.

## CHAPTER II

### REVIEW OF THE LITERATURE

Organizations are changing their business models because of pressures from their external environment and the influence of their customer bases (Mergel, Edelmann, & Haug, 2019; Rodríguez-Abitia & Bribiesca-Correa, 2021; Verhoef et al., 2021). These pressures derive from expectations, technological changes, and a drive to remain relevant in an evolving market (Mergel et al., 2019; Rodríguez-Abitia & Bribiesca-Correa, 2021). The Fourth Industrial Revolution has generated additional technological advancements as it puts unilateral pressure across business sectors, causing major changes to the workplace and how business is done (Castro Benavides et al., 2020; Ifenthaler & Egloffstein, 2020; Rodríguez-Abitia & Bribiesca-Correa, 2021).

Technological innovation and evolution are byproducts of scientific methods and practical problems (Berkun, 2010). Technology is commonly comprised of two aspects: hardware and software (Rogers, 2003). The hardware component could be a product, equipment, or material that manifests as a physical object (Rogers, 2003). Software, in comparison, includes the skills, procedures, principles, and knowledge that may conglomerate into an information base for a given tool (Rogers, 2003). Though every technology contains a software aspect to it, the nature of software can make it less visible when compared to the tangible hardware (Rogers, 2003). Technology and its corresponding hardware and software aspects are often seen as evolving linearly on a straight path toward a perfect and complete product (Berkun, 2010).

Berkun (2010) stated this is a common misconception; these changes occur much like how life on Earth has evolved, branching out in multiple paths with many dead ends. Technology, therefore, is often forgotten, re-discovered, and sometimes ignored as it is gradually adopted and integrated into a population (Berkun, 2010; Rogers, 2003).

Digital transformation has arisen as a pathway for organizations to dynamically address the sum of these technological innovations strategically (Jackson, 2019; Kopp et al., 2019). Therefore, digital transformation enables a change process and modification of the organizational business model to enhance and adapt business operations (Bonnet & Westerman, 2021; Gebayew, Hardini, Panjaitan, Kurniawan, & Suhardi, 2018; Kopp et al., 2019). For some organizations, according to Liu et al. (2011), the business model must be reconstructed due to the complex interactions between the technological innovations and the organization's business strategy, power distribution, and overall structure. This has been cited as causing tension amongst organizational stakeholders, where resistance to change and frustrations arise as new business models exist in parallel with traditional ones (Rof, Bikfalvi, & Marquès, 2020; Warner & Wäger, 2019). Warner and Wäger (2019) further elaborated upon this, stating that even though there is motivation to support digital transformation, organizational stakeholders find it challenging to balance the creation of new digital capabilities, leveraging existing business practices, as well as simultaneously ensuring compatibility with ongoing organizational dependencies. Though digital transformation has been shown to enable decision-making, connectivity, and innovation, higher education has continued to fall behind other sectors in technological innovation and digitalization (Branch et al., 2020; Buller, 2014; Caruth & Caruth, 2013; Rodríguez-Abitia & Bribiesca-Correa, 2021; Rof et al., 2020). This is partially due to a history of institutions slowly reacting to external pressures placed upon them, often

implementing solutions that cost exorbitant amounts and do not produce a return on investment in an attempt to preserve archaic functions and maintain traditions (Burke, 2018; Caruth & Caruth, 2013; Schein, 2017).

## **Digital Transformation**

Terminology related to digital transformation has been present since the invention of the vacuum tube computer. This innovation had a profound impact on an organization's decision-making capabilities and significantly accelerated accounting practices (Heavin & Power, 2018). Organizations have used technological innovations to impact the experience of the customers, the daily operations and processes of the organization, and the business models they follow (Gruman, 2016; Heavin & Power, 2018). Initially, these were unrelated initiatives or projects to implement new technology in the workplace. As organizations mature in their digital capability, they shift to a strategic and systematic approach for digital technology (Bonnet & Westerman, 2021). In this regard, digital transformation has evolved to become a term used to encompass these implementations, and it is viewed as a solution for increasing the effectiveness and efficiency of a given company (Heavin & Power, 2018). Distilled down further, according to Tekic and Koroteev (2019), digital transformation can take on two distinct and critical dimensions for an organization in the form of their usage of digital technologies and their business model's readiness to interact with digital operations.

## **Digital Transformation and Innovation**

Students who are entering the classroom and workforce are doing so as digital natives, growing up amongst social and technological trends in digitalization (Conefrey, 2016; Merriam

& Bierema, 2014; Valdés, Alpera, & Suárez, 2021). The Internet, which is growing with information on a daily basis, is a source of information these digital natives are accustomed to and comfortable navigating (Alenezi, 2021; Conefrey, 2016; Dumont & Istance, 2010; Merriam & Bierema, 2014). Morris (2011) explained that modern society uses innovative ways to handle and differentiate modern tasks. This is due to there not being one answer or a singular correct path an innovation can take and instead, there are a multitude of opportunities that can be guided by the priorities of the given population (Morris, 2011). Information and knowledge is no longer stored in a physical location but instead are available in a variety of formats on a vast variety of platforms made accessible through the Internet (Alenezi, 2021; Morris, 2011).

Since civilization has embraced industry, major technological jumps have driven paradigm shifts, which can be slotted into four distinct industrial revolutions (Lasi, Fettke, Kemper, Feld, & Hoffmann, 2014). The initial revolution, Industry 1.0, was hallmarked by the creation of the steam engine, shifting a predominantly handcrafted and agrarian economy to one that is driven by manufacturing (Baygin, Yetis, Karakose, & Akin, 2016; Xu, David, & Kim, 2018). In the early 20<sup>th</sup> century, Industry 2.0 began with the diffusion of the combustion engine, electricity, and Henry Ford's production line (Baygin et al., 2016; Xu et al., 2018). The third, and previous industrial revolution, was Industry 3.0, which began in 1960 with programmable devices that could facilitate the automation of production (Baygin et al., 2016; Xu et al., 2018). The Fourth Industrial Revolution, called Industry 4.0, is hallmarked by technological breakthroughs and new technologies in areas such as artificial intelligence, the Internet of Things, automation, and quantum computing (Schwab, 2016).

Since beginning in 2011, Industry 4.0 has not only innovated industries globally, but it has also increased the interconnectivity and diversity of technology available (Schwab, 2016).



Ustundag and Cevikcan (2017) highlighted this revolution focuses on strategies and opportunities for all stages of service and production to become digitized. These are centered around the main purpose of increasing an organization's competitive power (Ustundag & Cevikcan, 2017). With automation being a pinnacle variable, the human dimension cannot be forgotten (Bonnet & Westerman, 2021; Ustundag & Cevikcan, 2017). Instead of replacing a worker, researchers are instead seeing technological innovations supporting them in facing dynamic environments, increasing interconnectedness, and enabling them to work faster and smarter (Bonnet & Westerman, 2021; Turulja & Bajgoric, 2018). Therefore, it is critical to prepare and nurture the workforce with critical information and communication technology skills that complement the technical skills required for a given position (Marks, AL-Ali, Atassi, Elkishk, & Rezgui, 2021; Ustundag & Cevikcan, 2017).

Meritocracy is seen to stifle this process, as it is the belief that factors will allow the optimal process to be adopted (Berkun, 2010). Berkun (2010) warned of the temptation of adopting innovation based on the allure meritocracy can bring, where culture, tradition, politics, and long-term considerations often take precedence over the fostering of an innovative process. Therefore, a point of focus must be established when initiating a change or implementing an innovation (Berkun, 2010; Miller & Wedell-Wedellsborg, 2013). The adoption of an innovation, therefore, needs to be intentional and structured, placing focus on execution and persuasion (Berkun, 2010).

Selingo (2016) reported that innovative change has brought repercussions within the higher education sector, where technology and big data are "taking on new roles within the university" (p. 4). Industry 4.0 and the knowledge society it has created are pressuring university administrations to evolve and adopt updated business models to survive (Grajek, 2020; Perez

Gama et al., 2018). Those who are poised to embrace technological innovation effectively have a competitive advantage in the higher education sector (Grajek, 2020; Jackson, 2019). Adapting inputs and throughputs of the higher education system is a potential response to providing outputs that benefit and contribute to the modern knowledge society (Merriam & Bierema, 2014; Mumby & Kuhn, 2018). With this in mind, Moravec (2008) proposed higher educational institutions take a systematic approach to lead and weave innovative thinking into the systems that may compete in what they describe as a new standard of knowledge production. Digital transformation has evolved as a term that encompasses these paradigm shifts (Grajek, 2020; Jackson, 2019; Kähköpuro, 2017).

### **Digital Transformation and Digitization**

There is a distinction between digitization and digital transformation; digitization is strictly about the technology and digital transformation includes the value brought to the customer (Bloomberg, 2018; Verhoef et al., 2021; Verina & Titko, 2019). Digital transformation, therefore, assists in overlaying systems and companies in a way that allows them a diverse means to leverage solutions that are digitalized (Vrana & Singh, 2021). Though digitization can be a component of digital transformation, digitization is more of an integral component of the society that is driven by Industry 4.0, pushing development of economics, business, and society (Verina & Titko, 2019; Xu et al., 2018). Organizations can undertake multiple digitalization initiatives and automation projects. However, without making cross-cutting organizational changes to their business models, the organization may not necessarily advance in terms of digital maturity or digital transformation (Bloomberg, 2018).

## **Business Models and Digital Transformation**

Leveraging new digital technologies in this manner under the umbrella of digital transformation is considered to be a constant and ongoing process that permeates the daily operations of an organization (Warner & Wäger, 2019). Gebauer et al. (2020) warned of potential paradoxes organizations face when investing in digital transformation processes to advance their business models, providing evidence that investment does not guarantee strategic benefit or a financial return on investment. For example, an individual's readiness to use such technologies can be influenced by a variety of factors, including positive and negative feelings that the business model may not account for (Wook, Yusof, & Nazri, 2014). Henriette, Feki, and Boughzala (2016) elaborated that investments must go beyond just those that are fiscal in nature and emphasized that buy-in must come from the organization's key decision-makers. In addition, this needs to encompass organizational and cultural stakeholders who can work in tandem and are able to engage with the organization's key decision-makers (Henriette et al., 2016). The technology can become a facilitator or disruptor for the organization; therefore, digital transformation conversations must account for organizational and cultural dimensions (Henriette et al., 2016; Perez Gama et al., 2018). In addition, digital transformation is seen as a multifaceted phenomenon, meaning that how it interacts within a given organization can have different implications and aspects that complicate the process (Tekic & Koroteev, 2019). In an effort to create a conceptual framework for digital transformation, Verina and Titko (2019) found that digital transformation can be grouped into three core elements in business: processes and management, technologies, and people.

### ***Process and Management***

Heavin and Power (2018) created a decision guide for managers to consult as a strategic point for successfully traversing digital transformation in their organization. They concluded that transformation can be grouped into three distinct task categories: tactical, operational, and strategic (Heavin & Power, 2018). Tasks that are seen as providing more value to the organization also require a higher digital transformation maturity (Heavin & Power, 2018). To progress an organization to a higher maturity level, key elements are the processes, management of business, as well as the business models (Gebayew et al., 2018; Heavin & Power, 2018; Verina & Titko, 2019). Organizations that have seen success with digital transformation are also those that have changed their business models and policies to a modern and new digital business model (Gebayew et al., 2018). These shifts in how the organization does business most heavily impact operations and process management (Gebayew et al., 2018). This requires open communication between managers and establishing proper communication pathways for employees to assist in embracing what can be considered an overall organizational change (Verina & Titko, 2019).

### ***Technologies***

The technologies that are key to Industry 4.0 are at the forefront of digital transformation (Verina & Titko, 2019; Xu et al., 2018). These include data, cloud computing, artificial intelligence (AI), smart devices, and advanced connectivity of systems through the Internet of Things (Gebauer et al., 2020; Xu et al., 2018). These technologies assist in bridging the physical world with a digital one, where both work in tandem (Gebauer et al., 2020). To accomplish this, some organizations have had successes in updating their technological infrastructure to better

facilitate the interweaving of these technologies into their organization (Hakan, 2020). Though seen as a component, these organizations have reportedly been unsuccessful in accomplishing widespread digital transformation that encompasses the entire enterprise (Bonnet & Westerman, 2021; Elliot et al., 2016; Gebauer et al., 2020; Hakan, 2020; Tekic & Koroteev, 2019). Digital transformation, at its core, is more than just technology as it is also social disruption that impacts everyone (Kopp et al., 2019).

### *Employees*

Through digitalization and implementation of new digital technologies, the workplace is evolving and, therefore, so are the jobs people are occupying (Bloomberg, 2018). Automation is seen as a pillar of the previous industrial revolution, Industry 3.0, and has been seen as a driver for digitalization (Baygin et al., 2016; Bloomberg, 2018; Xu et al., 2018). Employees' resistance to change can be a considerable barrier to digital transformation in the workplace (Bonnet & Westerman, 2021; Verina & Titko, 2019). Bonnet and Westerman (2021) suggested that one source of employee resistance comes from the inclination that they will eventually be replaced by autonomous machines or artificial intelligence (Bonnet & Westerman, 2021). Instead, researchers are learning that many advances in these areas are progressing towards augmenting how a worker interacts in their job tasks rather than completely replacing them (Bonnet & Westerman, 2021). Advances in robotics and augmented reality, for example, are some of these augmentations that allow employees to work in a safer environment while expediting task completion through increased efficiency and capacity to engage in innovative approaches (Bonnet & Westerman, 2021). It is imperative that managers communicate and tailor their

messaging to ensure employees are included in the digital transformation process (Verina & Titko, 2019).

Digital transformation primarily focuses on bringing value to customers, which involves prioritizing their needs and experiences. (Gebayew et al., 2018; Verina & Titko, 2019; Vrana & Singh, 2021). To be successful in this, Vrana and Singh (2021) recommended organizations put the customer first through working on business models that incorporate more customer collaborative endeavors. Through an increasing number of digital touchpoints, some companies are struggling to keep up and manage an increasingly digitally mature customer base (Verhoef et al., 2021). Instead, customers should be seen as change agents and as a stakeholder in adapting the business model (European Commission, 2014; Verhoef et al., 2021).

### **Corporate Digital Transformation**

Within the corporate sector, digital transformation is a mechanism for value creation as changes in technology have forced changes in both the private and public sector (Jafari-Sadeghi, Garcia-Perez, Candelo, & Couturier, 2021). In some cases, these companies have been driven to explore innovative ways of doing business through technological adoption; however, Industry 4.0 has also caused some to have no choice but to adopt new and emerging technologies as they find their existing business models becoming obsolete (Gebayew et al., 2018; Jafari-Sadeghi et al., 2021; Liu et al., 2011). When one organization adopts a new and innovative business model, there is a chain effect in the market that has caused consumers' behaviors and expectations to add additional pressure to the equation (Merriam & Bierema, 2014; Verhoef et al., 2021). In their pioneer framework, Liu et al. (2011) found that management of existing resources and the ability to strategically implement new resources can assist a corporation in handling digital

transformation. These, in turn, cause the organization to modify their business policies and plans to incorporate new business models, often encompassing how operation and process management occur (Gebayew et al., 2018).

Westerman, Bonnet, and McAfee (2014) evaluated 50 companies for what they define as the nine building blocks for digital transformation. All nine of these elements were distilled under three major umbrellas: transforming customer experience, transforming operational processes, and transforming business models. Since this evaluation, Heavin and Power (2018) have argued there has been limited consideration from scholars on the challenges of operationalizing a transformative digital transformation approach. In a follow-up analysis, those organizations who have made headway in the following years provided evidence that organizations who are able to foster digital capabilities and leadership capabilities when considering technological innovation are capable of driving systematic and profitable organizational change (Bonnet & Westerman, 2021).

Warner and Wäger (2019) also emphasized the importance of agility of the corporate organization when it comes to digital transformation, indicating it needs to be a core mechanism fostered in the organization and should be instilled into the business model, how employees collaborate, as well as the overall culture of the business. Scholars agree there are a plethora of opportunities and challenges for corporate organizations when it comes to digital transformation; however, there have been some difficulties in quantifying all of these (Gebayew et al., 2018; Heavin & Power, 2018). It is, therefore, important to also consider the role leadership plays in navigating the pathway to digital maturity (Heavin & Power, 2018; Tekic & Koroteev, 2019; Verina & Titko, 2019; Warner & Wäger, 2019).

In an effort to operationalize digital transformation approaches, Heavin and Power (2018) proposed that leaders may benefit from a decision support guide. Strategic digital transformation requires leadership to lead by vision rather than risk avoidance (Tekic & Koroteev, 2019). Often, organizations that are labeled as not digitally mature are also those that have administrators who act in response to risk avoidance (Tekic & Koroteev, 2019). Without a solid strategy and vision from leadership, these organizations will continue to remain digitally immature as they tackle small projects that do not progress the organization through digital transformation (Bonnet & Westerman, 2021; Elliot et al., 2016; Gebauer et al., 2020; Tekic & Koroteev, 2019). Without a vision or growth path defined, the decision-makers at an organization can be discouraged by the lack of revenue enhancement singular digitalization investments may produce (Gebauer et al., 2020). Therefore, it is imperative that leaders and organizations recalibrate their organizational structures to better gauge and adopt new key performance indicators to allow for digital maturity (Verhoef et al., 2021).

### **Higher Education and Digital Transformation**

In a report completed by Deloitte (2019), some governments have taken note of countries that have corporations and legislature that are considered digitally mature. The governments in these countries have begun to pass policies and initiatives to address digital transformation on the political and legislative level (Deloitte, 2019; Vicente, Lucas, Carlos, & Bem-Haja, 2020; Xiao, 2019). Institutions of higher education are pressured by global and national policy trends, which has been a challenge for them to face because transformation is being forced upon them instead of there being a bidirectional relationship to accommodate the unique challenges attached to this type of organization (Branch et al., 2020; Marks et al., 2021). This is due to these organizations



being historically slow to change and adapt, specifically when it comes to digital transformation (Branch et al., 2020; Burke, 2018; Pucciarelli & Kaplan, 2016; Schein, 2017). This slow response has allowed the sector to be outpaced by other industries, and according to Rodríguez-Abitia and Bribiesca-Correa (2021), culture and leadership are key variables to the issue.

The transition from printed journal articles to electronic depositories caused a shift in how scholars at universities consume scholarly literature (Housewright & Schonfeld, 2008). This transition occurred unilaterally, as some disciplines became more integrated with digital practices while others remained analog for some time. As faculty began to increasingly value electronic resources, preferences for how faculty utilized digital resources also shifted (Housewright & Schonfeld, 2008). The transition and diffusion of digitalization was empowered by the cultural role and habits of the consumer, ultimately being dictated by preference (Housewright & Schonfeld, 2008). The digital technology must have a cultural value when being integrated and supported, especially when risks are involved (Branch et al., 2020; Brooks & McCormack, 2020; Warner & Wäger, 2019). However, higher education's structure causes digitization and digital transformation to be unevenly implemented across the organization (Brooks & McCormack, 2020; Housewright & Schonfeld, 2008). This is compounded by organizational units incorrectly viewing digitization as an issue and initiative for only the organization's IT department (Kopp et al., 2019).

### ***Digital Transformation and Students***

Pedro (2010) stated the generation of students entering the halls of institutions of higher learning are now known as digital natives. Being familiar with this digital landscape, Rof et al. (2020) found that students enroll already highly motivated to leverage digital tools in their

learning. Kopp et al. (2019) indicated that, at the time of their study, there had not been any scientific explorations of what digital competencies students bring with them when first entering higher education. These competencies include media literacy, digital content creation, cybersecurity, digital well-being, data literacy, problem-solving, critical thinking, communication, and collaboration (European Commission, 2019). Students may have some proficiency with these competencies when entering the classroom, but they often need to reframe their understanding and application to fit the higher education setting (Kopp et al., 2019). In addition, Kamsker, Janschitz, and Monitzer (2020), as well as Kopp et al. (2019), denoted that institutions need to grow and nurture these digital competencies further as students' progress through their degree and transition into the workforce.

As digital transformation further increases the need for higher education to cultivate digital competencies into a student's holistic learning experience, it also is changing the way students interact with the faculty and staff on campus (Hakan, 2020; Kamsker et al., 2020; Kopp et al., 2019; Marks et al., 2021). Digital transformation is driving innovation and change in how universities track admissions, optimize enrollment, and use tools and data to inform academic advising (Marks et al., 2021). Staff can leverage these instruments and data to improve students' experiences on campus (Marks et al., 2021). In addition, the curriculum faculty curate for these students is evolving as digitization enables more customizable learning experiences (Hakan, 2020; Kamsker et al., 2020). For example, learners can benefit from tutoring and study paths derived from artificial intelligence that supplements and supports students' experiences in the classroom (Kamsker et al., 2020; Marks et al., 2021). These changes place the learner in an active rather than passive role as they interact with the curriculum (Hakan, 2020).

### *Advantages to Digital Transformation in Higher Education*

Specifically to higher education, digital transformation increases the organization's ability to compete in the digital economy, improves the experience of users, reduces costs, and increases agility (Branch et al., 2020; Marks, AL-Ali, Atassi, Abualkishik, & Rezgui, 2020). Though digital transformation can reduce cost, it also requires cost up front in the form of an investment by the university (Brooks & McCormack, 2020; Rodrigues, 2017). Universities are often constrained financially, which contrasts with the often high price tag attached to emergent technologies (Rodrigues, 2017). Kopp et al. (2019) juxtaposed this perspective with data showing that many of these costs are already part of the organization's scheduled expenses, such as training and maintaining technology infrastructure. Institutions should focus on being strategic and intentional through dedicating budget lines specifically for digital transformation (Kopp et al., 2019).

In a study conducted by Branch et al. (2020), the changes in business models needed to successfully transverse digital transformation require intentional actions taken by leaders in higher education. Branch et al. (2020) provided further support for these findings, indicating that leadership is an important dimension as well as the investment in the people who make up the organization. This can be done through creating an understanding of the need for change and fostering awareness of what digital transformation is and how the organization can move forward with it (Branch et al., 2020). The lack of a vision, specifically one that is holistic for the organization, has been a barrier for growth as leadership has struggled to implement impactful digital transformation on college campuses (Branch et al., 2020; Marks et al., 2020; Rodrigues, 2017). This is attributed to the misalignment of perceptions between the organization's level of digital transformation maturity and the fundamental mechanics of digital maturity as a whole

(Marks et al., 2020). Without the evolution of leadership to facilitate organizational wide digital transformation competency, data structure, and process, higher education will continue to fail at digital transformational change as it fights a firm organizational culture (Brooks & McCormack, 2020; Rodrigues, 2017; Warner & Wäger, 2019).

### **Summary of Literature Review**

In this literature review, a comprehensive evaluation was conducted, exploring the concept of digital transformation in depth. Unlike digitization, which often involves the conversion of paper-based processes to digital formats, digital transformation is a more complex process that involves the integration of digital technologies into all aspects of an organization. This section primarily focuses on how digital transformation affects organizations, innovation, business models, and higher education. In addition, some emphasis was placed on the need to adapt to the realities of Industry 4.0, the Fourth Industrial Revolution. To facilitate successful digital transformation in an organization, there is a need for institutional leaders to champion the change and create a culture of innovation and collaboration. The workforce itself needs to be able to leverage digital skills that are essential for keeping themselves and their businesses competitive, which will allow them to be able to adapt to a workplace that has changing demands.

## CHAPTER III

### METHODOLOGY

#### **Description of Sample and Population**

The University of Tennessee System has five campuses across the state of Tennessee located in Knoxville, Chattanooga, Pulaski, Martin, and Memphis. In addition, the University of Tennessee System office, as well as its two statewide institutes and extension, has IT staff working within the system office and its various institutes across the state of Tennessee. Across these organizational units, approximately 416 IT professionals were the sample population this study drew upon. Though some individual positions may include elements analogous to this study's focus, employees will only be considered for inclusion if they are full-time and their position is primarily within the IT field.

With the IRB approval of this research study (Appendix A), the survey participants were asked to report their gender, age, ethnicity/race, job role, years at the institution, and the department they work for in their organization. Responses were collected anonymously to increase the privacy of the information being collected. Instead of identifiable variables tied to each entry, upon submission, participants were assigned a randomized unique identifier to ensure collected data could be grouped under a unique anonymous key. This unique key allowed data to remain confidential but organized throughout data analysis.

## **Research Design**

This study employed a mixed-methods approach, combining qualitative and quantitative data and analysis. Quantitative data collected from a distributed survey was analyzed using multiple regression for research question one and Pearson's correlation for research question two. A generic qualitative inquiry in conjunction with inferential statistics aided in the analysis of the collected data and gave insights into a larger population (Kahlke, 2014; Percy, Kostere, & Kostere, 2015). The data was analyzed through a process of coding, categorizing, and synthesizing to identify patterns and themes that emerged from the qualitative data. To further evaluate the proposed research questions, each qualitative survey question was analyzed through emergent thematic coding (Creswell, 2013). This approach required the sample to be reviewed several times, providing opportunities for themes to emerge from the data (Creswell, 2013).

The researcher bracket themselves to acknowledge potential bias from previous experiences better (Creswell, 2013). Bracketing allows the researcher to recognize their potential bias from working closely with the research topic and, therefore, take steps to minimize how one's own social and cultural experiences may shape interpretation (Creswell, 2013). In addition, because the researched population brings a variety of experiences specific to particular times and places, Hermeneutical coding occurred to better provide context and validation to the data (Creswell, 2013). Hermeneutical research, therefore, provides additional insight and meaning for an individual's interaction with digital transformation in the context of this research (Creswell, 2013).

**Variables**

This study’s dependent variable is the decision-making process, specifically when considering the employees in a higher education organization. This variable’s measurement was a 7-point Likert scale that explored the dimensions of strategy, organization, customer, ecosystem, technology, operations, and innovation (Beach, 2021; Valdez-de-Leon, 2016). This study had two independent variables, the first being demographic factors. The second independent variable for this study was organizational support and readiness. Table 1 provides a complete overview of the dependent and independent variables, specifying their levels and the measurement scales used.

Table 1 Independent and Dependent Variables

	Variable Labels	Levels of the Variable	Scale of Measurement
Dependent Variable	Decision-Making Process	Likert Scale	Scale
Independent Variable 1	Job Role	<ol style="list-style-type: none"> <li>1. I manage people and things including resources and budgets, and I CAN hire and fire employees</li> <li>2. I supervise people working under me and their activities, and I CANNOT recommend hiring and firing actions</li> <li>3. I am an employee and I do not have supervisory or</li> </ol>	Nominal

		management responsibilities	
	Work Location	<ol style="list-style-type: none"> <li>1. Majority in the Office</li> <li>2. Majority at home</li> </ol>	Nominal
	Education Level	<ol style="list-style-type: none"> <li>4. Highschool Degree</li> <li>5. Vocational School degree</li> <li>6. Bachelor degree</li> <li>7. Master degree</li> <li>8. PhD</li> <li>9. Other professional certification</li> </ol>	Ordinal
	Time with the University System	<ol style="list-style-type: none"> <li>1. Under 1 year</li> <li>2. 1-3 years</li> <li>3. 4-6 years</li> <li>4. 7-10 years</li> <li>5. 11-20 years</li> <li>6. Over 20 years</li> </ol>	Ordinal
	Time in Current Job Function	<ol style="list-style-type: none"> <li>1. Under 1 year</li> <li>2. 1-3 years</li> <li>3. 4-6 years</li> <li>4. 7-10 years</li> <li>5. 11-20 years</li> <li>6. Over 20 years</li> </ol>	Ordinal
	Age	<ul style="list-style-type: none"> <li>• Short answer text box that allowed a number to be submitted</li> </ul>	Scale
	Gender	<ol style="list-style-type: none"> <li>1. Male</li> <li>2. Female</li> <li>3. Non-binary / third gender</li> <li>4. Prefer not to say</li> </ol>	Nominal
	Ethnic Background	<ol style="list-style-type: none"> <li>1. Hispanic / Latino</li> <li>2. White</li> <li>3. Black</li> <li>4. Native Hawaiian / Pacific Islander</li> <li>5. Asian</li> <li>6. Native American / Alaska Native</li> <li>7. Two or More Races</li> </ol>	Nominal



		8. Other (field available for self-identification) 9. I prefer not to say	
Independent Variable 2	Organizational Support and Readiness	10. Likert Scale	Scale

### **Data Collection and Procedures**

Researchers at the University of Southern Denmark created a survey instrument to gauge how a European manufacturing firm has been impacted by digital transformation (Beach, 2021). With permission, this study adopted questions from this instrument to distribute to the described higher education population. CIOs and CIO equivalents across the University of Tennessee system distributed an email invitation that requested their staff’s participation in the study. The survey platform Qualtrics (Qualtrics, 2023) was leveraged to provide an introduction to the study’s purpose and gain participants' consent. The Qualtrics platform can desensitize data, present questions in organized sections, and use routing logic to collect relevant information while protecting participant rights (Qualtrics, 2023).

The welcome screen of the survey included a brief overview of the purpose of the study, how the survey data will be used, and details on how personal data will be handled. Those who wished to opt out of the survey were encouraged to do so at this point in the process. The survey itself was comprised of multiple Likert scale questions broken into five parts: demographic, general experience with digital transformation, sentiment and decision-making, work environment, and digital transformation efforts (Beach, 2021). Each Likert scale question presented the options of Disagree Strongly, Disagree, Slightly Disagree, Neutral, Slightly Agree,

Agree, Agree Strongly. The researcher also included additional demographic questions to gather more detailed information.

Participants at the end of the survey were asked to volunteer as a contributor in a semi-structured interview session. Those who agreed were contacted by email to arrange a date and time to connect virtually for an oral interview with the researcher. Before the meeting, participants filled out a consent form, which can be found in Appendix B. Each interview session began with the researcher explaining the purpose of the study and obtaining additional verbal consent from the participant. After receiving consent, the researcher asked three warm-up questions followed by nine questions listed in Appendix C. Sessions were recorded and then transcribed into separate word documents. Each interview was assigned a random identification number for analysis.

## **Data Analysis**

This study employed a mixed-methods approach, combining qualitative and quantitative data collected through Qualtrics. This section describes the methods used to analyze the four research questions this study explores.

RQ1: Does one or more demographic factor predict an employee's level of decision-making in higher education as it relates to digital transformation? This research question was constructed to explore whether statistical significance exists between decision-making in higher education administration and one or multiple demographic questions answered in the first section of the instrument. Data was loaded into IBM's Statistical Package for Social Sciences (SPSS) to explore this research question with the provided survey results. Multiple regression analyses were run to eliminate variables based on their level of significance. Variables identified as

predictive were then run through an ANOVA to test if the differences between group means were due to an actual effect or random chance (Field, 2018; Gliner et al., 2017).

RQ2: What is the relationship between perceived organizational support and the decision-making process in higher education as it relates to digital transformation? Survey participants' recorded responses to their perceived organizational support of digital transformation initiatives were compared to innovation-decision processes by calculating a Pearson's correlation coefficient. Through this analysis, it is possible to assess the strength of the relationship between perceived organizational support and the innovation decision-making process (Field, 2018; Patten & Newhart, 2018).

RQ3: What themes contribute to an employee's negative or positive perceptions of their organization's capacity for digital transformation and RQ4: What challenges contribute to an organization's agency for digital transformation initiatives? were analyzed through a generic qualitative inquiry that aided in the analysis of the collected data (Kahlke, 2014; Percy et al., 2015). Responses were collected through digital semi-structured interviews that the researcher recorded for later transcription. During each interview, before questions about digital transformation were asked, the researcher shared a definition of digital transformation as seen in Appendix D. Each recording was then reviewed and transcribed into a word processor with notations of each question asked and the corresponding response. A separate word document was created that combined the responses for each question, allowing the researcher to begin analysis through a process of coding, categorizing, and synthesizing to identify patterns and themes that emerge from the qualitative data. To further evaluate the proposed research questions, each qualitative survey question was analyzed through emergent thematic coding (Creswell, 2013).

This approach required the sample to be reviewed several times, providing opportunities for themes to emerge from the data (Creswell, 2013).

The researcher bracketed themselves to acknowledge potential bias from previous experiences better (Creswell, 2013). Bracketing allows the researcher to recognize their potential bias from working closely with the research topic and, therefore, take steps to minimize how one's social and cultural experiences may shape interpretation (Creswell, 2013). In addition, because the sample population brings a variety of experiences specific to particular times and places, Hermeneutical coding was also completed to better provide context and validation to the data (Creswell, 2013). Hermeneutical research, therefore, provides additional insight and meaning for an individual's interaction with digital transformation in the context of this research (Creswell, 2013).

## **Summary**

This study utilized a mixed-methods approach, with both quantitative and qualitative data collection and analysis methods. The Qualtrics survey platform was leveraged to distribute the survey instrument, including Likert scale and demographic questions. This survey collected data on participants' perceptions and experiences with digital transformation, specifically regarding their careers in higher education. Follow-up interviews were performed, and the researcher transcribed the responses. The data was then analyzed through coding, categorizing, and synthesizing to identify patterns and themes that emerge from the qualitative data, using inferential statistics, multiple regression, and Pearson's correlation analysis. The study aimed to increase external validity by considering extraneous variables such as age, job role, and institution size.

## CHAPTER IV

### RESULTS AND FINDINGS

#### **Introduction**

The primary goal of this study was to explore the factors influencing decision-making processes in higher education, specifically in the context of digital transformation. It was designed to identify predictors such as demographic factors and analyze the relationship between perceived organizational support and decision-making. Additionally, the researcher investigated themes and challenges that affect employees' perceptions. Finally, it examined the higher educational institution's capacity for digital transformation. A mixed-methods methodology was used to understand decision-making and experiences engaging in digital transformation initiatives on college campuses within the University of Tennessee System. Upon IRB approval, top-level IT administrators across the system distributed an invitation message that included a link to the online survey. The survey was left open for five weeks, and participants were encouraged to participate through reminder emails scheduled throughout the five weeks. The online survey afforded participants the option of volunteering for virtual interviews, conducted via an online video conferencing platform.

#### **Quantitative Research Component**

Once the online survey closed, results were exported from Qualtrics and imported into SPSS for analysis. A total of 83 responses were collected; however, only 57 submissions had

responses in all five sections due to partial responses. The first section of the online survey collected each participant's demographic details, which were included in the analysis for research question one. The gender distribution was 56.9% of respondents identified as male, 37.9% as female, 3.4% as non-binary or third gender, and 1.7% preferred not to disclose their gender. Table 2 below presents the distribution of ethnic backgrounds among the respondents. In addition, Table 3 illustrates the distribution of ages, providing an overview of the demographic characteristics of the study participants. Furthermore, Table 4 provides the distribution of education levels among those who participated, offering further insight into the respondents' educational backgrounds.

Table 2 Distribution of Reported Ethnicities

	N	Precent
Hispanic / Latino	1	1.7%
White	49	84.5%
Black	6	10.3%
Native Hawaiian / Pacific Islander	0	0.0%
Asian	1	1.7%
Native American / Alaska Native	0	0.0%
Two or More Races	0	0.0%
Other	0	0.0%

Table 3 Distribution of Reported Ages

	N	Precent
Age 20-29	7	12.1%
Age 30-39	10	17.2%
Age 40-49	19	32.8%
Age 50-59	10	17.2%
Age 60+	12	20.7%

Table 4 Distribution of Education Levels Among Respondents

	N	Percent
Highschool degree	2	3.4%
Vocational school degree	1	1.7%
Bachelor degree	32	55.2%
Master degree	21	36.2%
PhD	1	1.7%
Other professional certification	1	1.7%

In the demographic section, respondents were asked about their current position within the University of Tennessee System. When asked about their current main work location, 61.4% indicated they spend the majority of their work hours in the office, while 38.6% spend the majority of their hours working virtually (in the field, in another office, or from home). When asked about the structure of their role, the data indicate that the majority of respondents (59.6%) are employees without supervisory or management responsibilities. A smaller proportion (29.8%) manage people and resources, including the authority to hire and fire employees. The remaining 10.5% supervise others but cannot recommend hiring or firing actions. The following table, Table 5, presents data on the years respondents have worked within the University of Tennessee system as well as in their current position.

Table 5 Respondent’s Total Years Worked in their Current Position and in the UT System

Years	Worked in Current Job Function	Worked in the System
Under 1 year	8.6%	8.6%
1-3 years	37.9%	17.2%
4-6 years	20.7%	8.6%
7-10 years	13.8%	12.1%
11-20 years	8.6%	20.7%
Over 20 years	10.3%	32.8%

### ***Research Question 1***

The first research question was, does one or more demographic factors predict an employee's level of decision-making in higher education as it relates to digital transformation? Likert Scale Survey questions within the decision-making domain were averaged together to create a mean score for decision-making. A multiple regression analysis was run using nine demographic predictors: job role, work location, education level, time with the University of Tennessee System, time one has worked in their current job function, age band, ethnicity, and gender. The overall regression model was not statistically significant at the 0.05 level ( $p = 0.267$ ) and, therefore, does not provide a good fit. In addition, no predictor showed significance in their effect on decision-making, as seen in Table 6.



Table 6 Linear Regression with all Demographic Variables – Coefficients

Model 1	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
(Constant)	5.661	.548		10.321	<.001	4.558	6.763
Job Role	-.198	.107	-.298	-1.854	.070	-.412	.017
Primary Work Location	.171	.201	.140	.852	.399	-.233	.574
Education Level	.058	.098	.081	.594	.556	-.139	.255
Total Years working in UT System	.015	.062	.044	.240	.812	-.109	.139
Years working in current job function	-.098	.074	-.241	-1.328	.190	-.246	.050
Age	-.046	.074	-.100	-.626	.534	-.196	.103
Ethnicity	-.035	.083	-.062	-.428	.670	-.202	.131
Gender	-.013	.150	-.013	-.090	.929	-.316	.289

a. Dependent Variable: Decision Making Mean

Upon completion of the initial linear regression analysis, six additional regressions were evaluated, with each sequential analysis eliminating non-significant variables. The seventh regression analysis was conducted to assess the relationship between decision-making as the dependent variable and job role as the independent variable. This regression analysis with job role as a predictor yielded a model that was significant at the 0.05 level ( $p = 0.025$ ). The regression analysis showed an R-value of 0.298 and an R Square value of 0.089, indicating that about 8.9% of the variability in the dependent variable can be attributed to the independent variable. The adjusted R Square was 0.072, with a standard error of the estimate at 0.588, as illustrated in Table 7. An ANOVA was then performed with decision-making as the dependent variable and job role as the independent variable. Though the variables showed a significant relationship in the regression analysis, it did not show significant differences in ANOVA at the 0.05 level. According to Field (2018), regression analysis focuses on how changes in the independent variable can predict changes in the dependent variable. In contrast, an ANOVA analysis examines statistically significant differences between the means of the independent variable (Field, 2018).

Table 7 Model Summary for Regression Analysis – Job Role

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.298 <sup>a</sup>	0.089	0.072	0.57878

a. Predictors: (Constant), Job Role

### ***Research Question 2***

The second research question was about the relationship between perceived organizational support and the decision-making process in higher education as it relates to

digital transformation. The independent variable, organizational support, was computed from responses in sections two, four, and five of the survey. Incomplete responses for these sections were filtered out prior to analysis, leaving a sample of 57. A Pearson correlation was performed using the computed means of decision making and organizational support to analyze this research question. Bootstrap analysis was also conducted using 1000 samples to assess the relationship between the independent and dependent variables due to the smaller N value (Field, 2018). The Pearson correlation analysis returned a moderate positive relationship between the independent and dependent variable,  $r = .401$ , with a statistically significant correlation ( $p = .002$ ). The bootstrap bias indicated a minimal difference between the bootstrap estimates and the original sample estimate (.003). The overall results suggest the correlation coefficient is statistically significant and reliable, as seen in Table 8. These results indicate that as organizational support improves, then so does decision-making concerning digital transformation. The moderate positive relationship of the correlation indicates that there are other factors which also influence these variables.

Table 8 Pearson Correlation and Bootstrap Analysis Results for Decision-Making and Organizational Support

		Decision Making	Organizational Support		
Decision Making	Pearson Correlation	1	.401**		
	Sig. (2-tailed)		.002		
	N	57	57		
	Bootstrap <sup>c</sup>	Bias	0	.003	
		Std. Error	0	.122	
		95% Confidence Interval	Lower	1	.158
			Upper	1	.648
Organizational Support	Pearson Correlation	.401**	1		
	Sig. (2-tailed)	.002			
	N	57	57		
	Bootstrap <sup>c</sup>	Bias	.003	0	
		Std. Error	.122	0	
		95% Confidence Interval	Lower	.158	1
			Upper	.648	1

\*\* . Correlation is significant at the 0.01 level (2-tailed).

c. Unless otherwise noted, bootstrap results are based on 1000 bootstrap samples

### Qualitative Research Component

This study included two qualitative research questions. Participants in the online survey distributed through Qualtrics had the ability to opt-in to a follow-up interview with the researcher. Twelve individuals agreed to participate and were asked the interview questions contained in Appendix C. A summary of the key themes that emerged from the qualitative interviews is provided in Table 9, highlighting their relevance to the study's primary research inquiries regarding decision-making and digital transformation in higher education institutions.

Table 9 Interview themes, a summary of dominant ideas

	Themes
Research Question 3	Inter-Departmental Capability Training and Expertise Organization Processes and Structure Support
Research Question 4	Resistance to Change Strategic Direction Technology Advancement and Pace of Innovations Resource Constraints

***Research Question 3***

The third research question inquired into what themes contribute to an employee's negative or positive perceptions of their organization's capacity for digital transformation. All 12 participants were asked the same interview question, requesting they describe the organization's capacity for digital transformation. The researcher posed the question to explore the factors that may influence an employee's perceptions of their institution's readiness and capacity for digital transformation. Through a comprehensive qualitative analysis of interview data, four key themes emerged: inter-departmental capability, training and expertise, organizational process and structure, and support.

***Inter-Departmental Capability***

Several participants responded that their department has an appetite for digital transformation “because it does streamline so many things and removes error” according to Participant 1. However, the resistance to change from other departments often causes issues, as Participant 10 stated:

I would say that most departments are not really eager to change the way that things have been going, even things that do not involve, you know, digital transformation and things like that. It is kind of like, this is the way we have always done things. And this is the way that we always will do things

Several participants gave stories of working with other departments outside of their IT branch of the organization, where widespread initiatives were impacted by this resistance to change, such as the transition from the Zoom video conferencing platform to the Microsoft Teams ecosystem. In their experience, Participant 6 shared, “they [staff and some administration] do not even know what Teams is, they are using Zoom, they do not want to switch. They do not want to learn something new.” Therefore, this limits the organization’s capacity to lead successful implementations, as some are eager while others are resistant. To combat this, Participant 11 has found success in bringing in department chairs and deans, working collaboratively with them to “get some users moved, and the others start to see that this is successful, and it is not any harder than what they were doing.” Therefore, implementing a phased rollout of new technologies could help mitigate resistance by allowing employees to gradually adapt to changes.

### *Training and Expertise*

The next emerging theme was expertise and knowledge of the digital innovations driving digital transformation across the college system. Participant 1, for example, indicated a lack of “consistently [having] the right IT administrators sitting in the right places to properly support the systems.” This can cause slower transitions and implementations as often the IT organization needs to “moves their skill sets” and has to be cognizant of the “balance of maintaining [staff] to be able to transition those skill sets into the digital era” according to Participant 5. When the skillsets are available, or the IT organization has “familiarity with [the] technology [it is] able to

help different departments or folks see kind of where technology can help them out,” which Participant 9 stated is a pathway for the organization as a whole to get on board with digital transformation.

### ***Organizational Process and Structure***

The theme of organizational process and structure was another theme during these sessions, where capacity is hindered by not sequencing things correctly as Participant 2 indicates, “you can not just do every project at once” because “it is definitely a process.” Participant 1’s perspective was that their organization could improve in this area, as “the digital world is still the wild west” when it comes to following a process and structure within the organization.

Participant 8 elaborated upon this issue in their experience when an organizational process and structure are not in place, siloed groups in the institution can “launch out in 1000 directions, implement[ing] things that they do not know anything about and cannot maintain’ which ultimately must be then maintained by the organization’s IT who may or may not have expertise or understanding to full support it. Therefore, according to Participant 8, an IT governance group can help guide it from the top down.

### ***Support***

The most prevalent theme that arose when discussing capacity with interviews was support. Participant 7 framed support around championship, where the organization appoints an individual to be the focal point for digital transformation. This champion can sway the perspectives of others either positively or negatively, as given by their example:

[We] had one or two champions but the push was so swift for that it was haphazardly implemented and did not go well, we ended up blowing a lot of money. And so that curbed a lot of the appetite for it because of the implementation itself was not thought through and it was not well understood.

This is often due to “wanting to do something and actually doing it are two different things” according to Participant 6, as there is a need for the organization to dedicate budget, personnel, and training to the cause, according to Participant 7. Without these, working through digital transformation initiatives feels like to Participant 9 as if “you gotta keep the car moving while you are changing the wheel out sometimes” which contributes to solutions that are “not sustainable or particularly usable” for the organization, according to Participant 1. However, when employees have support, the perspective can shift to more positive outlooks, such as a story Participant 12 shared about initial hesitation with server virtualization. Given some time, they were able to move away from the discomfort of not seeing the physical server and to “now I love it. I mean, I can take a snapshot of a server and if something goes wrong, put it back and try again. My goodness amazing.” The shift in Participant 12’s outlook was due to them feeling properly supported through adequate resource allocation.

#### ***Research Question 4***

Research question four was about what challenges contribute to an organization's agency for digital transformation initiatives. To explore this, respondents were asked three questions during the interview. The first question asked, what challenges does your organization face in digital transformation? The second question specifically asked them about their challenges when trying to participate in digital transformation in their organization. Finally, the third question inquired about the projects that contribute to digital transformation and whether any agency is



contributing to the speed of the work being done. All responses to these three questions were reviewed together for emergent themes and then refined through iterative reviews (Creswell, 2013).

### ***Resistance to Change***

The initial theme to emerge was resistance to change, specifically when transitioning to a new technology or process being implemented in the organization. In Participant 3's experience, "people do not really want to pour money into thing that they have not like, have been shown to be tried and true and because of that, we miss trends, and we miss opportunity." It is the familiarity with the already established technologies and processes, according to Participant 1, where "people get used to the quirks of the system they are in." It is this familiarity that they then use to justify and point out the flaws of what might be proposed in the future. This could be from communication pathways not being established and employees not being shown "the benefits" according to Participant 8. According to Participant 9, there is a need to get adopters to "think of things in a different light and from different perspectives," which they believe takes a "culture shift" for the organization. Without this, Participant 1 further explained "if I can look at a problem and solve it with a hammer that I already own, I am going to solve it with that hammer." This stems from their personal experience, stating that they hold on to those previously implemented technologies as they are familiar and can still meet their needs.

### ***Strategic Direction***

The strategic direction theme emerged throughout the discussions about resistance to change. Those who were interviewed often shared personal stories of their participation in

projects that contributed to digital transformation, one of which Participant 4 shared as being a sizeable organizational change to a new platform. When considering agency, they stated that what drives it is the “fact that commitments were made” by administrators, which have “downstream effects.” Participant 1 said these can sometimes be inspired by the “administrator sees a thing and thinks that thing looks cool.” This becomes an issue because of the need for planning, as Participant 7 spoke on instances of “not thinking through all of the variables that could slow down or impede the progress or the adoption.” Therefore, understanding and communicating a strategic direction is essential, specifically with the perception of those doing the work.

Participant 6 understood the work they are doing is part of a “long term plan”; however, it is “harder to see” because they are “doing a million things to get it there.” Participant 1 echoed this and reported being “somebody who’s kind of on the frontlines of doing a thing” and highlights the need to have conversations with one’s administrators “push[ing] it up through their administration. Their administration then sees the need and supports them, hopefully.” With strategic direction, there can be “more push from leadership to get those processes started or moved along” according to Participant 2.

### *Technology Advancement and Pace of Innovations*

Various technologies, innovations, and implementations were shared, leading to an emergent theme of the speed at which technology advances and the pace of innovation. Particularly with agency, Participant 4 stated, “it is so new all the time.” According to them, this impacts their ability to drive change or initiate action because the quick “pace of learning” they have to maintain “and having to fit that into the framework that I have all the legacy experience.”

Participant 7 added another layer to this, where “there is a period of time in which you are both supporting the old type of tool but also the new type of tool.” The speed of advancement has also been driven by “the technology itself” according to Participant 1. One particular is artificial intelligence, which both Participants 2, 9, and 10 highlighted as being something that is empowering and causing challenges for the agency in higher education.

### ***Resource Constraints***

The last theme that emerged was the constraints of resources that can challenge groups or individuals in the organization to make decisions, initiate actions, and drive changes. First, there is a general feeling that some have personally hit their “capacity limitations” and have a “lack of time” to commit to engaging in digital transformation, as stated by Participant 9. Participant 2 described this as not having “bandwidth” where one does not have “all the available resources available at the same time.” Looking outward, Participant 7 adds that there are “only so many bodies to go around.” Participant 4 stated that the “sheer level of work or amount of work in relation to the number of people who can do it” stifles agency. Solutions were offered by Participant 1, such as obtaining or training the “kind of staffing you need to support change.” In addition, money was also discussed as “one of the hardest things is sometimes getting the training dollars” stated Participant 5, who then elaborated by saying that “getting the commitment to training dollars and time, and then there is acquiring the people who are able to willing to take it on,” compounding the need for not only money, staff, but also a willingness to take it on.

## **Summary**

The outcomes of this study reveal several factors that influence decision-making and digital transformation in higher education. Through qualitative interviews with 12 participants from various roles within the University of Tennessee System, this research found several key themes that emerged. Firstly, resistance to change was identified as a significant challenge, with many respondents expressing discomfort with new technologies or processes due to familiarity with existing systems. Furthermore, the importance of strategic direction was emphasized, as participants highlighted the need for clear goals and objectives to guide decision-making and resource allocation. Additionally, constraints on resources, including limited time, budget, and personnel, were identified as hindrances to driving digital transformation. The findings also suggest a moderate positive relationship between organizational support and decision-making, implying that the type of environment and effective decision-making processes can facilitate digital transformation. This was further supported by the demographic factor of job role showing a degree of impact on decision-making in relation to digital transformation initiatives.

## CHAPTER V

### DISCUSSION AND CONCLUSION

#### **Introduction**

The primary purpose of this study was to explore digital transformation efforts in higher education from the perspectives of IT professionals as they adopt innovations. The study was designed to understand the adoption of digitization initiatives and the factors influencing decision-making practices. By examining the impact of demographic factors and perceived organizational support, the researcher looked to further understand the factors shaping digital transformation in higher education.

#### **Review of the Findings**

Through a mixed methods approach involving an online survey and follow-up interviews, this study was designed to explore the factors influencing higher education decision-making processes, specifically in the context of digital transformation. Fifty-seven survey responses were collected from IT professionals across the University of Tennessee System, leveraging an instrument Beach (2021) developed that captures demographics, general experience with digital transformation, sentiment and decision-making, work environment, and digital transformation efforts. Respondents were invited to participate in follow-up interviews, resulting in 12 sessions being conducted. These instruments were leveraged to collect and analyze data to explore the following research questions:

RQ1: Does one or more demographic factor predict an employee's level of decision-making in higher education as it relates to digital transformation?

RQ2: What is the relationship between perceived organizational support and the decision-making process in higher education as it relates to digital transformation?

RQ3: What themes contribute to an employee's negative or positive perceptions of their organization's capacity for digital transformation?

RQ4: What challenges contribute to an organization's agency for digital transformation initiatives?

In the context of digital transformation, the study's initial quantitative component exploring research question one revealed that demographic factors overall were not significant predictors of decision-making. The nine demographic predictors in this study (job role, work location, education level, time with the University of Tennessee System, time in current job function, age, ethnicity, and gender) had a significant measurable impact on decision-making according to regression analysis. When a regression analysis was performed on just job role, statistical significance was found, alluding to a slight predictive power, accounting for approximately 8.9% of the variability in decision-making.

The interplay between perceived organizational support and decision-making was performed through a Person's correlation. The analysis revealed a moderately positive relationship between these two variables, which was found to be statistically significant. This relationship provides insights into the dynamics of organizational support and decision-making processes within the context of digital transformation. Specifically, this statistically significant correlation suggests that as the organization's perceived support levels go up, so do improved decision-making processes in the context of digital transformation.

The relationship between perceived organizational support and decision-making was moderately positive, with a statistically significant correlation. This suggests that higher levels of perceived organizational support are associated with improved decision-making processes in the context of digital transformation. Marks et al. (2020) indicated that digital transformation “should not be just another task handed down to IT personnel” (p. 512). Therefore, these findings underscore the need for organizations to cultivate a supportive organizational culture that empowers employees, foster their engagement, and encourage their active participation in driving digital innovation.

The initial qualitative element provided wealthy insights into the themes and challenges affecting employee perceptions of their organization’s capacity for digital transformation. Key emergent themes included resistance to change, organizational process, the importance of expertise and knowledge, and support's role in an institution. Resistance to change was cited as a significant barrier, as IT staff have to balance users’ familiarity with existing systems and reluctance to adopt new technologies with their eagerness to innovate and move the organization forward. The expertise and knowledge generated by IT staff were also deemed critical success criteria for effective digital transformation, especially when they align with key administrative positions. In addition, participants cited correctly sequencing projects and maintaining a unified strategy as important. Organizational process and structure are critical factors when considering digital transformation. Support emerged as one of the most prevalent themes, with participants noting that championship and proper resourcing are essential for successful digital transformation initiatives.

In summary, this study’s findings indicate that, while demographic factors may not significantly predict decision-making in digital transformation, perceived organizational support

plays a crucial role. Additionally, when addressing resistance to change, enhancing expertise and knowledge, improving organizational processes, and fostering holistic support mechanisms are vital for nurturing digital transformation in higher education institutions. Furthermore, fostering a supportive organizational culture may empower stakeholders in the higher education institution to actively contribute to innovations and drive digital transformation.

### **Limitations**

This study encountered several limitations that may be better accounted for in future research. In the case of this study, the sample represented IT professionals in the University of Tennessee System. Inviting other IT professionals at different universities across Tennessee could provide a larger sample size, providing more generalization for a larger population. In addition, this study focused specifically on professionals within IT job functions; however, faculty and staff within higher education outside of these units also participate in and are stakeholders in digital transformation on their campus. Faculty and staff could provide additional perspectives, especially in the qualitative domains, to further elaborate upon the research questions.

Though 83 IT professionals participated in the survey, only 57 responses contained data in the sections where this study performed statistical analysis. A variety of extraneous factors could have contributed to a participant not completing the survey instrument in this study. However, the instrument adopted from Beach (2021) consisted of 110 questions spread across five sections. Due to the length of the survey, some attrition may have occurred. Because this study used the responses of only a few of the adopted instrument's questions, a truncated version may be leveraged and, therefore, have a lower attrition rate.



The study's reliance on self-reported measures through the survey instrument could have also provided a source of bias, such as social desirability bias (Meisters, Hoffmann, & Musch, 2020). These occur when a participant responds in a way they perceive as socially acceptable rather than a truthful reflection of lived experiences and personal perceptions. In addition, another limitation related to variability in responses may stem from each participant's interpretation of the survey questions. The researcher made efforts by leveraging an existing instrument and ensuring the questions' formatting was optimal to promote clarity and consistency across the survey. Individual differences and interpretations may have influenced responses, introducing noise distracting from possible variable relationships (Silver, 2015).

## **Discussion**

Technological innovations enable the modern workforce to work more efficiently and leverage data-informed decision-making to an unprecedented extent (Bonnet & Westerman, 2021; Ustundag & Cevikcan, 2017). It is the role of institutions of higher education to nurture the skill sets of their scholars to prepare them, specifically in domains such as discerning critical information and communication technology on top of also building technical skills (Marks et al., 2021; Ustundag & Cevikcan, 2017). The transformation required to accommodate this has, to this point, been primarily forced upon the higher education sector, causing there to be an improper fit between practice in reality as there are distinct challenges specific to this type of organization (Branch et al., 2020; Marks et al., 2021). Engaging in digital transformation in higher education has its benefits, as it has been shown to increase the organization's ability to compete amongst its peers, increase agility, and reduce costs (Branch et al., 2020; Marks et al., 2020). Leveraging a mixture of variables from an instrument designed around digital

transformation, this study offered additional insights into aspects that drive digital transformation on college campuses.

A study conducted by Gkrimpizi and Peristeras (2022) found that university administration is often reactive, focusing on current concerns rather than leveraging decision-making practices to be proactive. Their findings suggest this is due to the time-consuming nature of these critical decisions, leaving little to no plan for digital transformation implementation. This study supports these findings, indicating the need for administrators to leverage data-informed decision-making to establish clear strategic direction and communication pathways. For example, Participant 2 mentioned that there are “only so many bodies to go around” and Participant 4 stated that “it is so new all the time.” The significant influence of job role on digital transformation decision-making underscores the critical need for administrative leadership to establish clear communication channels and a shared understanding of the institution's strategic objectives. This ensures that all stakeholders are informed, engaged, and working towards a common goal, thereby facilitating effective decision-making and successful implementation of digital transformation initiatives. Furthermore, a clear strategic direction may prioritize resources to ensure everyone is working towards the same goal. The nature of higher education is more receptive to both collective and authority decisions, according to Rogers (2003).

Due to the nature of digital transformation encompassing product and process transformation, weaving in organizational needs with technology, there is a need to balance both what is considered the old and new ways of doing things for an organization (Rodríguez-Abitia & Bribiesca-Correa, 2021). Though supporting staff and funding technology in higher education is commonly a fixed budget item existing on college campuses, Kopp et al. (2019) stated that higher education “can only achieve efficient digital transformation if they provide a specific

budget for it” (p. 1454). The conducted study found a significant relationship between digital transformation decision-making and perceived organizational support. While support can manifest in various forms, IT professionals in this study identified resource constraints as a considerable obstacle to promoting and participating in digital transformation initiatives. To overcome these hurdles, it is essential to allocate resources effectively, focusing on hiring and training staff with the necessary skills and technology.

Resistance to change was an overarching theme throughout the qualitative component of this study. Where IT professionals and the community they serve may struggle to recognize the value in transitioning from outdated, legacy practices to more contemporary approaches. As Participant 1 stated, “if I can look at a problem and solve it with a hammer that I already own, I am going to solve it with that hammer.” With the diffusion of innovations, there will always be those in the population who hold a degree of uncertainty and those who view innovation as a perceived risk (Rogers, 2003). Involving stakeholders in the decision-making process and allowing them to see the benefits were cited by participants as being successful pathways to see positive diffusion. For example, when Participant 12 initially began using virtual machines for their server needs, not seeing the physical server stack caused some barriers to the implementation. Marks et al. (2020) recommend communicating long-term value gained. When one can see and understand the value, the results can be quantified within Participant 12’s new perspective about virtual machines, where hesitation changed to adoration.

### **Implications for Practice**

Gafurov, Safiullin, Akhmetshin, Gapsalamov, and Vasilev (2020) discussed a transformation occurring in university resource management. To accommodate shifting and

evolving business processes brought forth by digital transformation, a university should consider cultural values, quality of life, and personality development of stakeholders as a component of resource management (Gafurov et al., 2020; Heavin & Power, 2018). This study reinforces these findings, with the importance of perceived organizational support being a contributing factor to digital transformation in higher education. There are implications that effective leadership should prioritize creating a culture that values and supports employees' involvement in digital transformation initiatives, providing them with appropriate resources, training, and growth opportunities. In particular, administrators should consider fostering open and collaborative communication channels among stakeholders to ensure seamless information exchange and alignment.

### ***Implications for IT Professionals***

Information technology professionals in higher education are often considered partners or drivers of digital transformation initiatives (Kopp et al., 2019). However, with emergent technologies and the pace of change, Participant 4 stated, "it is so new all the time." Keeping pace with innovation becomes even more difficult, as there are often extended periods where IT must support a legacy system while also trying to learn and support its replacement, according to Participant 7. Developing expertise in emerging technology, such as those adjacent to the innovations driving Industry 4.0, may help these IT professionals as the transverse implementing digital transformation initiatives (Gebauer et al., 2020; Limani, Hajrizi, Stapleton, & Retkoceri, 2019). Information technology professionals are not the only ones who would benefit from institutions becoming more intentional in developing emergent technology expertise, including other stakeholders outside of the IT department, who can also support the entire organization's

digital maturity as technical and nontechnical competencies can be developed (Kopp et al., 2019). According to Rof et al. (2020), the organization's approach and model must also provide individuals with adequate time to successfully learn and master the needed skills.

The resistance to change was a theme that some IT professionals in this study cited as being a barrier to digital transformation at their university, specifically when working outside their department. Participant 9 described a need for a "culture shift" and for these individuals to see a "different perspective." Participant 8 indicated that they have had success when a stakeholder can "see the benefits" of the change. Because "digital transformation is a broad cross-cutting issue and, as such, affects all possible target groups" (Kopp et al., 2019, p. 1452), where effective leadership can assist in shifting IT away from a service provider to a partner for the entire organization (Kähkipuro, 2017). One practical approach is for IT to develop cross-functional relationships. This can be done by having IT professionals dedicate their time to collaborating with academics, serving as ambassadors who can facilitate innovative solutions and processes that integrate technology seamlessly into teaching and research (Kähkipuro, 2018). By fostering greater collaboration between IT professionals and stakeholders across the organization, digital transformation initiatives can more effectively convey their value and benefits.

### ***Implications for Higher Education Institutions***

Higher educational institutions are often challenged by technological and financial constraints, with emergent technology bearing a substantial price tag (Rodrigues, 2017). Rodríguez-Abitia and Bribiesca-Correa (2021) cited that, though there is market pressure for institutions to innovate and align more with trends of the fourth industrial revolution, funding is

causing digital transformation to be stifled. Participant 3 echoed this when discussing resistance to change “people do not really want to pour money into thing that they have not like, have been shown to be tried and true and because of that, we miss trends, and we miss opportunity.”

Therefore, universities may consider shifting their budgetary model to invest in digital transformation costs, including training, developing communication plans, materials, and time. Implementing a specific budget to digital transformation and change processes may be recommended to enable competitive advantage and digital transformation (Kopp et al., 2019).

Higher education institutions' organizational and social structures are unique compared to the corporate sector (Powers & Schloss, 2017). Within the confines of the university's ecosystem are administrative staff, faculty, and students. Though a variety of different departments and groups create this culture, they often work within silos (Kähkipuro, 2018). Warner and Wäger (2019) stated that strategic cultural shifts could unfold during digital transformation when business models and collaborative practices are reimaged. Therefore, a shared strategic vision and strategic planning across the organization should be considered to encourage the creation of cross-functional collaboration (Warner & Wäger, 2019). Through fostering collaboration among various departments and promoting shared understanding, digital transformation can be better enabled as various disciplines can contribute their expertise (Kähkipuro, 2018; Verhoef et al., 2021; Warner & Wäger, 2019).

### **Suggestions for Future Research**

This study focused on a population within the University of Tennessee system, which includes being united and connected as one of the seven guiding principles for the overall organization (Boyd, 2021). With collaboration being a theme of this study, the findings may

differ if the sampled population extended outside of the University of Tennessee System. Expanding the population to other higher education institutions would also allow for comparisons between four-year organizations, community colleges, state-led schools, and private institutions. Furthermore, expanding the study's population to include faculty, students, and staff beyond the IT department could provide valuable insights, given the diverse range of stakeholders in higher education institutions.

Secondly, because job roles showed a relationship between decision-making when considering digital transformation, additional analysis could facilitate a more nuanced exploration of this relationship. The researcher could expand this aspect of the survey to examine the role of leadership in driving organizational change in this regard. For example, it could be beneficial to incorporate leadership style levels of management to examine its influence on adopting and implementing digital transformation strategies within various higher education organizations. Additionally, breaking up measures for levels of management could provide a pathway to collect perspectives of both senior-level administrators and middle management that might provide more understanding of the dynamics at play.

Through the one-on-one surveys, the researcher heard from several participants that they had not heard the term digital transformation prior to engaging in this study. Therefore, it may be of interest to further explore the source of why the term is not well known in higher education and the root causes of why the syntax surrounding it has stalled on the innovation curve. This may provide additional insights into how to diffuse the term, providing leaders with insights on beginning digital transformation in their organization or campus.

Finally, AI was a recurring topic in the interviews as a driver for digital transformation at the participant's organizations. Hannan and Liu (2023) stated that AI is currently in the early

adoption phase for higher education institutions, however successful adoption has the potential to improve student experience in student support, enrollment, and through custom tailored learning experiences. As AI diffuses as an innovation through institutions of higher learning, this study could be continued as a longitudinal study. Due to the nature of technology gradually being adopted and integrating into a population, comparing data across multiple years may give insights into more factors that influence the adoption, implementation, and general sentiment around digital transformation (Berkun, 2010; Rogers, 2003).

## **Conclusion**

This study explored the factors influencing digital transformation decision-making among IT professionals in the University of Tennessee system. The results indicated that job roles affect digital transformation decision-making, with administrative roles needed to support those in more technical roles to ensure they feel empowered. The researcher explored perceived organizational support, finding a relationship between it and digital transformation decision-making, where IT professionals who feel supported by their organization are more likely to participate and promote innovative initiatives. In addition, resistance to change was a common theme among participants, cited as an obstacle to digital transformation outside of the IT department within the organization. It is recommended that higher education institutions bolster their communication and engagement with other departments, gaining stakeholder buy-in and championship. One such way is by ensuring those adopting the change understand the strategic direction and can see the benefits of engaging in the given initiative.



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APPENDIX A

INSTRUCTIONAL REVIEW BOARD APPROVAL LETTER

**Institutional Review Board**

Dept 4915  
615 McCallie Avenue  
Chattanooga, TN 37403  
Phone: (423) 425-5867  
Fax: (423) 425-4052  
instrb@utc.edu  
<http://www.utc.edu/irb>

TO: Donald Kelly Behneman **IRB # 24-044**  
Dr. David Rausch

FROM: Dr. Cheryl Murphy, Director of Research Integrity  
Dr. Susan Davidson, IRB Committee Chair

DATE: 3/14/24

SUBJECT: IRB #24-044: Examining the adoption of digital transformation initiatives in higher education institutions: The impact of time, experience, and perceptions


Thank you for submitting your application for exemption to The University of Tennessee at Chattanooga Institutional Review Board. Your proposal was evaluated in light of the federal regulations that govern the protection of human subjects.

Specifically, 45 CFR 46.104(d) identifies studies that are exempt from IRB oversight. The UTC IRB Chairperson or his/her designee has determined that your proposed project falls within the category described in the following subsection of this policy:

**46.104(d)(2)(ii):** Research only includes educational tests, surveys, interviews, public observation and any disclosure of responses outside of the research would NOT reasonably place subject at risk

Even though your project is exempt from further IRB review, the research must be conducted according to the proposal submitted to the UTC IRB. If changes to the approved protocol occur, a revised protocol must be reviewed and approved by the IRB before implementation. For any proposed changes in your research protocol, please submit an Application for Changes, Annual Review, or Project Termination/Completion form to the UTC IRB. Please be aware that changes to the research protocol may prevent the research from qualifying for exempt review and require submission of a new IRB application or other materials to the UTC IRB.

A goal of the IRB is to prevent negative occurrences during any research study. However, despite our best intent, unforeseen circumstances or events may arise during the research. If an unexpected situation or adverse event happens during your investigation, please notify the UTC IRB as soon as

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possible. Once notified, we will ask for a complete explanation of the event and your response. Other actions also may be required depending on the nature of the event.

Please refer to the protocol number denoted above in all communication or correspondence related to your application and this approval.

For additional information, please consult our web page <http://www.utc.edu/irb> or email [instrb@utc.edu](mailto:instrb@utc.edu).

Best wishes for a successful research project.

APPENDIX B

INTERVIEW CONSENT FORM

# Consent Form for Follow-Up Interview Question

## Introduction

I would appreciate your assistance with this research project on examining the adoption of digital transformation initiatives in higher education institutions. The project is being conducted by Donald Behneman, a graduate student attending the University of Tennessee, Chattanooga and will be used in a doctoral dissertation. The research will help further the understanding of the impacts time, experience and perceptions have on the adoption of Digital Transformation in institutions of higher education.

Thank you in advance as I genuinely appreciate your participation. If you have any questions regarding the research, you may ask during this interview, email the researcher, Donald Behneman at [Donald-Behneman@utc.edu](mailto:Donald-Behneman@utc.edu) or contact Dr. David Rausch (Dissertation Chair), at [David-Rausch@utc.edu](mailto:David-Rausch@utc.edu). This project was approved by the University of Tennessee, Chattanooga Institutional Review Board on March 14th, 2024. If you have any questions regarding your rights as a research subject, please contact Dr. Susan Davidson, the Chair of the Human Subjects Committee, Institutional Review Board at 423-425-1387. Additional contact information is available at [www.utc.edu/irb](http://www.utc.edu/irb).

To help with the research, I ask you take part in an interview that will not exceed thirty minutes. Your participation is voluntary, so if you do not wish to participate, you please let me know.

## How Will My Information Be Protected?

Your identity will be kept confidential to the extent provided by law. Your responses will be stored on a password-protected computer and each study record will be assigned a code number so that personally identifying information can be removed from the data set that will be used for analyses. The list connecting any recordings to this number will be stored on a password-protected computer and will be destroyed upon the completion of the data analysis and study. Your name will not be used in any report or publication.

Any identifiers will be removed from the data collected in this study. Deidentified responses may be used for future research studies without additional informed consent.

## What If I Decide Not to Participate?

Your participation in this study is completely voluntary. You have the right to withdraw from the study at any time. You will not be penalized if you choose not to participate or to withdraw from the study, and you will not lose any benefits that you are otherwise entitled to receive. If you decide not to participate or withdraw after the study has started, we will discard any information we have already collected from you.

## Use of Recordings during the Research

"I understand that the interview that will be conducted during this study will be recorded by the researcher using the audio and video recording capabilities available in the Zoom videoconferencing platform. These recordings are necessary because the interviews must be transcribed so that researchers can analyze the information provided during the interview. Recordings created during the study will be stored on the password-protected computer of the researcher in an encrypted file format. I understand that additional copies of the recordings may be saved by Zoom on the company's servers, beyond the control of the researchers. Recordings stored by the researcher will be kept for one year and destroyed no later than 5/1/2025."

## Audio Recording of Study Activities

Audio recordings of interviews may be generated during the study to help researchers ensure accuracy

when transcribing your responses. You have the right to refuse to be recorded. Please indicate your preference below:

I consent to audio recording: YES  NO

**Agreement**

I have considered all of the above information and have had an opportunity to ask questions about anything that is not clear to me. I am at least 18 years of age, and I choose to participate in this study.

Participant's Name: (Print) \_\_\_\_\_

Signature \_\_\_\_\_

(Date) \_\_\_\_\_

APPENDIX C

INTERVIEW QUESTIONNAIRE

## FOLLOW-UP INTERVIEW QUESTIONS

Code:

Time:

Date:

Interviewer:

Interview Length:

Zoom Link:

### **Interviewer Introduction**

“Before we begin, I would like to first describe the format of the interview as well as what you may expect. This session should not exceed thirty minutes and I would be happy to answer any questions you may have throughout the process. The questions I will be asking you will center around your experience with digital transformation on your college campus.

You do not have to answer every question and your identity will remain anonymous in the study results. I emailed you a consent form prior to our session, however I am also putting on the screen the same consent message. First, please read through this consent form.

- *[Once Participant has finished reading]* Do I have your consent to participate in this study?
  - If they answer no, thank them for their time and end the session.
- Do I have your permission to audio-record our discussion? This will enable me to concentrate fully on our conversation?
  - If they answer no, the conversation will not be recorded
- Do you have any questions for me before we get started?

### **Warm-up**

1. How long have you been working in the Information Technology field?
2. What got you started in the Information Technology field?
3. Can you briefly describe your role and responsibilities within the campus community?

### **Main Questions**

1. How often do you use digital tools or platforms in your current role?
2. How would you describe the current state of digital transformation on campus?
3. Can you describe a time when your organization implemented a digital transformation initiative?
  - a. What were your perceptions of this process?
  - b. What factors do you think contributed to these perceptions?
4. How would you describe your organizations capacity for digital transformation?
  - a. Can you describe any specific occurrences that have influenced your opinion?
5. What challenges does your organization face in digital transformation?



6. What challenges do you face when trying to participate in digital transformation in your organization?
7. Have there been instances where a challenge was overcome concerning digital transformation? If so, could you tell more about it?
8. In your opinion, what could your organization do differently to improve its approach to digital transformation?
9. In projects that contribute to digital transformation, is there any agency contributing to the speed of the work being done?

**End**

I appreciate your participation in this study and talking to me more about this subject.

APPENDIX D

DIGITAL TRANSFORMATION DEFINITION

FOR FOLLOW-UP INTERVIEW

# Digital Transformation

has been defined as the use of new digital technologies, such as mobile, artificial intelligence, Cloud, the Internet of things (IoT) technologies (etc.), to enable major business improvements to augment customer experience, streamline operations, or create new business models.

APPENDIX E

IDENTIFICATION AND ANALYSIS OF RESEARCH QUESTIONS

## Identification and Analysis of Research Questions

### *Quantitative*

**RQ1:** Does one or more demographic factor predict an employee’s level of decision-making in higher education as it relates to digital transformation?

	<b>Variable Labels</b>	<b>Levels of the Variable</b>	<b>Scale of Measurement</b>
<b>Dependent Variable(s)</b>	Decision-making process	Likert Scale	Scale
<b>Independent Variables</b>	Job Role	10. I manage people and things including resources and budgets, and I CAN hire and fire employees 11. I supervise people working under me and their activities, and I CANNOT recommend hiring and firing actions 12. I am an employee and I do not have supervisory or management responsibilities	Nominal
	Work Location	3. Majority in the Office 4. Majority at home	Nominal
	Education Level	13. Highschool Degree 14. Vocational School degree 15. Bachelor degree 16. Master degree 17. PhD Other professional certification	Ordinal

	Time with the University System	<ul style="list-style-type: none"> <li>7. Under 1 year</li> <li>8. 1-3 years</li> <li>9. 4-6 years</li> <li>10. 7-10 years</li> <li>11. 11-20 years</li> <li>12. Over 20 years</li> </ul>	Ordinal
	Tim in current job function	<ul style="list-style-type: none"> <li>7. Under 1 year</li> <li>8. 1-3 years</li> <li>9. 4-6 years</li> <li>10. 7-10 years</li> <li>11. 11-20 years</li> <li>12. Over 20 years</li> </ul>	Ordinal
	Age	<ul style="list-style-type: none"> <li>• Short answer text box that allows a number to be submitted</li> </ul>	Scale
	Gender	<ul style="list-style-type: none"> <li>5. Male</li> <li>6. Female</li> <li>7. Non-binary / third gender</li> <li>8. Prefer not to say</li> </ul>	Nominal
	Ethnic background	<ul style="list-style-type: none"> <li>11. Hispanic / Latino</li> <li>12. White</li> <li>13. Black</li> <li>14. Native Hawaiian / Pacific Islander</li> <li>15. Asian</li> <li>16. Native American / Alaska Native</li> <li>17. Two or More Races</li> <li>18. Other (field available for self-identification)</li> <li>19. I prefer not to say</li> </ul>	Nominal

**RQ2:** What is the relationship between perceived organizational support and the decision-making process in higher education as it relates to digital transformation?

	<b>Variable Labels</b>	<b>Levels of the Variable</b>	<b>Scale of Measurement</b>
<b>Dependent Variable(s)</b>	Decision-making process	Likert Scale	Scale
<b>Independent Variables</b>	Organizational Support and Readiness	Likert Scale	Scale

*Qualitative*

**RQ3 (Qualitative):** What themes contribute to an employee's negative or positive perceptions of their organization's capacity for digital transformation?

Data Point/Element	Source for Data	Data Gathering Method	Data Analysis Method
Semi-structured interviews	Interview transcripts	Interview participants	Emergent thematic

**RQ4 (Qualitative):** What challenges contribute to an organization's agency for digital transformation initiatives?

Data Point/Element	Source for Data	Data Gathering Method	Data Analysis Method
Semi-structured interviews	Interview transcripts	Interview participants	Emergent thematic

**Attribute Variables:**

<b>Variable Labels</b>	<b>Levels of the Variable</b>	<b>Scale of Measurement</b>
Gender	<ul style="list-style-type: none"> <li>● Male</li> <li>● Female</li> <li>● Nonbinary</li> <li>● Other</li> <li>● Prefer not to answer</li> </ul>	Nominal

Age	<ul style="list-style-type: none"> <li>• Short answer text box that allows a number to be submitted</li> </ul>	Scale
Ethnic background	<ul style="list-style-type: none"> <li>20. Hispanic / Latino</li> <li>21. White</li> <li>22. Black</li> <li>23. Native Hawaiian / Pacific Islander</li> <li>24. Asian</li> <li>25. Native American / Alaska Native</li> <li>26. Two or More Races</li> <li>27. Other (field available for self-identification)</li> <li>28. I prefer not to say</li> </ul>	Nominal
Responder's Job Role	<ul style="list-style-type: none"> <li>• Open Ended Text Box</li> </ul>	Nominal
Years at institution	<ul style="list-style-type: none"> <li>• 0-1</li> <li>• 2-4</li> <li>• 5-7</li> <li>• 8-10</li> <li>• 11-14</li> <li>• 15+</li> </ul>	Ratio
Department	<ul style="list-style-type: none"> <li>• Open Ended Text Box</li> </ul>	Nominal



## VITA

Donald (Donny) Behneman is a native of Northern Virginia. He graduated from Independence High School and the University of Tennessee at Chattanooga (UTC). He completed his Bachelors of Science in Biology in 2013. He was hired as a summer camp counselor in 2011 at UTC, which spurred his interest in a career in Higher Education. After graduating with a Master of Education degree in 2016, he joined UTC's Academic Affairs department. In 2021, he transitioned to the Information Technology department as a Business Intelligence and Process Analyst. In this role, he promotes sustainable business practices, data analytics, and data-driven decision-making.