A Study on the Impact of Policy Support and Digital Technology on
the Extent of Higher Education Reform -Take Shandong University
of Engineering and Vocational Technology as an Example

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This Independent Study has been approved as a Partial Fulfillment of the Requirement of International Master of Business Administration in Education Management

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ABSTRACT

The study of the extent of higher education reform in the context of digitization is becoming increasingly important. The two research objectives of this study were: 1) To explore the relationship between the level of policy support and the extent of higher education reform at Shandong University of Engineering and Vocational Technology in the context of digitization; 2)To explore the relationship between the level of digital technology application and the degree of reform at Shandong University of Engineering and Vocational Technology higher education in the context of digitization.

The purpose of this study is to explore the impact of the level of policy support and the level of digital technology adoption on educational practices in the reform at Shandong University of Engineering and Vocational Technology higher education. To achieve the research objectives, this study adopted a quantitative research methodology and designed a questionnaire survey with teachers and students at Shandong University of Engineering and Vocational Technology as the research subjects. The sample size of this study was 330 questionnaires, and the data were processed and analyzed，the model was constructed.
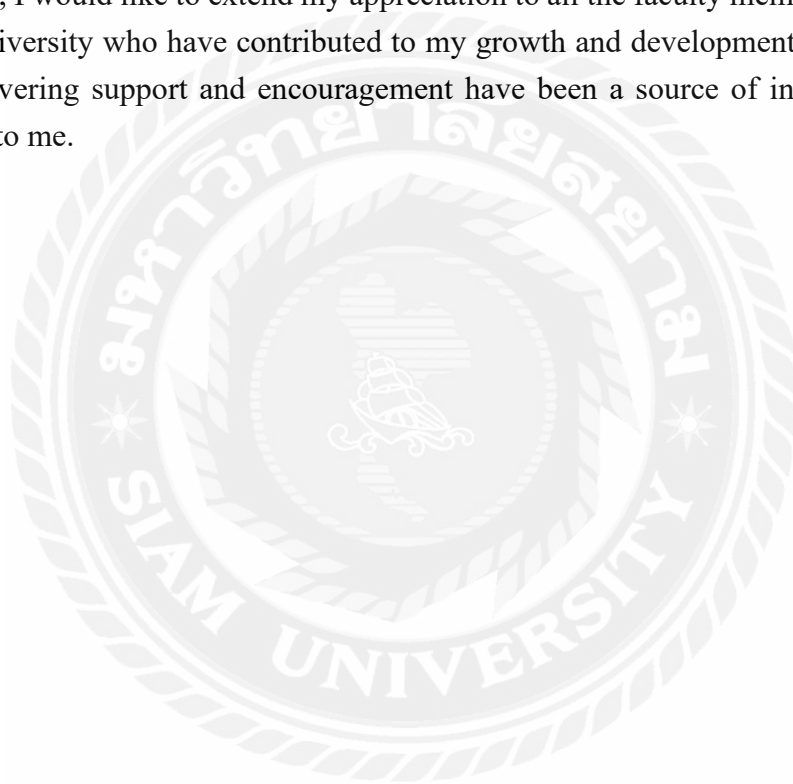
The findings of this study were summarized as follows: 1) In the context of digitization, the level of policy support positively affects the extent of higher education reform at Shandong University of Engineering and Vocational Technology. Government policy support not only provides the resources and direction needed for reform but also motivates universities to participate more actively in the reform to improve the quality of education and cope with the challenges of the digital era; 2) In the context of digitization, the level of digital technology application positively affects the extent of Shandong University of Engineering and Vocational Technology's higher education reform. The wide application of digital technologies has provided more educational tools and resources, enhancing online learning, personalized education, and educational innovation.

Keywords: Policy Support, Digital Technology, Higher Education, Digitization

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Declaration

I, MENG XIANYONG, hereby certify that the work embodied in this independent study entitled *"A Study on the Impact of Policy Support and Digital Technology on the Extent of Higher Education Reform -Take Shandong University of Engineering and Vocational Technology as an Example"* is the result of original research and has not been submitted for a higher degree to any other university or institution.

MENG XIANYONG

June 26,2023

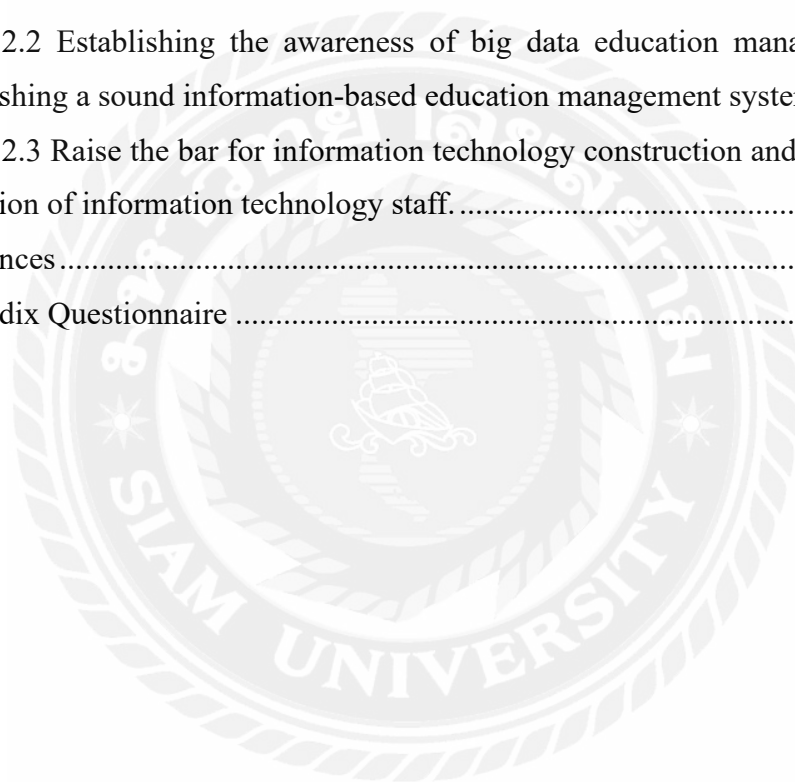# CONTENTS

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Chapter 1 Introduction

1.1 Background of the Study

Hundreds of years ago, the way humans understood and transformed the world was mainly theoretical reasoning and experimental verification, but now it relies entirely on high-quality mechanism model simulation and optimization and big data analysis based on massive data (Zhao, 2006). In recent years, influenced by the advancement of information technology and the trend of social informatization, world Universities everywhere are adapting to digital transformation.

The digital transformation of universities is essential and has become an unavoidable requirement for the development of universities in the new era. The requirements of the present and future age of China's college reform call for the development of digital skills and the leadership of high-quality growth of colleges and universities through digital innovation. At the same time, information technology in the field of colleges and universities in promoting university reform in a comprehensive and accelerated manner.

The goal of digital transformation in colleges and universities is usually directed at students and teachers, and it is the process of university organizations using technology and data to better serve students and teachers in teaching and learning practices, such as the digitization of the enrollment process, the intelligence of the student registration system, and the networking of student learning (Ou, 2018). With the rapid development of digital technology, Chinese higher education is facing many challenges and opportunities. To adapt to the educational needs in the context of digitization, higher education reform mechanisms need to be studied urgently. This study was conducted with a specific analysis of Shandong University of Engineering and Vocational Technology.

Higher education has been one of the focuses of attention of governments globally, and the impact of policy support and the development of digital technology on higher education reform has gradually come to the fore. In this context, it is of great theoretical and practical significance to discuss in depth the impact of policy support and digital technology on higher education reform by taking Shandong University of Engineering and Vocational Technology as an example.

First, government policy support is an important driving force for higher education reform (Rosser, 2023). By enacting a series of regulations, policies, and documents, different countries and regions aim to promote the innovation and upgrading of the higher education system (Hu et al., 2023). These policies may involve financial support, curriculum, educational assessment, etc., which directly affect the operation and development direction of higher education institutions. An in-depth study of policy support for Shandong University of Engineering and Vocational Technology can provide empirical data and cases for understanding the role of policy in higher education reform.

Second, the rapid development of digital technology has brought great opportunities for change in higher education (Núñez-Canal et al., 2023). The application of digital technologies such as information technology, big data, and artificial intelligence not only improves the efficiency of teaching, research, and management but also provides a broad space for innovating education models and expanding subject areas (Ismatullaeva, 2022). Taking Shandong University of Engineering and Vocational Technology as an example, studying the application of digital technologies in higher education at this university helps to comprehensively understand the impact of digital technologies on education quality, student experience, and school management, and provides reference and inspiration for the digital transformation of other universities.

Therefore, this study aims to explore the associated mechanisms and interactions through an in-depth analysis of the impact of policy support and digital technology on the reform of higher education in Shandong University of Engineering and Vocational Technology. Collecting and analyzing empirical data is expected to provide a scientific basis for formulating more effective higher education policies, promoting the innovation of digital technology in education, and providing reference and inspiration for higher education reform.

1.2 Research Questions

Covid-19 greatly affected the institution's digitalization process. For Shandong University of Engineering and Vocational Technology (SUEVT), its digital transformation and development have been delayed or hindered to some extent in the face of the dual challenges posed by the epidemic and technological change (Chu, 2014). This study aims to explore the impact of policy support and digital technology on higher education educational practices in the context of digitization. In the current digitalized environment, there exists a lack of relevant policy support to promote the digital transformation of higher education in Shandong University of Engineering and Vocational Technology, and the insufficient level of application of digital technology is problematic for the educational practice and reform and development of SUEVT. The research questions of this study are as follows:

1. What is the velationship between the level of policy support in the context of digitization and the extent of reform at Shandong University of Engineering and Vocational Technology higher education?

2. What is the relationship between the level of digital technology adoption in the context of digitization and the extent of higher education reform at Shandong University of Engineering and Vocational Technology?

1.3 Research Objectives

Digital teaching is the requirement of the times, and digital technology is an important tool in the field of higher education today. With the development of the times, the importance of the digital transformation of higher education has become more and

more prominent, and the comprehensive promotion of digital reform has become a general trend. The purpose of this study is as follows:

1. To explore the relationship between the level of policy support and the extent of higher education reform at Shandong University of Engineering and Vocational Technology in the context of digitization.

2. To explore the relationship between the level of digital technology application and the degree of reform at Shandong University of Engineering and Vocational Technology higher education in the context of digitization.

1.4 Significant of the Study

In the era of big data, college education has gradually realized informatization, whether it is course teaching or school student source management. The significance of managing higher education under the new educational model is obvious; on the one hand, big data technology can address the issue of traditional education management's lack of efficiency; on the other hand, it also offers more suggestions for managing management tasks more effectively. It is an inevitable trend to promote the management of college education in the era of big data (Shi, 2022).

The extent of higher education reform in the context of digitization is of great theoretical and practical significance. In the age of big data, colleges, and universities can implement personalized education management for college students based on big data information, comprehend the social and developmental needs of college students in phases, and assist students in growing and developing more thoroughly in accordance with the concept of people-oriented education. A more comprehensive and accurate education management model can be found based on regional needs and differences in education objects, to make education management more comprehensive and accurate (Bai, 2022).

In addition, the research significance of the study is also reflected in the following aspects: educational equity and distribution of educational resources, teaching mode, and technological innovation in scientific research, as well as the internationalization of education and evaluation feedback. Digital technology has brought new possibilities to the teaching mode of higher education, which can effectively break geographic limitations and enable the wider dissemination of high-quality educational resources.

1.5 Scope of the Study

Promoting the digitalization of education has become a consensus and a common task for all sectors of society. This study will focus on the relationship between policy support and digital technology application and the extent of higher education reform at Shandong University of Engineering and Vocational Technology in the context of digitization, using questionnaire surveys with university teachers, students, and university management as the research subjects. Finally, this study will propose new models, new approaches, and related countermeasures for higher education reform in the context of digitization.

The study conducted an extensive literature review covering relevant studies on digitization of education, higher education reforms, policy support, and the use of digital technology in education. In the process, the study read 80 pieces of literature, including academic journals, conference papers, and government reports. A total of 330 questionnaires were distributed. The questionnaires were distributed and collected over a time span that began in September 2023 and ended in December 2023.

Chapter 2 Literature Review

2.1 Introduction

The literature review in this paper will focus on the impact of "policy support" and "digital technology" on higher education reform, as well as a case study of Shandong University of Engineering and Vocational Technology (SUEVT), aiming to gain a deeper understanding of the roles and interrelationships of these two factors in higher education reform. First of all, regarding the research on policy support, past academic literature has extensively investigated and analyzed the policies of different countries and regions in the field of higher education. Researchers have paid attention to the driving role played by the government in higher education reform and have conducted in-depth studies on aspects ranging from financial support and enrollment plans to teaching quality assurance. By synthesizing these findings, we can gain a comprehensive understanding of the impact of policies on the operation and development of higher education and provide a basis for subsequent research. Secondly, the application of digital technology in higher education has also become a hotspot of academic research. Established literature has focused on the improvement and innovation of education and teaching by digital technologies such as information technology, online education, and artificial intelligence, as well as the impact of digital transformation on students' academic achievement, discipline development, and education management. By synthesizing these studies, the practical application of digital technology in higher education and its far-reaching impact on the transformation of the higher education system. Finally, combining these two key factors and conducting an in-depth study using Shandong University of Engineering and Vocational Technology as a case study will help to understand the mechanisms by which policy support and digital technology interact at a practical level and their actual effects on higher education reform. By conducting the literature review, this study aims to provide theoretical support and empirical experience for a deeper understanding and promotion of higher education reform.

2.2 Policy Support

Policy support plays a key role in higher education reform. Policies can influence funding allocations, institutional changes, admission policies, and curriculum design. In Shandong, the government has been increasing its support for higher education reforms to improve education quality and international competitiveness. Xiong and Zhang's (2018) study found that there is a positive correlation between the degree of policy support and the degree of higher education reforms and that policy guidance and

support can accelerate the reform process. (Feinstein et al.2020) identify three distinct but overlapping policy uses.

Education supports climate change adaptation through three distinct but overlapping pathways, each offering concrete policy options: education infrastructure, general education, and adaptation learning support. The enactment of employability policy has driven an evolution in the practices of higher education in both curriculum and student support. (Campbell et al. 2019) present a case study of an Australian university that has reimagined the delivery of career and student support services through a framework that envisions preparing students for future worlds of work. The purpose of (Vargas et al. 2019) is to improve understanding of sustainable development implementation in higher education by undertaking a multilevel (international, national, organizational) analysis of policy frameworks. Results suggested that policy frameworks include policy issues such as collaboration, partnership, education, outreach, teaching and learning, staff development, curriculum review, research, campus operations, and policy that can support sustainable development implementation. (Johnson et al. 2020) aimed to develop an evidence-based, ACGME-compliant policy to optimize lactation support for residents and fellows at their institution and present a framework for improving lactation support for residents and fellows and share an institutional policy suitable for implementation by other graduate medical education departments.

(Masri et al. 2020) examine policy responses in higher education in March and April 2020 during the rapid unfolding of the COVID-19 pandemic. Actions to support higher education were largely dispersed and uncoordinated in the two key months of March and April 2020.(Óskarsdóttir et al. 2020) present a model based on a review of international and European policy and the current European Agency for Special Needs and Inclusive Education work on school leadership for inclusive education. The SISL project examines current theories of school leadership together with the core functions of school leaders in participating countries to develop a model specifically focused on inclusive school leadership. Agency projects such as SISL focus on research findings and policy developments that support countries to chart their course toward a common goal. This process of cross-national working permits member countries with their distinctive national, ethnic, cultural, and linguistic diversities to work together on common goals. Developments in international inclusive education policy, including in prominent UN documents, often refer to the aim of a quality education for all. And, under what conditions are quality educational experiences possible for all learners? Diana Murdoch, Andrea English, Allison Hintz, and Kersti Tyson bring together research on inclusive education with the philosophy of transformative learning, in

particular John Dewey and phenomenology, to further the discussion on these two questions (Murdoch et al., 2020).

To locate UDL within the specific inclusive education policy context of South Africa and consider how this approach can support policy implementation. (McKenzie et al. 2020) argue that UDL could serve as a strategy to link policy imperatives with classroom practice, enabling effective communication between the different actors. Children with special education needs (SEN), such as children with autism, benefit from being included in education along with typical peers. (Kessel et al. 2021) identify conditions that facilitate IE development for children with autism in the European Union and benchmarks to track IE policy development. (Werner et al. 2021) examine the association between perceived self-efficacy and attitudes toward inclusion among elementary school teachers. (N = 352) Working in general or special education schools completed questionnaires assessing attitudes towards inclusion, sense of self-efficacy, knowledge of current policy, and perception of support for inclusive practices.

2.3 Digital Technologies

Digital technologies have become an integral part of modern higher education and play a key role in improving the quality and flexibility of education. A study by Jin, Liu, and Liu (2020) showed that the widespread use of digital technology has enabled the university to offer more online courses, personalized learning, and real-time feedback, which has helped to reform educational practices. The nature and characteristics of self-directed learning have been transformed with the growth in digital and mobile technologies, however, there is minimal understanding of the role of these technologies in the self-directed learning habits of adult learners. (Curran et al. 2019) seek to explore the perspectives of adult learners regarding the effect of digital and mobile technologies on continuing professional education activities. Digital health literacy and digital skills are to become prerequisite competencies for health professionals to facilitate the implementation and leverage the potential of digital technologies to improve health. (Machleid et al. 2020) aim to assess European medical students' perceived knowledge and opinions towards digital health, the status of digital health implementation in medical education, and the student's most pressing needs.

This paper analyses whether the entrepreneurship education centers introduced by the Italian Ministry of Higher Education and Research in 2012 are effectively adopting emergent digital technologies for nurturing their entrepreneurship education activities and dissemination of knowledge contamination practices among university students. An in-depth analysis of Italian entrepreneurship education centers provides evidence of the direct role played by digital technologies in supporting and enhancing the entrepreneurial processes, as well as their indirect role in stimulating the

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entrepreneurship activities of nascent student entrepreneurs. Findings provide some insights into the strategic role of some categories of digital technologies inside the Cabs (Secundo et. al., 2020).

The main results show still a weak use of digital technologies in Cabs except for social media and digital platforms, mainly used for promotion scope and communication of the entrepreneurial outputs achieved by the students. Research limitations consist of the need to expand the study to all the other Cabs belonging to the Cabs Italian Network and to derive a set of "invariances" among the cases in terms of digital technologies support for student entrepreneurship. Practical implications of new ways of managing entrepreneurship centers will involve a more massive adoption of digital technologies to support and transform some processes realized inside the Cabs, even if the governance of such centers must develop new digital skills. The originality of the work regards the contribution to the emerging role of digital technologies on the student's entrepreneurship. (Schmidt et al.,2020) provide an overview of technology integration in education from computers to other more advanced forms of digital technologies.

The transformative potential of digitalization in education is exciting and presents many opportunities and challenges, given new trends and developments in digital technologies. Digital technologies fundamentally transform teaching and learning in higher education environments, with the pace of technological change exacerbating the challenge. (Nikou et al. 2021) employ Structural Equation Modelling (SEM) using Partial Least Squares (PLS) to examine the impact of information and digital literacy on 249 Finnish university staff and students' intention to use digital technologies. Digital technologies are expanding beyond innovative and less traditional techniques of teaching and learning via education collaboration. The final 47 studies are chosen for the review process using the PRISMA Statement 2015, and bibliometric analysis is done to find the occurrence of keywords (Qureshi et. al., 2021). The purpose of (Štemberger et. al., 2021) was to determine what attitudes specifically Slovenian student teachers hold towards using digital technologies in education, their self-reported proficiency in using digital technologies in education, and to what extent their attitudes towards using digital technologies in education predict their self-reported proficiency in using digital technologies.

The student teachers' attitudes towards using digital technologies in education were proved as an important predictor of their level of proficiency in using digital technologies. (Secundo et al. 2021) adopt a combined research approach to describe the experience of the Contamination Lab of the University of Salento, an entrepreneurship education program focused on innovative and technology-based entrepreneurship for university students. (Secundo et. al. 2021) shows a new approach to entrepreneurial

storytelling, pitching, and business planning and development through digital technologies. Other influential work includes (Beardsley et. al., 2021; Kovalchuk et. al., 2023)

2.4 Education Reform

Educational reform has been a key driver of social progress globally. In recent years, the wave of social change and technological advancement has driven the continuous evolution of the education system to meet the changing needs of society and to shape more creative, adaptable and globally competitive talents (Smith, 2018). The spread of digital technology and the impact of globalization have brought new opportunities for education, as well as a comprehensive transformation of the education system, prompting educational institutions to revisit teaching methods, curriculum design, and assessment systems (Brown & Wang, 2020).

However, the current education reform still faces a series of challenges. Social inequality and unequal distribution of educational resources are still hot issues in global education reform. The disconnection between the education system and the job market, as well as the imperfection of the assessment system, make the reform process face a complex and severe test. In order to overcome these challenges, future education reforms need to emphasize the overall quality training of students, focusing on the cultivation of innovative thinking and practical skills. In addition, more attention should be paid to the research, development and application of educational technology in order to better integrate digital tools with traditional teaching methods, enhance teaching effectiveness and promote better adaptation of students to the needs of the future society.

Among the extensive studies in this area, Smith (2018) pointed out the trend of global education reform, while Brown and Wang (2020) explored the challenges and opportunities facing education reform. In addition, Jones et al.'s (2021) study provides new perspectives on education reform in the digital age, highlighting the potential of digital technologies to facilitate student learning and improve teaching effectiveness. In addition, Powell et al. (2019) research study reveals the growing societal demand for STEM education (science, technology, engineering, and mathematics), which suggests new needs and directions for future educational reforms. Recent studies have also found that there is also a growing demand for ESD globally, which provides new ideas and goals for educational reform (Green et al., 2022).

2.5 Digitization of Teaching and Learning in Higher Education

The development of technology-intensive environments has led to the digital transformation of higher education, and universities around the world are adapting to

the digital transformation of technological advances and social informatization trends. As early as 2018, by the U.S. National Center for Education Statistics, nearly 35.3% of U.S. college students took at least one online course during their school years. In the same year, China's Ministry of Education issued the development goal of the digital transformation of university education and teaching, in addition to the deep integration of technology and teaching, but also requires universities to form a complete digital information era to adapt to the education system. The logical consequence of this shift requires innovation not only in the form of instruments and digitization of learning but also in learning innovation in the learning process and student learning experiences (Ratnawati, 2020).

Learning innovations using research-based learning models that are integrated through e-learning to improve student capabilities. (Fekih，2020) highlights the negative impacts of Covid-19 on higher education in Tunisia. The higher education sector has made remarkable headway through accelerating digitization and the pursuit of distance education during the pandemic, but constraints persist. Advances in science and technology contribute to educational development with the emergence of virtual education as an academic alternative for higher education institutions and as an opportunity for thousands of people who work and need constant training through educational platforms. (Guzmán's，2020) study compiled information in the scientific literature about the planning and structuring of virtual teaching and learning processes, applying Instructional Design. Digitization and automation across all industries have resulted in improvements in efficiencies and effectiveness in systems and processes, and the higher education sector is not immune (Butler-Henderson et al., 2020).

They provide a brief background on online examinations, followed by the results of a systematic review on the topic to explore the challenges and opportunities. (Kraus et al.2021) investigate the peculiarities of modern problems of higher education in Ukraine, considering objective conditions and current tendencies of the development of information society. The author's opinion is that changes are caused by integration processes in the higher education system, democratization of the process of obtaining education, and the introduction of tools for freedom of choice of resources and technologies. The higher education sector has faced increasing tension to transform due to digitization that reshapes the world in the 21st century to strengthen and improve the teaching and learning environment. Most of these past inquiries overlooked the effects of cultural and contextual components, where higher education landscape perspectives are often underrepresented. (Yassin et al. 2021) aim to fill this gap by critically reviewing a considerable number of past studies on the changes in Asian educational institutions.

The digitization of resources is the key to changing existing teaching means and teaching methods reform and has become the basis of higher education informatization (Yang, 2021). Yang aims to build an interactive digital ideological and political education platform based on the school to solve the problem of lack of interactivity and network function. To address the question of to what extent the conversion of teaching and learning as a result of the restrictions on teaching caused by COVID-19 has worked from the point of view of the teachers, (Schütte et al. 2021) present empirical results of an online survey among teachers of the Cooperation Network for Risk, Safety & Security Studies (CONRIS). (Dumulescu et al. 2021) aim to formulate specific learning design recommendations for developing effective didactic strategies and addressing the current worldwide critical issue: dealing with the digitization of higher education in the immediate future. The effectiveness of university teaching in the post-digital era is strongly connected with the ability to create cognitive-transferable learning experiences, and emotionally safe learning environments while promoting an active autonomy-focused approach for self-regulated learning (Zhang et al. 2022).

2.6 The Combined Impact of Policy Support and Digital Technologies on Educational Practices

Policy support and the level of digital technology adoption interact with each other in higher education reform, and together they affect educational practices. Policy support can provide motivation and direction for reform and can encourage universities to adopt digital technologies more actively. The adoption of digital technologies can provide tools and resources to achieve and meet, policy goals. For example, the government supports the development of online learning and virtual laboratories, which are interlinked with increased digital technology adoption (Cheng, Zhou & Zhang, 2019). Efforts to assess the impact of training in digital technologies on teachers' pedagogic practices remain relatively limited. In light of this, Mahapatra (2020) conducted a study aimed at exploring changes in the practices of three English for Science and Technology (EST) teachers in India.

The findings revealed a positive impact of the program on their practices, highlighting differences in the selection, utilization, and perception of digital technologies among the three teachers. Shifting focus to environmental sustainability, (Bacenetti et al. 2020) investigated the potential reduction in the environmental impact of nitrogen fertilization through smart technologies, specifically in paddy rice cultivation. Their study introduced a novel smart app, Pocket NNI, for field NNI estimates, integrated with remote sensing data, showing promising preliminary results that indicate potential environmental benefits. In the realm of higher education in Vietnam, Vo (2021) examined the uses of digital technologies within an English-

Medium Instruction (EMI) context. Employing a qualitative multiple case study, the research explored how teachers and students utilized digital technologies and their perceptions of students' learning development in the EMI environment.

The impact of the rapid transition to online education during the COVID-19 pandemic is explored by (Pittman et al. 2021), who shared responses from the literature and a small case study on the perceptions and practices of the school of education faculty. This study addressed multicultural and educational issues, providing insights into strategies for addressing digital equity and educational inclusion in online educational settings. Looking at the preparation of future educators, (Alelaimat et al. 2021) investigated the integration of technology and digital media in early childhood teacher education programs. Their study involved 192 preservice teachers, aiming to understand the implications for their future practices. (Meanwhile, Oudeweetering et al. 2021) shed light on two online learning initiatives funded by the European Commission, questioning their role as policy actors in the creation of a "borderless" European Education Area and their contribution to addressing the "refugee crisis." As educational technologies continue to evolve, (Deacon et al. 2022) delved into the various organizational factors crucial for the successful implementation of these technologies in higher education. This analysis comes in response to the renewed interest in maintaining lessons learned from the COVID-19 transition to online teaching. In the corporate sector, (Romagnoli et al. 2023) investigated how firms can enhance the functionality of their circular supply chains (CSCs) by adopting sustainable practices and digital technologies. Their study explores the benefits of specific technologies in boosting the impact of sustainable practices on CSCs. Finally, (Cook et al. 2023) reviewed empirical studies of Emergency Remote Teaching (ERT) over the past two years, deriving a conceptual frame for ERT digital competence. They applied this frame to analyze teaching or digital competency frameworks from Australian universities, emphasizing the role of institutional policies and digital competence frameworks. This body of research collectively addresses the multifaceted impacts and implications of digital technologies across education, agriculture, environmental sustainability, and corporate practices, contributing valuable insights to these evolving domains. Other influential work in this field includes (Hamburg et al. 2019).

2.7 Theoretical Framework

Policy support, digital technology, and higher education reform are clearly at the center of this study. This study will explore the impact of policy support and digital technology on the extent of Shandong University of Engineering and Vocational Technology's higher education reform in the context of digitization and establish a theoretical framework as shown in Figure 2.1 below, where the independent variables

are the degree of policy support and the level of digital technology adoption, and the dependent variable is the extent of Shandong University of Engineering and Vocational Technology's higher education reform.
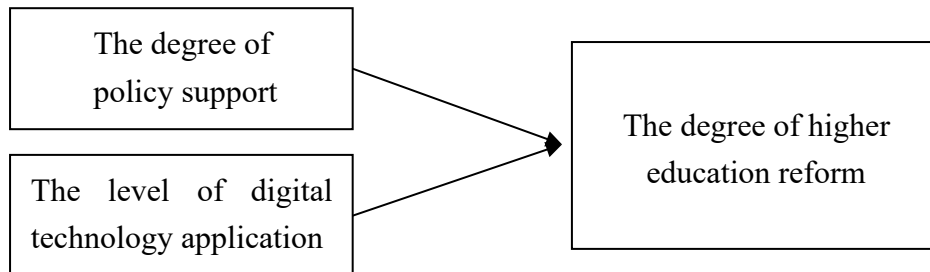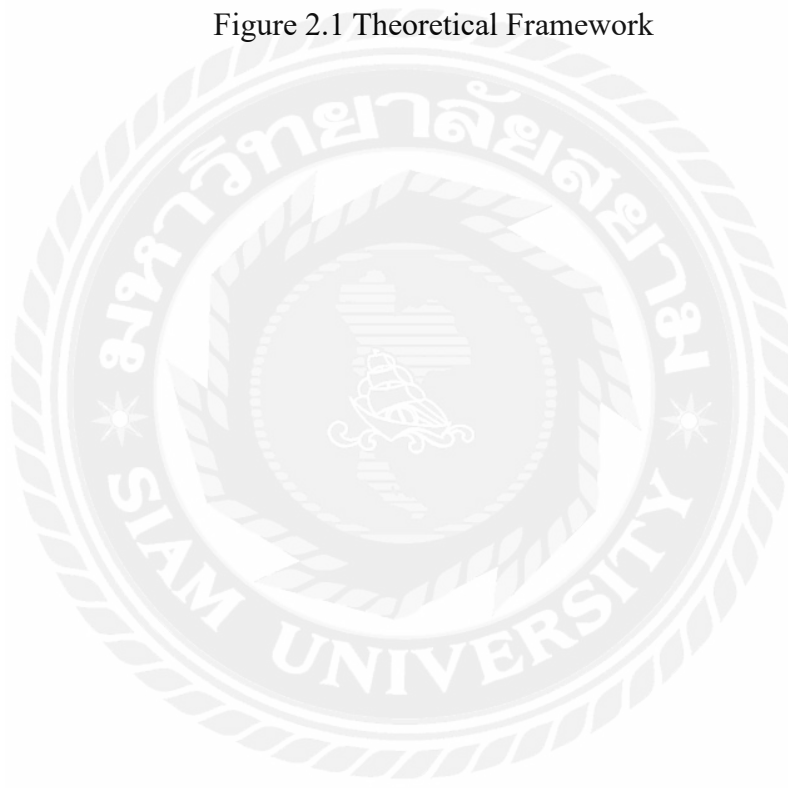

Figure 2.1 Theoretical Framework

Chapter 3 Research Methodology

3.1 Introduction

In this study, a questionnaire was designed for teachers and students of Shandong University of Engineering and Vocational Technology using quantitative research method. The questionnaire addressed issues related to the extent of higher education reform in the context of digitalization.

3.2 Population and Sampling

This study focuses on the impact of policy support and digital technology on the extent of higher education reform in Shandong University of Engineering and Vocational. The scope of the study is Shandong University of Engineering and Vocational (SUEVT), and the main target population is students, faculty and administrators of SUEVT. Other universities were excluded from the survey. The university has nearly 24,000 students enrolled in 26 undergraduate majors and 49 specialized majors. The main research method of this study is the random sampling method.

$$N = (r2*q2)/E$$

Calculated by the sample formula, collect data values for the quartile of the standard normal distribution, for the confidence level generally takes the value of 95%. q is the sample standard deviation, the sample standard deviation of the estimated value of the standard deviation of the sample is generally used 0.5, to determine the margin of error K (i.e., the maximum permissible value of the difference between the sample mean and the overall mean), K = 0.05. Calculated results yielded a sample of 330. For the random sampling method, an online survey will be conducted using Questionnaire Star for questionnaire distribution, and the sample will be drawn randomly from the overall population.

3.3 Research Design

The research design of this study utilizes quantitative research methodology. Quantitative research methodology is applicable to the study of policy support and the impact of digital technology on higher education reforms. This is because it allows for the collection and analysis of numerical data to identify patterns, correlations and statistical significance (Creswell & Creswell, 2017). In this study, a questionnaire survey was used to select Shandong University of Engineering and Vocational Technology as the study population from among students, faculty members, and administrators as a randomly selected number of participants as a research sample to

represent the overall situation of Shandong University of Engineering and Vocational Technology. Subsequently, the data collected were statistically analyzed in this study using SPSS 22.0, and based on the results of the analyses, the relationship between policy support, the degree of adoption of digital technology and the degree of reform in higher education was explained.

This paper utilizes the design and implementation of the relationship between policy support, the degree of adoption of digital technology and the degree of reform in higher education was explained through a case study of Shandong University of Engineering and Vocational Technology. Policy Support measures 4 items. L Digital Technology Application measures 4 items. Higher Education Reforms measures 4 items. A five-point Likert scale was used, with scores ranging from 1-5, representing strongly disagree, disagree, generally agree, agree, and strongly agree, with higher scores representing greater agreement with the item. The corresponding question items were designed for each variable and the items were coded as shown in Table 3.1.

Table 3.1 Measurement Items

Variate	Measuring item	NO.
Policy Support	1.The degree of influence of policy documents on higher education reforms in colleges and universities is significant.	Q1
	2.The extent to which government financial support is helpful in the reform of higher education in higher education institutions.	Q2
	3.The extent to which government propaganda of higher education reform policies has helped higher education reforms is large.	Q3
	4.Experience of colleges and universities policy support is very strong.	Q4
Digital Technology Application	5.Teachers' mastery of digital skills is very good.	Q5
	6.Teachers' use of digital technology for teaching, research or management purposes is very high.	Q6
	7.The digital technology facilities provided by the colleges and universities are able to meet demand.	Q7
	8.The experience of digital technology facilities in colleges and universities is very strong.	Q8
Higher Education Reforms	9.The extent to which the colleges and universities has implemented digital technology-based higher education teaching and learning modes is very high.	Q9

	10.The extent to which colleges and universities have implemented digital technology-based changes to student assessment in higher education is very high.	Q10
	11.High degree of implementation of digital technology-based changes in higher education management in colleges and universities.	Q11
	12.Colleges and universities have a very strong experience of higher education reforms	Q12

3.4 Data Collection

The study adopted a quantitative research methodology and developed a questionnaire that included questions on policy support, level of digital technology adoption, and level of reform in higher education. The questionnaire addressed issues related to the extent of reform of higher education in the context of digitization. The questionnaire utilized multiple-choice and open-ended questions aimed at obtaining respondents' views and opinions. In this study, the questionnaires were distributed to the participants of Shandong University of Engineering and Vocational Technology obtained from the sample. The questionnaires were distributed and collected through online platforms and offline. Finally, the data from the recovered questionnaires were collected and the data were cleaned and organized. A total of 330 questionnaires were distributed, 23 invalid questionnaires were excluded, and finally, 307 questionnaires were returned, with a validity rate of 93%.

The return of questionnaire data, provides specific information about the study, including the total number of questionnaires distributed, the number of invalid questionnaires, and the final number of valid questionnaires, as well as the validity rate. These data indicate the research sample size and valid sample size of the study, which helps to understand the sample size and the credibility of the data during the data collection process.

3.5 Data Analysis

In this study, the questionnaire data were validated and screened using SPSS 22.0 statistical software to ensure the validity and reliability of the data. Then, the data between related variables were correlated and analyzed by statistical methods to further validate the research hypotheses.

Reliability is the degree to which an indicator agrees with the variable it is intended to measure. Evaluate how much the score allows people to trust it. The higher the reliability, the less error is introduced into the scores for different items on the same

scale. Thus, the scores on the scale move consistently across respondents and reflect the true state of affairs. The greater the consistency, the greater the degree of reliability, and vice versa. In this study, Cronbach's Alpha was used as the basis for the reliability scores of the questionnaire. Generally speaking, Cronbach's alpha value is between 0 and 1. The larger the coefficient is, the higher the reliability of the questionnaire is. The survey data shows that the questionnaire's reliability is good. The questionnaire has 12 items in total. The Cronbach's alpha for Policy Support is 0. 898. The Cronbach's alpha for Digital Technology Application is 0.870. The Cronbach's alpha for Higher Education Reforms is 0.934, which is greater than 0.8, indicating that the scales have high stability and consistency. This indicates that the reliability of the questionnaire of this survey study is very good, as shown in Table 3.2. This indicates that the questionnaire is reliable in testing the factors affecting the extent of higher education reform at Shandong University of Engineering and Vocational Technology.

Table3.2 Reliability Analysis

Variate	Cronbach's Alpha	N of Items
Policy Support	0.898	4
Digital Technology Application	0.870	4
Higher Education Reforms	0.934	4

The results of SPSS data show that the KMO value is 0.815, with a significance of 0.000, which is less than 0.05 and reaches the significance level (Table 3.3). This indicates that there is a correlation between the variables and the factor analysis is valid. Then the factors with eigenvalues greater than 1 were extracted and the factors were rotated using the maximum variance method the results showed that the factor loading values were greater than 0.4, which indicated that the questionnaire had good structural validity.

Table3.3 Validity Analysis

KMO &Bartlett's test		
KMO		0.815
Bartlett's test	Approximate Chi-square	2113.909
	df	66
	Sig	0.000

3.6 Hypothesis

Based on the literature review, the construction of the theoretical model, and the proposed research design, the following hypotheses were formulated in this study, as shown in Figure 3.1 below.

H1: The degree of policy support positively affects the degree of higher education reform at Shandong University of Engineering and Vocational Technology in the context of digitization.

H2: The level of digital technology application positively influences the degree of higher education reform at Shandong University of Engineering and Vocational Technology in the context of digitization.
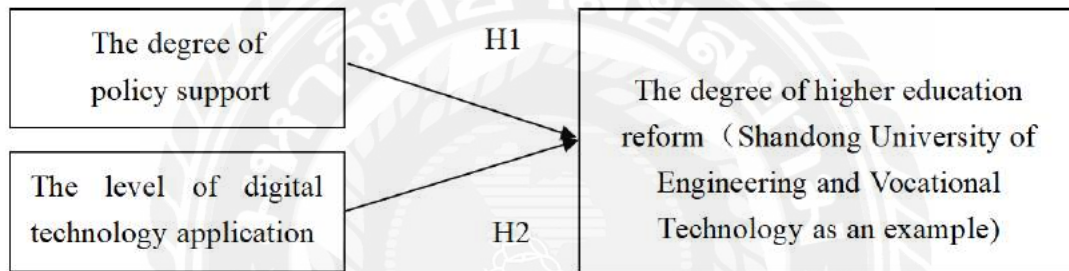
Figure 3.1 Hypotheses

Chapter 4 Finding

The current social and economic growth must address the important issue of digital transformation, which is particularly heavy in the field of higher education. After analyzing the questionnaire data, it is easy to find the following conclusions.

4.1 Description of Statistical Variables

This study takes Shandong Engineering Vocational and Technical College as an example, and the questionnaires were collected, collated, and counted. A total of 307 valid questionnaires were collected in this study. This study statistically describes the overall distribution of the sample, as shown in Table 4.1.

1). Gender: divided into two categories, male and female.

2). Age: 18-25 years old, 26-35 years old, 36-45 years old, 46-55 years old, and 55 years old and above.

3). Income: Below 2000 yuan, 2001-4000, 4001-6000, 6001-8000, 8001-10000, More than 10000 yuan.

4). Educational level: High school, Bachelor, Master, Ph.D., Others.

5). Occupation: Students, Teachers, Administrators, Others.

Table 4.1 Statistics on the Distribution of Survey Respondents

Items	Category	Frequency	Percentage
Gender	Male	200	65%
	Female	107	35%
Age	18-25 years old	80	26%
	26-35 years old	120	39%
	36-45 years old	50	16%
	46-55 years old	40	13%
	55 years old and above	17	5%
Income	Below 2000 yuan	30	10%
	2001-4000	40	13%
	4001-6000	110	36%
	6001-8000	100	32%
	8001-10000	20	6%
	More than 10000 yuan	7	2%
Educational level	High school	50	16%
	Bachelor	100	32%
	Master	120	39

	Ph.D.	30	10%
	Others	7	2%
Occupation	Students	50	16%
	Teachers	150	48%
	Administrators	100	32%
	Others	7	2%

The distribution of the sample characteristics can be seen in Table 4.1 as follows:

In terms of the gender composition of the respondents, there is a large difference in the proportion of men and women, with men as accounting for 65% and women for 35%. In terms of age composition, respondents aged 26-35 accounted for the majority of respondents, which was 39%. Respondents aged 55 or above accounted for a smaller proportion of the total, at 5%. In terms of the monthly income of the respondents, those earning $4001-6000 and those earning $6001-8000 accounted for a larger proportion, at 36% and 32% respectively. In terms of education level, most of the interviewees are highly educated, with master's degree accounting for 39% and bachelor's degree accounting for 29%. In terms of position status, the vast majority of respondents in this survey were teachers, accounting for 48%, followed by Administrators, accounting for 32%. In addition, the survey sample shows a single peak in terms of education level and income status, and the sample is in good condition.

4.2 Analysis of Variance (ANOVA)

ANOVA was also conducted in this study; the analysis results are shown in Table 3.4. The table shows that the ANOVA was used to investigate the difference between higher education reforms in higher education colleges and universities on policy support and digital technology adoption in higher education colleges and universities.

As can be seen from Table 4.2, ANOVA was used to investigate the variability of the degree of higher education reform in schools for the degree of school policy support, the degree of digital technology application in schools for a total of 2 items, as can be seen from Table 3.4: the degree of higher education reform in schools for the degree of school policy support, the degree of digital technology application in schools for all show significance (p<0.05), which means that there is variability in all of them. The specific analyses are as follows.

1). Colleges and universities higher education reform for policy support shows 0.01 level of significance (F = 10.344, p = 0.000), as well as specific comparison of the differences can be seen, there is a more obvious difference between the group mean score comparison results for "agree > strongly agree" (Figure 4.1).

2). Colleges and universities higher education reform for the digital technology applications show a 0.01 level of significance (F = 48.942, p = 0.000), as well as specific comparative differences can be seen, there are more obvious differences in the group mean score comparison results for "agree > strongly agree" (Figure 4.2)

Table4.2Analysis of Variance (ANOVA) Results

| | Colleges and Universities Higher Education Reform | | | F | P |
	Strongly Agree	Agree	General		
Policy Support	1.30±0.54	2.20±0.45	3.00±null	10.344	0.000
Digital Technology Applications	1.04±0.19	1.80±0.45	3.00±null	48.942	0.000
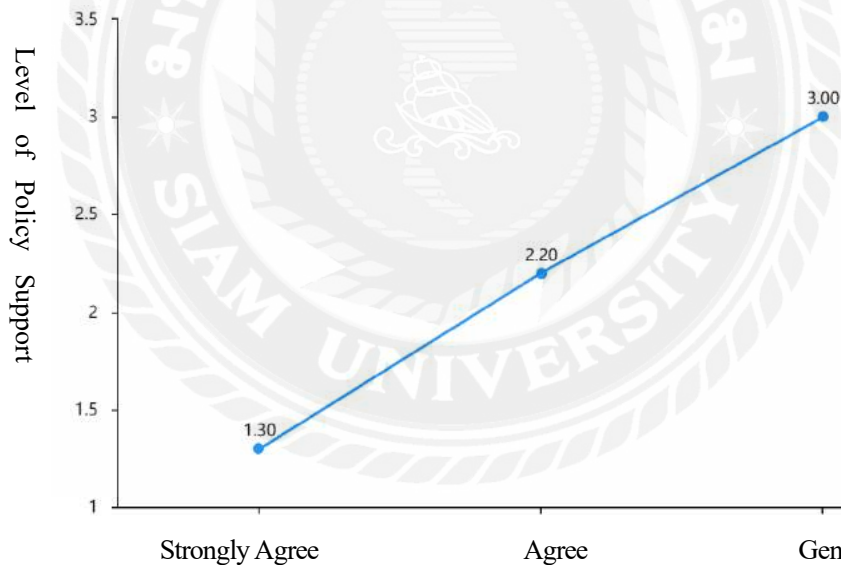
Figure 4.1 ANOVA Comparison of Colleges and Universities Higher Education Reform and Policy Support
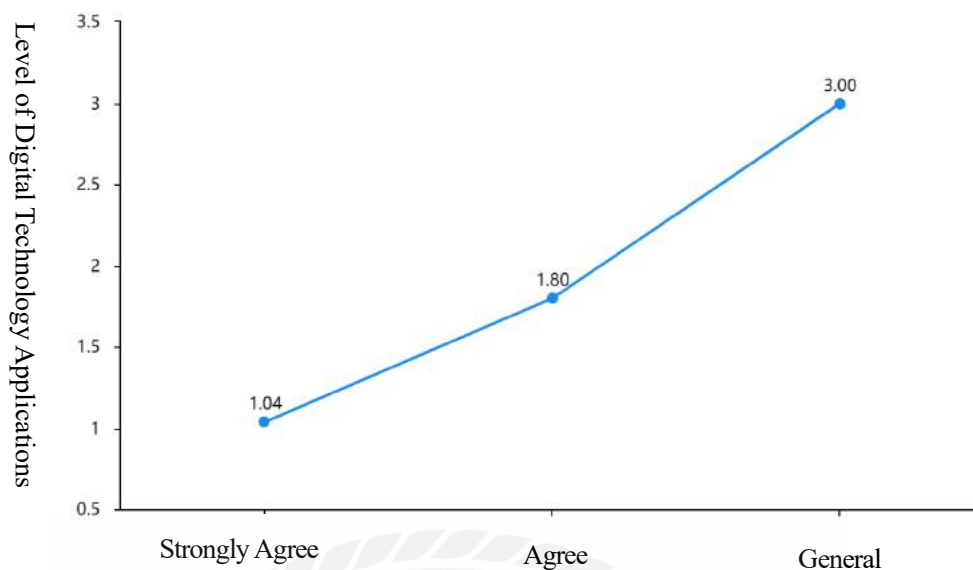
Figure 4.2 ANOVA Comparison of Colleges and Universities Higher Education Reform and Digital Technology Applications

The study also conducted a one-sample t-test using SPSS 22.0 and as shown in Table 4.3, the p-values for each of the analyzed items are less than 0.01, which presents significance. This indicates that the mean value of each item is statistically different from the number 0.0.

Table 4.3 Results Analyzed by One-sample T-test

Entry	Minimum Value	Maximum Value	Average Value	Standard Deviation	T	P
1	1.000	3.000	1.515	0.619	14.072	0.000**
2	1.000	2.000	1.333	0.479	16.000	0.000**
3	1.000	2.000	1.364	0.489	16.036	0.000**
4	1.000	3.000	1.485	0.667	12.786	0.000**
5	1.000	3.000	1.515	0.667	13.047	0.000**
6	1.000	2.000	1.152	0.364	18.167	0.000**
7	1.000	2.000	1.152	0.364	18.167	0.000**
8	1.000	3.000	1.212	0.485	14.368	0.000**

9	1.000	2.000	1.182	0.392	17.333	0.000**
10	1.000	2.000	1.152	0.364	18.167	0.000**
11	1.000	2.000	1.121	0.331	19.433	0.000**
12	1.000	3.000	1.212	0.485	14.368	0.000**

* $p<0.05$ ** $p<0.01$

4.3 Linear Regression Analysis

Based on the above analysis, this study conducted a linear regression analysis with the degree of policy support the degree of digital technology application as independent variables, and the degree of reform of higher education in schools as the dependent variable, as can be seen in Table 4.4, the model formula is: the degree of reform of higher education in schools = 0.061 + 0.174*degree of policy support + 0.737*degree of digital technology application. The R-square value of the model is 0.792, which means that the degree of policy support in schools and the degree of digital technology application in schools can be used to explain 79.2 percent of the variation in the degree of reform in higher education in schools. The F-test of the model was found to pass the F-test (F=57.080, p=0.000<0.01), which means that the model construction is meaningful. At least one of school policy support degree, school digital technology application degree will have an impact on the degree of school higher education reform, in addition, for the model of multiple covariance test found that the model of VIF value are all less than 5, which means that there is no covariance problem, and the D-W value in the number of numbers near the 2, thus indicating that the model does not exist in the autocorrelation, there is no correlation between the sample data relationship, and the model is better. The final specific analyses r as follows:

1). The regression coefficient value of the degree of school policy support is 0.174 (t=2.411, p=0.000<0.01), which means that the degree of school policy support will have a significant positive influence relationship on the degree of school higher education reform.

2). The regression coefficient value of the degree of school digital technology application is 0.737 (t=7.442, p=0.000<0.01), which means that the degree of school digital technology application will have a significant positive influence on the degree of school higher education reform.

Table4.4 Results of Linear Regression Analysis

Item	B	S.E.	Beta	t	p	VIF	1/ VIF
C	0.061	0.116	-	0.521	0.607	-	-
the degree of policy support	0.174	0.072	0.239	2.411	0.000*	1.416	0.706
the degree of digital technology application	0.737	0.099	0.737	7.442	0.000**	1.416	0.706
R Square	0.792						
Adjusted R Square	0.778						
F	F (2,30)=57.080,p=0.000						
Durbin-Watson	2.240						

4.4 Hypothesis Testing

Based on the analysis of the study conducted in Shandong University of Engineering and Vocational Technology, the results support hypotheses H1 and H2 regarding the impact of policy support and digital technology application on the extent of higher education reform in the context of digitization. As shown in table 4.5

H1: The degree of policy support positively affects the degree of higher education reform.

The results of ANOVA show that there is a significant difference in the degree of higher education reform based on policy support (F = 10.344, p = 0.000). Specific comparisons showed more pronounced differences between groups, with higher mean scores in the "Agree" category than in the "Strongly Agree" category. In addition, linear regression analysis confirmed the positive effect of the level of school policy support on the level of higher education reform in schools. The regression coefficient was 0.174 (t = 2.411, p = 0.000 < 0.01), indicating a significant positive relationship.

H2: The level of digital technology adoption positively affects the degree of higher education reform.

The results of ANOVA for digital technology adoption similarly showed a significant difference in the level of higher education reforms (F = 48.942, p = 0.000). Specific comparisons showed more pronounced differences between groups, with higher mean scores in the "Agree" category than in the "Strongly Agree" category.

Linear regression analysis further confirmed the positive effect of the level of digital technology adoption in schools on the level of higher education reform in schools. The regression coefficient was 0.737 (t = 7.442, p = 0.000 < 0.01), indicating a significant positive effect.

Overall, both policy support and digital technology application were identified as significant factors positively influencing the degree of higher education reform in the context of digitization in Shandong Engineering Vocational and Technical University. The regression model has a high R-squared value of 0.792, indicating that policy support and digital technology application can explain up to 79.2% of the variance in the degree of higher education reform. The model passed the F-test, indicating that its construction is meaningful. The multiple covariance test of the model shows that the VIF values are all less than 5, indicating that there is no covariance problem. In contrast, the D-W value is close to 2, indicating that there is no autocorrelation in the model and there is no correlation between the sample data, and the model performs well.

The regression coefficient of the degree of school policy support is 0.174 (t = 2.411, p = 0.000 < 0.01), indicating that the degree of school policy support will significantly and positively affect the degree of higher education reform in schools.

The regression coefficient of the degree of school digital technology application is 0.737 (t = 7.442, p = 0.000 < 0.01), indicating that the degree of school digital technology application will significantly and positively affect the degree of school higher education reform.

Table4.5 Hypothesis Test

NO.	Hypothesis	Result
H1	The degree of policy support positively affects the degree of higher education reform.	Supported
H2	The level of digital technology adoption positively affects the degree of higher education reform.	Supported

Chapter 5 Conclusion and Recommendation

5.1 Conclusion

Based on the results of the analyses, the study explains the relationship between policy support and the extent of higher education reform. In the context of digitization, the level of policy support positively affects the extent of higher education reform at Shandong University of Engineering and Vocational Technology. And the results of the analyses explain the relationship between the level of digital technology application and the extent of higher education reform. In the context of digitization, the level of digital technology application positively affects the extent of Shandong University of Engineering and Vocational Technology's higher education reform.

5.1.1 The relationship between the level of policy support and the extent of higher education reform

The results of ANOVA show that there is a significant difference in the degree of higher education reform based on policy support (F = 10.344, p = 0.000). Specific comparisons showed more pronounced differences between groups, with higher mean scores in the "Agree" category than in the "Strongly Agree" category. In addition, linear regression analysis confirmed the positive effect of the level of school policy support on the level of higher education reform in schools. The regression coefficient was 0.174 (t = 2.411, p = 0.000 < 0.01), indicating a significant positive relationship. This supports the first research hypothesis (H1).

Government policy support not only provides the resources and direction needed for reform but also incentivizes HEIs to participate more actively in reforms to improve the quality of education and meet the challenges of the digital age. In the context of digitalization, the level of policy support positively affects the extent of higher education reform at Shandong University of Engineering and Vocational Technology. Government policy support not only provides the needed resources and direction for reform, but also motivates universities to participate more actively in the reform in order to improve the quality of education and meet the challenges of the digital era. Talent is the cornerstone of industrial development and the gas pedal that fuels industrial transformation and upgrading. The development of Shandong University of Engineering and Vocational Technology needs to separate talent cultivation from industrial development, grasp the market development needs to cultivate professionals, and match the quality of talent cultivation with industrial development needs. As the supply side of talent, while expanding the scale, it should carry out digital transformation, strive to improve the quality of talent, teach students to apply digital technology to industrial practice, and strengthen the synchronization between talent training and industrial development. In addition, the advancement of talent cultivation

is higher than the status quo of industrial development, so it is necessary to promote the transformation and upgrading of industry with the digital transformation of education. With the rapid development of digital technology, the Chinese government has realized the importance of digitization to higher education and adopted a series of policy measures to promote the digital transformation of higher education. These policy supports include financial input, regulation making, talent cultivation, etc., which provide better conditions and resources for S Shandong University of Engineering and Vocational Technology to carry out digital reform. Therefore, the stronger the policy support, the higher the motivation and effectiveness of universities to carry out reforms in the context of digitization will increase accordingly.

5.1.2 The relationship between the level of digital technology application and the extent of higher education reform

The results of ANOVA for digital technology adoption similarly showed a significant difference in the level of higher education reforms (F = 48.942, p = 0.000). Specific comparisons showed more pronounced differences between groups, with higher mean scores in the "Agree" category than in the "Strongly Agree" category. Linear regression analysis further confirmed the positive effect of the level of digital technology adoption in schools on the level of higher education reform in schools. The regression coefficient was 0.737 (t = 7.442, p = 0.000 < 0.01), indicating a significant positive effect. This supports the second research hypothesis (H2).

In the context of digitization, the level of digital technology application positively affects the extent of Shandong University of Engineering and Vocational Technology's higher education reform. The wide application of digital technologies has provided more educational tools and resources, enhancing online learning, personalized education, and educational innovation. The wide application of digital technology has provided colleges and universities with more educational tools and resources, enhancing online learning, personalized education, and educational innovation, all of which have contributed to the reform of higher education. At present, the level of digital infrastructure construction in Shandong University of Engineering and Vocational Technology is relatively backward. The importance attached to digital construction is not high, and digital infrastructure construction is still in its infancy. The application of emerging digital technologies is still lacking, and most of them are still traditional deliberative decision-making. Therefore, Shandong University of Engineering and Vocational Technology needs to rapidly improve digital infrastructure construction and digital transformation. The degree of regional economic growth in China is highly correlated with the development of universities. With the rapid popularization and application of information technology, various emerging technologies, such as artificial intelligence, big data analysis, and online learning platforms, have been widely used in

the teaching, management and services of higher education. These technologies have not only improved the quality and efficiency of teaching, but also enriched students' learning experience and access to resources. Therefore, the higher the level of application of digital technologies, the ability and effectiveness of universities to carry out reforms in the context of digitization will be enhanced accordingly.

The conclusion of this study emphasizes the importance of policy support and digital technology adoption in shaping higher education reform at Shandong University of Engineering and Vocational Technology. Government policy support provides the backing and impetus for reform, while digital technology adoption provides the tools and resources to achieve policy goals. Together, these two factors have driven innovation and reform at Shandong University of Engineering and Vocational Technology's higher education sector, providing opportunities to improve the quality of education, promote accessibility, and adapt to the demands of the digital age. These findings have practical implications for policymakers, administrators, and education researchers to guide future policy and practice.

5.2 Recommendation

5.2.1 Actively promote the sharing and synergy mechanism of digital resources in universities in China.

Currently, there are specific problems of fragmentation and duplication in the development and use of digital resources in universities. Based on the positive relationship between the level of policy support and the degree of higher education reform, the following measures are suggested to actively promote the digital resource sharing and collaboration mechanism in Chinese universities:

Firstly, the government should increase the level of policy support for digital resource sharing and collaborative mechanisms. The government can issue policy documents to encourage colleges and universities to establish digital resource-sharing platforms to promote the sharing and exchange of teaching resources. In addition, the government can provide the necessary financial input and technical support to help universities build digital resource management systems.

Secondly, colleges and universities should strengthen cooperation and synergy and establish a mechanism for sharing digital resources. Colleges and universities can set up digital resource-sharing centers and promote resource-sharing and synergy among different colleges and universities by establishing alliances or network platforms. At the same time, colleges and universities can encourage teachers and students to actively participate in developing and sharing digital resources by formulating relevant regulations and reward mechanisms.

Finally, universities need to strengthen the management and maintenance of digital resources. Colleges and universities can set up special teams responsible for the screening, integration and management of digital resources.

In addition, colleges and universities should strengthen the quality assessment of digital resources to ensure the reliability and effectiveness of shared resources. The digital transformation of colleges and universities should focus on technical collaboration, business collaboration, and data collaboration, and achieve the goal of cross-level, cross-department, cross-campus, cross-campus, cross-school level, cross-school-enterprise, and cross-school household. Students, teachers, and everyone in the school will generate a large amount of data, which can be digitized to achieve precision goals. On this basis, by analyzing the differences behind individual goals, establishing a unified coordination mechanism and platform, actively promoting the communication and flow of individual data among various subjects, forming a digital brain of colleges and universities from individual to whole, collaboratively governing the digital transformation of universities, and improving the digital capabilities of universities.

5.2.2 Establishing the awareness of big data education management and establishing a sound information-based education management system.

In the era of big data, 5G technology, information systems, website construction multimedia applications, and other information technologies can bring new ideas to college education management. As a result, we must keep up with the times, hasten the establishment of big data management awareness, and perform a more rational and scientific job in managing education. Many college instructors in China now lack a thorough understanding of big data education management, and some instructors are not even aware of the concept. On the one hand, it is difficult to ensure the accuracy of education management, which leads to the problem of insufficient management efficiency, on the other hand, it cannot meet the development of the times, and the development and reform of college education will also be affected to a certain extent . Based on the positive relationship between the degree of digital technology adoption and the degree of higher education reform, it is recommended that the following measures be used to create awareness of big data education management and to establish a sound information-based education management system.

Firstly, university management should strengthen the cultivation of awareness of big data education management. In the era of big data, innovative forms of education management are an inevitable development demand, so university management should first help all teachers in colleges and universities establish correct educational management concepts. Leaders of colleges and universities should pay attention to the role of big data in education management, understand its potential value and application

scenarios, and actively promote the formulation and implementation of relevant policies.

Secondly, colleges and universities should establish a sound information-based education management system. Colleges and universities can introduce advanced information management systems to achieve digital processing and integration of various aspects of teaching affairs, student management, teacher evaluation and so on. At the same time, colleges and universities should also strengthen the normative and standardized construction of the information-based education management system to ensure its scientific and operability, strengthen the application of modern information technology training, and improve and innovate the way of education management in colleges and universities.

Finally, colleges and universities should also continuously optimize the education management courses to adapt to the needs of change in the era of big data, and at the same time, they can also strengthen cooperation with relevant enterprises and institutions to jointly promote the construction of information-based education management system. Through the co-operation with enterprises, colleges and universities can learn from the management experience of enterprises to improve the efficiency and effectiveness of the information-based education management system.

5.2.3 Raise the bar for information technology construction and increase the education of information technology staff.

In the era of big data, the update speed of information equipment and resources is very fast. If the information construction of colleges and universities has been in a backward state, then the education management work will inevitably be affected . In order to further increase the level of adoption of digital technology and reform of higher education, the following measures are recommended to raise the standard of information technology (IT) construction and to enhance the education of IT personnel.

Firstly, colleges and universities should set clear standards for information technology construction. Through normative documents and guidance, colleges and universities can clarify standards for the configuration requirements of information technology facilities, network security requirements and other aspects to ensure the effective use and application of information technology. At the same time, increase the capital investment in digitization and information infrastructure construction. School digital libraries, multimedia equipment, smart classrooms, teaching computers, information management systems, and private network resources all need sufficient fund guarantees. Schools should increase investment and do a good job in information infrastructure construction. Only the implementation of information infrastructure construction can better promote education reform and innovation. Because there is more educational information available in schools in the big data era traditional

teaching resources are no longer adequate to satisfy students' learning demands. Schools should fully utilize the benefits of big data and delve into their educational and instructional resources to improve the management of these areas and aid in the all-around growth of kids. Big data technology will advance in the future, and this will transform how universities administer their educational programs. Improve the comprehensive literacy of education administrators. Education management personnel are the executors of education management work, and their comprehensive quality will inevitably have a direct impact on the effect of education management work.

Second, colleges and universities need to strengthen the training and education of information technology personnel. Colleges and universities can set up learning and exchange platforms or use information platforms to organise information technology training courses, teachers' salons, lecture competitions or seminars, so as to enhance the professional knowledge and technical skills of information technology personnel and managers, as well as the level of information literacy in the disciplines of teaching and educating and the level of literacy in education and management. At the same time, colleges and universities can also actively recruit professionals with information technology backgrounds and capabilities, and the era of big data offers the possibility of "talent exchange" among colleges and universities. Managers in the field of education may also be able to obtain new information and competence as a result, and also provide better support and guarantee for the construction of information technology.

Finally, colleges and universities have set up special talent training funds. On the one hand, they can increase investment in talent training to attract more excellent teachers; on the other hand, they can also hire high-level experts at high salaries to help managers improve their abilities. In addition, colleges and universities can also strengthen cooperation with relevant enterprises and institutions to jointly promote the construction of information technology. Through co-operation with enterprises, colleges and universities can obtain advanced information technology equipment and solutions, as well as professional technical support and services.

The above recommendations aim to promote the reform of higher education and the development of digital education, and require the joint efforts and co-operation of universities, the government and relevant stakeholders. Through active implementation of these recommendations, it is expected to further enhance the quality and effectiveness of higher education and make positive contributions to the cultivation of more outstanding talents.

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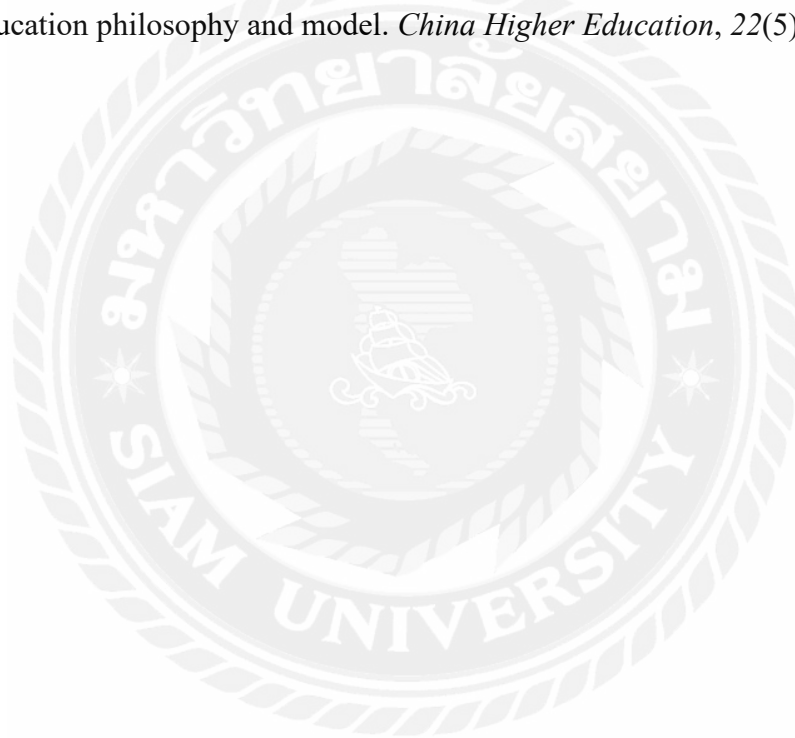
Appendix Questionnaire

Dear Sir/Madam,

Thank you for your participation in this questionnaire survey. The survey will be conducted anonymously, and your relevant information will be kept confidential. Thank you again for your cooperation.

Part I：

1. Gender?   A Male   B Female
2. Age?   A 18-25   B26-35   C36-45   D46-55   E above 55
3. Monthly income?
A Below 2000yuan   B 2001-4000   C 4001-6000   D 6001-8000
E 8001-10000   F More than 10000 yuan
4. The highest education?
A High school   B Bachelor   C Master's degree   D Ph.D.   E Others
5. What is your occupation What is your occupation?
A Students   B Teachers   C Administrators   D Others

Part II:

Please judge to what extent you agree with the following statement; choose the most appropriate option, and mark the corresponding number " √ . " The questionnaire used a Likert scale, ranging from 1 to 5 in which one indicates strongly disagree (or strongly disagree), two indicates relatively disagree (or relatively disagree), three indicates neutral, four indicates relatively agree (or relatively agree), and five indicates strongly agree (or strongly agree)

Measuring item	Strongly disagree	Disagree	General	Agree	Strongly agree
Policy Support					
1.The degree of influence of policy documents on higher education reforms in colleges and universities is significant.					
2.The extent to which government financial support is helpful in the reform of higher education in higher education institutions.					
3.The extent to which government propaganda of higher education reform policies has helped higher					

education reforms is large.					
4.Experience of colleges and universities policy support is very strong.					
Digital Technology Application					
5.Teachers' mastery of digital skills is very good.					
6.Teachers' use of digital technology for teaching, research or management purposes is very high.					
7.The digital technology facilities provided by the colleges and universities are able to meet demand.					
8.The experience of digital technology facilities in colleges and universities is very strong.					
Higher Education Reforms					
9.The extent to which the colleges and universities has implemented digital technology-based higher education teaching and learning modes is very high.					
10.The extent to which colleges and universities have implemented digital technology-based changes to student assessment in higher education is very high.					
11.High degree of implementation of digital technology-based changes in higher education management in colleges and universities.					
12.Colleges and universities have a very strong experience of higher education reforms					