IJAMS

Digital Transformation Strategy, Management Practices and Challenges Among Academic Heads of Higher Education Institutions in Zamboanga Peninsula

MARICOR A. MARQUEZ, Ph.D.
Colegio de la Ciudad de Zamboanga

JOE-AN G. CUARESMA, Ed.D.
Commission on Higher Education
joeangcuaresma@gmail.com

Abstract — The study aimed to determine digital transformation strategy (DTS) and management practices among academic heads of higher education institutions (HEIs) in the Zamboanga Peninsula during the school year 2022-2023. The digital transformation strategy and management practices were measured in terms of three areas namely; digital leadership, technology utilization, and workforce capability through a Survey Questionnaire (SQ) and the challenges experienced by academic heads through a semi-structured interview. This study made use of mixed research design involving 108 teacher-respondents and eight academic heads-participants. Analysis of results was conducted using mean and standard deviation, parametric tests such as Pearson-r Coefficient of Correlation and t-independent test, and Analysis of Variance (ANOVA). The findings revealed that the faculty digital transformation strategy among academic heads was moderately evident in technology utilization and highly evident in terms of digital leadership and workforce capability. Moreover, their DT management practices were highly evident. The identified challenges that academic heads experienced were managing incapable teachers, retaining qualified and competitive faculty, lack of structures and technological resources (facilities, tools, and equipment), and poor internet connections. There was a significant relationship between the digital transformation strategy and DT management practices among academic heads of HEIs when analyzed.

Keywords — Digital Transformation Strategy, Management Practices, Digital Leadership, Technology Utilization, Workforce Capability

I. Introduction

Digital transformation is a major change including the use of digital technology to reconstruct teaching models and processes and increase the effectiveness and efficiency of learning. It is the use of Information and communication technology (ICT) in the four essential areas namely; teaching and learning, communication, governance planning and decision-making, and process and operations (UNESCO MGIEP, 2018). The framework for digital transformation is used as a tool to direct all levels of the business and acts as a roadmap for how an organization transitions from the requirement for significant change to meet the changing business needs

(Storey, 2023). The quick and expanding development of digital technologies deemed necessary in educational settings, which turn the learning environment into digital learning, has made the digital transformation strategy (DTS) acknowledged as being equally as important as the inevitable digital transformation in education. DTS is required in universities due to global phenomena including internet use, information interchange, digitalization, virtualization, and social media use, all of which in some way influence how students learn. With the DTS, the theory is put into practice, especially when universities use digital capabilities to revolutionize the way that teaching and learning are delivered and when they use digitally oriented management to give students an exceptional experience.

On the other hand, management practices relate to the strategies employed by managers to raise the standard of their work, such as staff empowerment and training, the introduction of quality-improving programs, and the use of new technologies to boost employee performance in the direction of organizational objectives. Similar to other groups, Afridi et al. (2019) noted that in order for knowledge management to function well and support the success of a company, Higher Education Institutions (HEIs) must adhere to proper management practices, including information storage and accessibility.

Furthermore, HEIs amid digital transformation need to develop "digital pedagogies" and make it a priority to not just incorporate technology in the operation but as a process for analyzing the needs, the demands of the stakeholders, and students' needs to be able to provide a world-class learning experience. DTS involves the intense alteration to deliver the highest quality education, to enable world-class education experience, and to transform the students in keeping with the globalized industry demands with minimal capital expenditure, resource savings and without regular budget constraints, with high-standard set and sustainable competitive advantage to compete in the global educational landscape (Mohamed, 2022). The DTS when being practiced in HEIs shall improve the learning process and automate plenty of essential operations. There is an increasing concern about how education handles its place in the knowledge society, along with the development of several digital tools and technology. The management of HEIs is expected to be prepared to implement changes and adapt to the digital transformation strategy in order to keep up with the world's rapid technological advancement, to fulfill the HEI mission, and to continue to be relevant as it enters the fourth industrial revolution. It is essential that HEIs deal with the disruptive digital technologies in order to establish innovative, adaptable models and to shape learning and development, delivery, and continuous improvement methods. All these concerns led to the observation that HEIs in Zamboanga Peninsula face significant changes and challenges pertinent to the digital transformation in terms of management, the adoption of digital tools and technology in the teaching and learning process, human resources, and modifying the existing systems, processes, communication modes, and channels and all the other academic and administrative activities involved in the institutes. DTS covers the management, the process, and the technology in place for HEIs.

This study was conducted to determine the digital transformation strategy, management practices, and challenges among academic heads of higher education institutions (HEIs) in Zamboanga Peninsula during the school year 2022-2023. digital leadership, technology utilization and workforce utilization and the challenges among academic heads, specifically the deans, department heads, and program chairs/coordinators of the different offered education programs of higher education institutions (HEIs). Furthermore, the profile of the respondents such as age, educational attainment, length of service, and type of HEI were included in this study.

Moreover, the hypothesized significant difference in the digital transformation strategy and management practices according to profile were determined. This study served as baseline data for the proposed Digital Leadership Technology Utilization Workforce Capability Model.

II. Methodology

The study employed the mixed method research design. Raosoft sample calculator was utilized resulted to 108 teacher-population in eight higher education institutions (HEIs). Furthermore, eight academic heads-participants particularly one per HEI were interviewed about the challenges experience in the implementation of digital transformation strategy.

A modified survey questionnaire was used to measure digital transformation strategy and management practices in terms of digital leadership, technology utilization and workforce capability with five indicative statements each scored very high reliability coefficients of 0.8605, which means the survey questionnaire is reliable. The respondents for pilot-testing were the faculty of a college during school year 2022-2023.

The survey questionnaire has four parts. Part 1 of the questionnaire described the profile of teacher-respondents in terms of their age, educational attainment, length of service and type of HEI. Part 2 and 3 consisted of a 4-point Likert Scale survey question with the following description: 4-Highly Evident; 3-Moderately Evident; 2-Fairly Evident; 1-Not Evident. It delved on the digital transformation strategy and management practices in terms of digital leadership, technology utilization, and workforce capability, respectively through survey questionnaire with five indicative statements. Part 4 focused on the challenges that academic heads experience in the implementation of the digital transformation in HEI and were arranged through thematic analysis of common themes.

Permission was sought from school officials of the selected higher education institutions to gather data. The research instrument was submitted to the validators and experts for approval. The teachers were made to answer the survey questionnaire for the digital transformation strategy and management practices in terms of digital leadership, technology utilization, and workforce capability in their respective faculty rooms and classrooms. There was an interview arranged to eight academic heads to identify the challenges they experience in the implementation of DTS.

And finally, the data were treated using Microsoft Excel and SPSS for statistical analysis and data from the interview was transcribed and analyzed through thematic analysis.

The Mean and Standard Deviations were utilized to determine digital transformation strategy and management practices in terms of digital leadership, technology utilization, and workforce capability among academic heads through the teacher-respondents. Furthermore, Thematic Analysis was used for common themes for the result of the interview with the academic heads on the challenges experience in the implementation of DTS in HEIs. Pearson-r Correlation Coefficient Test was used to determine the significant relationship between the digital transformation strategy and DT management practices among academic heads of HEIs. The T-independent test was used to determine the hypothesized significant differences of the digital transformation strategy and DT management practices among academic heads of HEIs based on type of HEI with two groups; private and public. Moreover, the Analysis of Variance (ANOVA) was used to determine the significant differences based on teacher's age with six age groups; 25 years old and below, 26 to 30 years old, 31 to 35 years old, 36 to 40 years old, 41 to 45 years old, and 46 years old and above: teacher's educational attainment with five groups; bachelor's degree, with master's earned units, master's degree, with doctorate earned units and doctorate degree: and teachers' length of service in five groupings; below five years, six to 10 years, 11 to 15 years, 16 to 20 years, and 21 years and above.

III. Results and Discussion

Table 1 shows that the digital transformation strategy in terms of digital leadership, technology utilization, and workforce capability was Moderately Evident with an average weighted mean of 3.20 described agree and interpreted moderately evident. This implies that teachers in teacher education programs agreed to some areas of strategies implemented in the DTS by academic heads such as on their leadership style and in managing their workforce capabilities but not to all indicators in technology utilization. These teacher-respondents were exposed to the digital transformation strategy of academic heads when academic heads led the team towards the attainment of goals, on how they managed their existing people in the department and how tasks were assigned to them based on their knowledge and skills but needed improvement in terms on technology utilization. Conceivably, academic heads utilized the existing technologies but since technologies innovate now and then, not all technologies were being highly utilized. The availability of these digital tools in offices and learning environment which could also be considered factors in technology utilization was not just the responsibility of academic heads since there were higher management, who has the highest authority over purchasing it and prioritizing it to be available in the educational setting.

The efforts of academic heads in leading the team towards the attainment of its goals in digital transformation support Wooldridge (2022) that a key component of digital transformation

is cultivating a digital attitude among staff members by top executives and other influential figures. Similarly, Alenezi (2021) put forth in the Google Framework the notion that the university leadership must support an innovative culture and motivate individuals to take chances and learn from failures. To achieve the academic and operational objectives of the institution, the leadership must identify, test, and gain the team's support for the adoption of the proper technology (tools and procedures). The administrators should then create a long-term budget, identify various funding options, and look for opportunities for cost savings and resource reallocation that are directly tied to student objectives.

Nevertheless, the findings put forth Vial (2019) idea that the digital transformation strategy (DTS) in HEI is a movement or change process that starts with the adoption and use of digital technologies. After that, an organization undergoes a comprehensive transformation from a technological, organizational, and social perspective in terms of teaching, infrastructure, curriculum, administration, research, business process, human resource, extension, DT governance, information, and marketing. When it was carried out using Porter's 1985 architecture of building advantages and when DTS in virtual learning and virtual program management capabilities delivered a top-tier educational experience, it raises the idea that competitiveness and DTS are inextricably linked. Similarly, Hess, et. al (2020), DTS is the digital technology at an organizational level, developed strategies and incorporated changes are needed to improve the overall performance and productivity of the organization.

All of these pointed to the necessity of having a clear vision and creating a supportive culture for effective digital leaders, according to Vuyisile (2022). It demonstrates that leaders who employ digital leadership are the ones who will prepare people to adopt digitization by helping followers grasp the chaos brought on by digital transformation. To close the digital divide, every leader also needs to be inclusive in their leadership style and be able to communicate the institution's goal to the workforce. Progressive institutions will encourage and follow the digital revolution so these institutions require visionary leaders who can use strategy to facilitate the use of digital technologies.

Table 1 *Summary of Results of the Digital Transformation Strategy in terms of Digital Leadership, Technology Utilization and Workforce Capability*

Digital Transformation Strategy Indicator	Weighted Mean	Description	Verbal Interpretation
Digital Leadership	3.29	Strongly Agree	Highly Evident
Technology Utilization	2.98	Agree	Moderately Evident
Workforce Capability	3.33	Strongly Agree	Highly Evident
Average Weighted Mean	3.20	Agree	Moderately Evident

Table 2 shows that the digital transformation management practices in terms of digital leadership, technology utilization, and workforce capability were Highly Evident with an average

weighted mean of 3.31 described strongly agree and interpreted highly evident. This tells those teachers in teacher education programs highly agreed with some aspects of the leadership style, technological use, and workforce management practices of academic heads. By observing how these academic heads used their digital skills to lead the teachers toward the achievement of high-quality education through making sound decisions, responding appropriately to various situations, respecting diversity, taking risks, and learning from experiences. This further means that academic heads supported teachers in the use of digital learning platforms, interactive multimedia, and other digital tools to support teaching in the learning environment. They also strongly agreed with how their academic heads used technology for online meetings, data storage, collaboration, and communication. When the teacher respondents strongly agreed on how academic heads had planned the teaching load, evaluated them for their teaching strategies, put policies and procedures into place, and came to an understanding of the teachers' evaluation for their IPCR assessment reflects that academic heads perform proper management of workforce capability.

The good strategic management of academic heads in managing their leadership style, technology utilization, and workforce capability improves performance and supports Langat et. al (2019) idea that strategic management is a key aspect to enhance the performance of an organization performance and failure of strategic management is due to a lack of knowledge, coordination, and poor strategy execution. The execution of strategies improves performance however several local institutions have failed to leverage strategic institutionalization. Similarly, Ruloff and Petko (2021) indicated that while incorporating technology in the schools, all of the principals have a clear commitment to student-centered instruction. One principal who focused on transformational leadership reported more quick and significant improvements than all the principals who were focused on a more transactional style of leadership. Moreover, the faster adoption of digital technology and a stronger focus on educational objectives rather than tools are both indicators of transformative leadership. However, this finding contradicts Najeeb and Muhammad (2021) results that teachers' reflections highlighted their extreme mental stress as a result of the rough and harsh behavior of school heads. As a result, school heads' general practices are discovered to be autocratic, which is directly related to the low morale of instructors.

Table 2 *Summary of Results of the DT management practices in terms of Digital Leadership, Technology Utilization and Workforce Capability*

DT management practices Indicator	Weighted Mean	Description	Verbal Interpretation
Digital Leadership	3.40	Strongly Agree	Highly Evident
Technology Utilization	3.27	Strongly Agree	Highly Evident
Workforce Capability	3.27	Strongly Agree	Highly Evident
Average Weighted Mean	3.31	Strongly Agree	Highly Evident

The descriptions of the challenges that academic heads experienced in the Implementation of digital transformation strategy involved the experience of dealing with incapable teachers in

using technologies (specifically senior teachers), the lack of structures and some technological resources (facilities, tools, and equipment), the poor or weak internet connections caused by unstable signals and intermittent power interruptions and retention of competitive and qualified teachers.

The incapabilities of teachers in using technologies were generated because there were different age groups that they were managing, teachers' age limits them to explore more on the use of computers and their level of willingness to learn differs from younger ones. In the 21st century, there was difficulty in teaching senior teachers because they belong to the non-computer era, who used the conventional method of instruction since they lacked skills in the use of Google classrooms and other technologies which led them to retire because of digitalization. However, the situation was managed by determining the series of training and mentoring strategies implemented by young teachers (who were competent and very willing to help) and students who were technology savvy. Also, some teachers were difficult to convince because they could think and made decisions on their own.

The HEIs prioritized making structures and some technological resources (facilities, tools, and equipment) in their respective universities/colleges. However, it was challenging for academic heads due to several factors, including the growing student population that the existing facilities could no longer support, the destruction of existing technological resources by unforeseen circumstances or termite attacks, the inadequate physical infrastructure, and the information and communication technologies already in place, but needs to be upgraded with air-conditioned rooms to safeguard the available technologies.

Another challenge was the poor internet connections brought on by erratic signals and unpredictable power outages which academic heads were powerless to address that they needed to request help from the government on this. The academic heads in HEIs faced difficulties implementing their digital transformation strategy because of poor internet access. Internet connectivity had a significant impact on using online platforms for teaching and learning, communicating with students and professors, and taking online classes. It disrupted online apps, halted online learnings, and caused no immediate response in online platforms, which had an impact on how the digital transformation strategy was being implemented, as a whole. Poor internet services were being paid for through internet plans, which gave academic heads the impression that they were paying service providers for poor services. Some HEIs had the technological capacity to digitally modify the teaching-learning environment and to promote online learning, but these technological resources would be ineffective in the absence of signals, low speed or bandwidth, or internet connectivity. Neither the academic heads nor those in senior management have any control over this challenge, thus, it cannot be managed. The inadequate internet connection had an effect on the bigger plans of the HEIs in placing all the necessary infrastructure, digital tools, and equipment.

Lastly, the academic heads in HEIs found it challenging to retain competitive and qualified teachers. When these teachers found better employment opportunities and more favorable conditions in other HEIs in the middle of semesters, they were free to go and the academic heads faced the challenge of assigning the subjects left to the remaining teachers and the finding of a new one. Thus, managing incapable teachers (particularly senior or elderly teachers), keeping qualified and competitive faculty, a lack of structures and some technological resources (facilities, tools, and equipment), and poor or weak internet connections that affected the digital transformation strategy were the challenges faced by academic heads in HEI. It requires dedication and perseverance to be a capable leader with decision-making abilities, responsibility for making technological tools available, and the capacity to manage workforce capabilities in the digital transformation strategy.

Academic heads of these HEIs experienced challenges in the digital transformation which for Mohamed et. al (2021) are the evolution of strategic management practices in universities. According to Liu et. al (2020) that notable changes in managerial practices can be observed in all four categories of practices; task-oriented, relations oriented, change-oriented, and external practices that further showed digitalization as a process that transforms managerial practices through aiding managers in their tasks and making some tasks more difficult. Likewise, Aljanazrah et al. (2022) stated that a variety of barriers to digital transformation, such as those relating to social context, software usability, digital pedagogy, and online evaluation. Tarman et. al (2016) added that the highly identified barriers were mainly external factors such as a lack of technology, restricted Internet access, and a lack of administrative and technical support. With this, these findings support IGI Global (2023) claim that when DTS is rolled out, it affects the way employees perform their tasks, and leaders face more challenges that they need to prepare the workforce and identify the tasks and projects because transformation does not happen immediately, it takes time, consistency, and diligence to achieve the desired outcomes and it is having the right business strategy, data, process, and people with flexible workflow, a decentralized decision-making process, learning, and a greater reliance on business ecosystems and not just on technology. Thus, leaders need to be more aware and able to adapt and practice the changes that digitization brings. On the other hand, from the teachers' perspective, Heitnik (2017) indicated that there should be support to teacher education programs and professional development initiatives to acquire Technological Pedagogical Knowledge (TPK).

Table 3 *Academic Head-participants' Responses on the Challenges Experience in the Implementation of Digital Transformation Strategy*

Common Themes	Participant Identification	Number of Participants/ Total Number	Percentage
Incapabilities of teachers in using technologies	P1, P2, P3, P5	4/8	50
Lacking of structures and technological resources (facilities, tools and equipment)	P1, P4, P7	3/8	37.5
Poor or weak internet connections caused by unstable signals and intermittent power interruptions	P2, P4, P5, P6, P7, P8	6/8	75
Retention of competitive and qualified teachers	P3, P6	2/8	25

Table 4 shows the correlation between the academic heads' level of digital transformation strategy and DT management practices in the implementation of digital transformation. The coefficient of correlation is 0.870 with a probability value of 0.000 which is significant at alpha = 0.05. Hence, the null hypothesis that states there is no significant relationship between the digital transformation strategy and DT management practices among academic heads of HEIs is hereby rejected. This means that there is a significantly strong correlation between the academic heads' digital transformation strategy and DT management practices among academic heads. This implies that the views of teachers on the academic heads' digital transformation strategy affect their management practices in HEIs. Based on the findings of this research, the digital transformation strategy among academic heads is significantly related to their DT management practices in the implementation of digital transformation. When academic heads applied digital transformation strategy can be seen in their managerial practices which was highly evident through the teachers' responses. Conversely, when academic heads implemented a digital transformation strategy, it was highly obvious in their administrative practices to their teachers. Their management practices in terms of digital leadership, technology utilization, and workforce capability were indeed the set digital transformation strategy on how to manage for the attainment of set goals and targets through being a transformational leader who considers managing the workforce in the process and its culture. This finding relates to Teng et. al (2022) result that revealed small- and medium-sized enterprises (SMEs) concluded that digital technology and employee digital skills are positively correlated with performance, and it is the moderator of DTS on performance to maintain their sustainable development. Moreover, McCarthy et al. (2023) recognized the critical components for system change leaders in the context of digital transformation in education. Leaders are aware that for information, services, and human relationships to be efficient and effective for stakeholders, a digital revolution is required. Since leaders in education and decision-makers have faced pressure to establish a logical strategy for the transition brought on by digital transformation, decision-makers in the educational system aspire to go beyond technological developments and adopt a transformational mindset, employing technology as an enabler.

Table 4 *Correlation: Digital Transformation Strategy and the DT management practices among Academic Heads of HEIs in Zamboanga Peninsula*

X	Y	r – value	p – value	Interpretation
Academic Heads' Digital Transformation Strategy	Academic Heads' Management Practices	0.870	0.000	Significant

Correlation is significant at 0.05 level.

Table 5 shows the digital transformation strategy among academic heads when the respondents are grouped according to age. The F value of 0.866 with the corresponding probability value of 0.507 is not significant at alpha = 0.05. The data indicate that regardless of the respondents' age, their perceived digital transformation strategy among academic heads does not vary. Whether the teacher-respondents were young or old, they had similar level of perceived digital transformation strategy among academic heads. The age was not a factor to the perceived digital transformation strategy among academic heads because whatever were the age, the DTS was not affected. This finding has some connection to Chanin et. al (2022) research findings in which it identified six components of the digital transformation factor: 1) Strategy, 2) Process, 3) Product/Service, 4) People, 5) Data, and 6) Technology, and they are consistent with empirical data (p-value = 0.860). The data was gathered from 100 higher institutions, with 40.67% of the population being between the ages of 31 and 40.

Table 5 *Digital Transformation Strategy among Academic Heads when Respondents Are Grouped According to Age*

Variable	Source of variance	Sum of Squares	Mean Square	F-Value	P-Value	Decision
Digital Transformation Strategy of Different Age Groups	Between	1.043	0.209	0.866	0.507	Not Significant
	Within	24.569	0.241			
	Total	25.612				

Table 6 shows the digital transformation strategy among academic heads when the respondents are grouped according to educational attainment. The F value of 3.367 with the corresponding probability value of 0.012 is significant at alpha = 0.05. The data indicate that regardless of the respondents' educational attainment, their perceived digital transformation strategy among academic heads varies. This means that regardless of educational attainment, the teacher-respondents had different levels of perceived digital transformation strategy among academic heads. Educational attainment was a factor in the DTS among academic heads in terms of digital leadership, technology utilization, and workforce capability. It does matter whether they were with master's degrees or doctorates. They were not the same in the level of perceived digital transformation strategy among academic heads. This finding somewhat relates to Su et al. (2018)

results that there is a positive correlation between education (managers' and employees' degrees) and the management practice gap, but a negative relationship between competition and the management practice gap. Moreover, Tarman et. al (2016) in his study found a statistically significant difference between teachers who attended technology-related professional development and those who did not.

Table 6 *Digital Transformation Strategy among Academic Heads when Respondents are Grouped According to Educational Attainment*

Variable	Source of variance	Sum of Squares	Mean Square	F-Value	P-Value	Decision
Digital Transformation Strategy of Different Educational Attainment	Between	2.962	0.740	3.367	0.012	Significant
	Within	22.650	0.220			
	Total	25.612				

Table 7 shows the digital transformation strategy among academic heads when the respondents are grouped according to the length of service. The F value of 1.582 with the corresponding probability value of 0.185 is not significant at alpha = 0.05. The data indicate that regardless of the respondents' length of service, their perceived digital transformation strategy among academic heads does not vary. This means that regardless of the length of service, the teachers had a similar level of perceived digital transformation strategy among academic heads. The length of service was not a factor in the level of DTS among academic heads in terms of digital leadership, technology utilization, and workforce capability. It does not matter whether they were experienced teachers or less experienced teachers or novice teachers in teaching education programs to witness academic heads' digital transformation strategy. They were all the same in the level of perceived digital transformation strategy among academic heads. This finding somehow contributes to Marquez (2020) conclusions that the perceived level of implementation of digital transformation among new junior high school teachers in the teaching profession moderately implemented DT in public high schools. Moreover, the result was caused by the unavailability of ICT resources or limited digital tools in classrooms, internet connectivity for Augmented Reality (AR) based learning tools, and not enough ICT training for teachers.

Table 7 *Digital Transformation Strategy among Academic Heads when Respondents Are Grouped According to Length of Service*

Variable	Source of variance	Sum of Squares	Mean Square	F-Value	P-Value	Decision
Digital Transformation Strategy of Different Length of Service	Between	1.482	0.371	1.582	0.185	Not Significant
	Within	24.130	0.234			
	Total	25.612				

Table 8 shows the digital transformation strategy among academic heads when the respondents are grouped according to type of HEI. The T value of 0.331 with the corresponding probability value of 0.566 is not significant at alpha = 0.05. The data indicate that regardless of the respondents' type of HEI, their perceived digital transformation strategy among academic heads does not vary. This means that regardless of type of HEI, the teachers had similar level of perceived digital transformation strategy among academic heads. The type of HEI was not a factor in the DTS among academic heads in terms of digital leadership, technology utilization and workforce capability. It does not matter whether they belong to public or private HEI in the education programs. They were all the same in the level of perceived digital transformation strategy among academic heads. This result contradicts Alshammri and Alenezi (2021) result that there is a statistically significant differences between the mean rankings of educational university leaders-participants on the flexibility domain according to the type of university (public or private), with public universities favoring educational leaders.

Table 8 *Digital Transformation Strategy among Academic Heads when Respondents Are Grouped According to Type of HEI*

Variable	Type of HEI	Mean	T-Value	P-Value	Decision
Digital Transformation Strategy	Private	3.30	0.331	0.566	Not Significant
	Public	3.16			

Table 9 shows the DT management practices among academic heads when the respondents are grouped according to age. The F value of 0.804 with the corresponding probability value of 0.550 is not significant at alpha = 0.05. The data indicate that regardless of the respondents' age, their perceived DT management practices among academic heads do not vary. This means that regardless of age, the teachers had similar levels of perceived management practices among academic heads. Whether the teacher-respondents were young or old, they had similar levels of perceived DT management practices among academic heads. Age was not a factor in the perceived management practices among academic heads because, whatever the age, the management practices were not affected. This finding somehow adds to Semerci and Aydin (2018) findings that there is no significant difference between teachers' perceived Information and Communication Technology (ICT) willingness by age, gender, teaching experience, ICT experience, ICT skills, and ICT training.

Table 9 *DT Management Practices Among Academic Heads when Respondents Are Grouped According to Age*

Variable	Source of variance	Sum of Squares	Mean Square	F-Value	P-Value	Decision
DT Management Practices of Different Age Groups	Between	0.993	0.199	0.804	0.550	Not Significant
	Within	25.207	0.247			
	Total	26.200				

Table 10 shows the DT management practices among academic heads when the respondents are grouped according to educational attainment. The F value of 2.086 with the corresponding probability value of 0.088 is not significant at alpha = 0.05. The data indicate that regardless of the respondents' educational attainment, their perceived digital transformation strategy among academic heads does not vary. This means that regardless of educational attainment, the teacher-respondents had the same level of perceived management practices among academic heads. Educational attainment was not a factor in the management practices among academic heads in terms of digital leadership, technology utilization, and workforce capability. It does not matter whether they were graduates of bachelor's degree, master's degree, doctorate's degree, or even with earned master's degree units or earned doctorate's degree units in the education programs. They were all the same in the level of perceived management practices among academic heads.

Table 10 *DT Management Practices among Academic Heads when Respondents are grouped According to Educational Attainment*

Variable	Source of variance	Sum of Squares	Mean Square	F-Value	P-Value	Decision
DT Management Practices of Different Educational Attainment	Between	1.963	0.491	2.086	0.088	Not Significant
	Within	24.237	0.235			
	Total	26.200				

Table 11 shows the digital transformation strategy among academic heads when the respondents are grouped according to the length of service. The F value of 1.582 with the corresponding probability value of 0.185 is not significant at alpha = 0.05. The data indicate that regardless of the respondents' length of service, their perceived digital transformation strategy among academic heads does not vary. This means that regardless of the length of service, the teachers had a similar level of perceived digital transformation strategy among academic heads. The length of service was not a factor in the level of DTS among academic heads in terms of digital leadership, technology utilization, and workforce capability. It does not matter whether they were experienced teachers or less experienced teachers or novice teachers in teaching education

programs to witness academic heads' digital transformation strategy. They were all the same in the level of perceived digital transformation strategy among academic heads.

This finding somehow contributes to Marquez (2020) conclusions that the perceived level of implementation of digital transformation among new junior high school teachers in the teaching profession moderately implemented DT in public high schools. Moreover, the result was caused by the unavailability of ICT resources or limited digital tools in classrooms, internet connectivity for Augmented Reality (AR) based learning tools, and not enough ICT training for teachers.

Table 11 *DT Management Practices among Academic Heads when Respondents Are Grouped According to Length of Service*

Variable	Source of variance	Sum of Squares	Mean Square	F-Value	P-Value	Decision
DT Management Practices of Different Length of Service	Between	0.745	0.186	0.753	0.558	Not Significant
	Within	25.455	0.247			
	Total	26.200				

Table 12 shows the DT management practices among academic heads when the respondents are grouped according to the type of HEI. The T value of 0.001 with the corresponding probability value of 0.982 is not significant at alpha = 0.05. The data indicate that regardless of the respondents' type of HEI, their perceived management practices among academic heads do not vary. This means that regardless of the type of HEI, the teachers had similar levels of perceived management practices among academic heads. The type of HEI was not a factor in the DT management practices among academic heads in terms of digital leadership, technology utilization, and workforce capability. It does not matter whether they belong to public or private HEI in the education programs. They were all the same in the level of perceived DT management practices among academic heads. This result supports Alshammri and Alenezi (2021) result that there were no statistically significant differences between the means of ranks of participants' scores in the remaining domains such as problem sensitivity, fluency, and originality of the creative leadership scale and its total score according to university type (public-private). In addition, Costley (2014) added that technology integration is becoming more common in public and private schools.

Table 12 *DT Management Practices Among Academic Heads when Respondents are Grouped According to Type of HEI*

Variable	Type of HEI	Mean	T-Value	P-Value	Decision
DT Management Practices	Private	3.37	0.001	0.982	Not Significant
	Public	3.30			

he

IV. Conclusion

Based on the foregoing findings, it is safe to conclude the academic heads utilized the existing technologies but not all since technology innovation occurs periodically. However, they were leading the team towards goal attainment and managing teachers' capabilities as the basis for task assignment. The academic heads used their digital skills to lead the teachers toward the achievement of high-quality education through making sound decisions, responding appropriately to various situations, respecting diversity, taking risks, and learning from experiences, recommending the use of digital learning platforms and other digital tools for collaboration, and communication and more effective digital learning and they performed proper management in assigning teacher's assignments, evaluation, and adjustments in policies and procedures. Furthermore, the challenges that academic heads experience requires them to be more dedicated and persevere more to be the capable digital leader in managing the workforce, making decisions, taking responsibility to make technological tools available, and being capable to handle diverse people in HEIs. The views of teacher-respondents to the academic heads' digital transformation strategy affect their management practices in the implementation of digital transformation in HEIs. The academic heads apply digital transformation strategy seen in their managerial practices as highly evident in the teachers' responses. Additionally, the perceived digital transformation strategy among academic heads in HEIs are equally or similarly evident regardless of the respondents' age, length of service, and type of HEI clustering. However, when they are clustered according to educational attainment, the digital transformation strategy among academic heads varies.

REFERENCES

[1] Afridi, O., Gul, S., and Naeem, M. (2019). The Role of Management Practices of Higher Education Institutions | 89 Journal of Management and Research (JMR) Volume 6(1) : 2019 The Role of Management Practices of Higher Education Institutions in Knowledge Storage and Knowledge Accessibility

[2] Alenezi, M. (2021). Deep Dive into Digital Transformation in Higher Education Institutions. Educ. Sci., 11, 770. https://doi.org/10.3390/educsci11120770

[3] Aljanazrah, A., Yerousis G., Hamed G. and Khlaif, Z. (2022). Digital transformation in times of crisis: Challenges, attitudes, opportunities and lessons learned from students' and faculty members' perspectives. https://doi.org/10.3389/feduc.2022.1047035

[4] Alshammri F.S., and Alenezi, A.K. (2021). Creative Leadership and its Relationship to Thinking Styles among Saudi University Leaders. International Journal of Education and Practice, Conscientia Beam, vol. 9(2), pages 340-353. https://archive.conscientiabeam.com/index.php/61/article/view/710/1022

[5] Bonifacio, A.L. (2013). Developing Information Communication Technology (ICT) Curriculum Standards for K-12 Schools in the Philippines. Retrieved at https://www.semanticscholar.org/paper/Developing-Information-Communication-Technology-(-) Bonifacio/7164ae5e942f0bd45a8f1296677abd8714299d87

[6] Chanin T., Prachyanun N., and Panita W. (2022). Factors Influencing Digital Transformation Adoption among Higher Education Institutions during Digital Disruption. Higher Education

Studies; Vol. 12, No. 2; 2022 ISSN 1925-4741 E-ISSN 1925-475X. https://doi.org/10.5539/hes.v12n2p9

[7] Costley, K. C. (2014). The Positive Effects of Technology on Teaching and Student Learning.

[8] DepEd Order No. 78, s. 2010. Guidelines on the Implementation of the DepEd Computerization Program. Department of Education

[9] DepEd empowers digital transformation in schools through nationwide distribution of annual Adobe licenses. DepEd Page. https://www.deped.gov.ph/2022/01/26/deped-empowers-digital-transformation-in-schools-through-nationwide-distribution-of-annual-adobe-licenses/

[10] Gilli, K., Nippa, M. and Knappstein, M. (2023). Leadership competencies for digital transformation: an exploratory content analysis of job advertisements", German Journal of Human Resource Management, Vol. 37 No. 1, pp. 50-75, 23970022221087252.

[11] Heitnik, M. (2017). Eliciting Teacher's Technological Pedagogical Knowledge. Australasian Journal of Educational Technology, 33 (3)

[12] Hess, T., Matt, C., Benlian, A., and Wiesböck, F (2020). Options for formulating a digital transformation strategy. In Strategic Information Management; Routledge: London, UK, pp. 151–173

[13] Hong, J.E. (2016). Social Studies Teachers' Views of ICT Integration. Review of International Geographical Education Online, v6 n1 p32-48

[14] House Bill No. 6787, "An Act Providing for A National Digital Transformation Policy and For Other Purposes".

[15] K-12 Blueprint (2017). Clarity Innovations. https://www.k12blueprint.com/

[16] IGI Global (2023). What is Management Practices. https://shorturl.at/hikx7

[17] Langat, M., Kirimi, H. and Wainaina, L. (2019). Strategic Management Practices and Organization Performance of DTS. LAP Lambert Academic Publishing. Retrieved at

[18] https://www.lap-publishing.com/catalog/details//store/gb/book/978-3-659-56210-5/strategic-management-practices-and-organization-performance-of-dts

[19] Liu, G., Bin Zainal Fitri, M.F. and Apine, H. (2020). Effects of Digitalization on Managerial Practices as Experienced By Managers. School of Business, Society and Engineering, Mälardalen University. Retrieved at https://www.diva-portal.org/smash/get/diva2:1435701/FULLTEXT01.pdf

[20] Mccarthy, A.M., Maor, D., Mcconney, A., and Cavanaugh, C. (2023). Digital Transformation In Education: Critical Components For Leaders Of System Change, Social Sciences & Humanities Open. Volume 8, Issue 1,100479. Issn 2590-2911. https://Doi.Org/10.1016/J.Ssaho.2023.100479.

[21] Marquez, Maricor A. (2020). Digital Transformation among Public Secondary School Teachers: Basis for Instructional Enhancement". Master's Thesis.

[22] Mårtensson K. and Roxå, T. (2016). Leadership at a local level–Enhancing educational development," Educational Management Administration & Leadership, vol. 44, no. 2, pp. 247-262, 2016, doi: 10.1177/1741143214549977.

[23] Minedu.sk. (2020). Informatization and digitization of education. Available at: https://www.minedu.sk/informatizacia-a-digitalizacia-skolstva/

[24] Mohamed H. M., Tlemsani, I., and Matthews, R. (2022). Higher education strategy in digital transformation. Educ Inf Technol 27, 3171–3195. https://doi.org/10.1007/s10639-021-10739-1

[25] Najeeb E.K. and Muhammad U. H. (2021). How and to What Extent Managerial Practices of School Heads are Influencing the Morale of Primary School Teachers? Bulletin of Education

and Research. Vol. 43, No.2 pp. 85-99. Retrieved from https://files.eric.ed.gov/fulltext/EJ1338292.pdf

[26] Nalugon, L. (2015). Influence of Information and Communication Technology Utilization of Teachers' Performance: Towards Enhancing Technology- Driven Schools.

[27] Philip J., Gilli, K. and Knappstein, M. (2022). Identifying key leadership competencies for digital transformation: evidence from a cross-sectoral Delphi study of global managers. Emerald Publishing Limited. http://creativecommons.org/licences/by/4.0/legalcode

[28] Republic Act 10650, "An Act Expanding Access to Educational Services by Institutionalizing Open Distance Learning in Levels of Tertiary Education and Appropriating Funds Therefor"

[29] Republic Act No. 11494, "An Act providing for COVID-19 response and recovery \ interventions, providing mechanisms to hasten the recovery and strengthen the resilience of the Philippine economy, Providing Funds Therefor, and for Other Purposes",

[30] Republic Act No. 10844, "An Act Creating the Department of Information and Communications Technology, Defining its Powers and Functions Appropriating Funds Therefor, and for Other Purposes".

[31] Ruloff, M. and Petko, D. (2021). School principals' educational goals and leadership styles for digital transformation: results from case studies in upper secondary schools, International Journal of Leadership in Education, DOI: 10.1080/13603124.2021.2014979

[32] Semerci, A. and Aydin, M. K. (2018). Examining High School Teachers' Attitudes towards ICT Use in Education. International Journal of Progressive Education, v14 n2 p93-105

[33] Storey, J. (2023). The Only Digital Transformation Framework You Will Need. https://expert360.com/articles/perfect-digital-transformation-framework#:~:text=A%20digital%20transformation%20framework%20is,the%20organisation%20through%20the%20journey.

[34] Su, Y., Liu, B. and Li, D. (2018). What Causes the Differences in Management Practices between US and UK? An Application of Decomposition Analysis on Firms across Countries. Theoretical Economics Letters, 8, 1684-1700. doi: 10.4236/tel.2018.810109.

[35] Tarman, B. (2017). Editorial: The future of social sciences. Research in Social Sciences and Technology, 2(2), 1-6.

[36] Tarman B., Kilinc, E., and Hasan A.H. (2016). Barriers to the Effective Use of Technology Integration in Social Studies.

[37] Teng, X., Wu, Z., and Yang, F. (2022). Research on the Relationship between Digital Transformation and Performance of SMEs. Sustainability 2022, 14, 6012. https://doi.org/10.3390/su14106012

[38] The Malaysian Online Journal of Educational Technology (2014). www.mojet.net

[39] UNESCO (2018). Mahatma Gandhi Institute of Education for Peace and Sustainable Development (UNESCO MGIEP).

[40] UNESCO, ICT in education (2019). Retrieved at https://en.unesco.org/themes/ict-education.

[41] TeacherPh (2014). DepEd Computerization Program (DCP) Guide.

[42] Vial, G. (2019). Understanding digital transformation: A review and a research agenda. Journal Of Strategic Information Systems Review. Retrieved At https://www.sciencedirect.com/science/article/pii/S0963868717302196

[43] Vuyisile, M. (2022). Higher Education Leadership in a Time of Digital Technologies: A South African Case Study. International Journal of Information and Education Technology, Vol. 12, No. 10. Retrieved at http://www.ijiet.org/vol12/1728-IJIET-5005.pdf

[44] Wooldridge, S. (2022). The Role of Digital Transformation in

[45] Workforce Management. MHR Blog. Retrieved at https://mhrglobal.com/uk/en/blog/role-digital-transformation-workforce-management-0

[46] YIber L., Edmond H., Larry S., and Murat R. (2019). Digital Transformation Readiness in Higher Education Institutions (HEI): The Case of Kosovo, IFAC-Papers OnLine, Volume 52, Issue 25, Pages 52-57, ISSN 2405-8963, https://doi.org/10.1016/j.ifacol.2019.12.445.