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Research Article

The Degree of Impact of Digital Transformation on The Professional Stress of Public-School Principals in the Sultanate of Oman from Their Perspective

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ABSTRACT

The current study aimed to explore the degree of impact of digital transformation on the professional stress of public-school principals in Sultanate of Oman from their perspective. A descriptive approach was used. The researcher developed an instrument, and psychometric characteristics were calculated. The study sample consisted of 266 respondents. The study results showed that both levels of digital transformation and professional stress among principals in public schools in Sultanate of Oman was high. Regarding the correlation relationship between the digital transformation and professional stress, the results showed that there is a statistically significant positive correlation them (0.333). In addition, the results of linear regression analysis showed that the degree of impact of digital transformation could predict 10.1% of the professional stress public-school principals in Sultanate of Oman. Based on the results, the current study recommends that school principals should continue to adapt their schools to the digital era; provide the necessary physical and human infrastructure; and establish partnerships with experts to conduct training courses for all staff on the use of digital applications in the schools, which could reduce the professional stress of the principals.

Key Words: Digital Transformation, School Principals, Professional Stress, Sultanate of Oman

Introduction

The communications and information revolution witnessed in the twentieth century is a qualitative developmental leap no less important than the industrial revolution, and it has penetrated all service, economic, social and political sectors, and has covered the economic aspect significantly, which gave it the description of the digital economy, so that it became the advanced face of the traditional economy, as it took much of its role and continues to do so. Digital transformation has entered all sectors, which consists of activities that take place between individuals themselves, between individuals and institutions, between institutions themselves, or between companies and government agencies using digital technologies such as artificial intelligence, the Internet of Things, or block chain technology (Khudair and Sajat, 2022).

However, digital transformation may bring about organizational changes, requiring both technical and social skills. Moreover, in contrast to traditional organizational changes, digital transformation can cause more dynamic changes that can be stimulated and shaped by technological revolutions in ICT (Hanelt, 2021). Digital transformation not only changes organizations, but can also cause the sudden extinction of some business models and the emergence of new digital business models, even in non-IT industries. Therefore, digital transformation nowadays appears as a qualitatively different organizational change than those previously observed and examined in the literature (Schallmo et al., 2017).

Schwarzmumller et al, 2018) suggest that the expected impacts of digital transformation include improvements in work efficiency and organizational effectiveness. Despite the indisputable advantages of digital transformation, the process of digital transformation and improper implementation of digital changes and solutions may cause high stress, excessive workload, and challenges in adapting communications with many employees, and these demands may in turn increase the stress experienced by employees in the workplace, thus reducing productivity, commitment, and employee well-being in the workplace more broadly.

Work stress resulting from increased work complexity has become a prominent and pervasive feature of modern organizations. Researchers in the field of organizational psychology and management have used the term work stress to refer to the mental state of employees resulting from a job situation or a set of job situations that are perceived as excessive and disparate. Occupational stress is the inability to cope with stress at work (Reddy & Anuradha, 2013), it is a psychological and physical condition that affects the individual in terms of productivity, effectiveness, personal health and quality of work, and generally refers to the ways in which stress manifests itself in terms of behavioral, physical or psychological outcomes (Aftab & Khatoon, 2012).

(Reddy & Poornima, 2012) point out that a leader who is under pressure at work cannot ensure productive and comfortable results in the organization, and occupational stress is constantly defined in different ways, as the US National Institute for Occupational Health and Safety describes stress as serious emotional and physical reactions that occur when work demands and necessities are not compatible with employees' abilities and resources, and based on the above, stress is a never-ending condition that is caused by the work environment that negatively affects the individual's career progression.

Effective leadership has long been considered essential to ensure the successful performance of schools by providing a stimulating environment, providing adequate resources, and creating good relationships with peers and students (Kythreotis, et al., 2010). Social changes have transformed the school into a more dynamic and complex organization than we have seen so far. A good leader mobilizes resources to achieve collective interest goals and makes decisions to achieve societal goals. (Bachiardis, 2011) points out that without leaders who are able to perform their duties effectively, they will not be satisfied and stable in their workplaces, which affects the overall performance of the organization, and therefore the occupational stress of individuals is the most dominant variable as it is directly responsible for unsatisfactory performance (Suleman et al., 2018).

In this context, the vision of the Ministry of Education in the Sultanate of Oman is: “To develop the teaching and learning processes in a way that ensures the building of a glorious and loyal generation, capable of continuous learning and coexistence with others within a framework of commitment and responsibility.” Its mission is to create a generation capable of achieving the economic and social development of society by providing a set of tools to help achieve this, such as improving teaching and learning methods in schools, providing qualified human resources and appropriate curricula, providing the necessary care for all students, and ensuring the use of technology in line with Oman's direction towards a digital Oman (Ministry of Education, 2019).

Study Problem and Questions

Digitization and digital technologies are the future of business management, so educational institutions should prepare themselves to adopt digitization tools to provide relevant academic services, which can be considered a major shift in the process of knowledge dissemination. The number of Internet users in Oman is increasing annually by 6.62%, reflecting the desire of individuals and organizations towards digitization, which is equally important in educational institutions (Subramanian et al., 2021). The Ministry of Education in Oman is one of the first institutions to digitally transform its services, and its progress is remarkable compared to other institutions, despite the fact that the education sector is a broad sector, which cannot be compared to institutions whose size may constitute (5%) of the size of the ministry (Al Balushiya et al., 2020, p. 10).

In this context, (AI Hasani & Husin, 2021, p. 54) also point out that the importance of digital transformation in education in the Sultanate of Oman appears through the use of modern technological tools, represented when the Ministry of Education introduced computers in all schools in Oman, and learning resource centers that rely on computers and the Internet, and training teachers on how to use these devices, and the results in this area were very encouraging, and it led to the positive transformation in digital education in Oman quantitatively, but it needs qualitative development as well.

Therefore, the process of preparing administrators, teachers and support staff who are able to keep pace with the knowledge generation and the fourth generation (the generation of the industrial revolution), in order to achieve the goals of the educational process, is through supporting the processes of learning digital knowledge for digital transformation, cyber security and artificial intelligence in line with Oman's 2040 vision towards digital transformation under the slogan “Digital Oman” (AlMaamari, 2020). Studies have shown that leaders have a major role in implementing the digital transformation process, as this process affects the nature of the work, the skills required from it, and the extent of absorbing the associated technologies, which may increase the workload and stress associated with it (Al Maamari & Bhuiyan, 2021; Makowska-Tłomak et al., 2023). This is where the role of school principals as leaders in their organizations comes into play.

There are many studies that have dealt with the professional stress of school principals (Hans et al., 2014; Al-Balawi and Al-Hamidi, 2018; Samahi and Khawi, 2019), and many studies have also dealt with digital transformation in educational institutions (Abdul Jabbar and Abdul Khaleq, 2022; Al-Balushiya et al., 2020; Al-Adwan, 2022), but this study is one of the few studies - within the researcher's knowledge - that aimed to identify the degree of impact of digital transformation on the professional stress of public school principals in Oman. Based on the above, the study questions focus on the following:

1. What is the level of digital transformation in public schools in the Sultanate of Oman from the perspective of the study sample?
2. What is the level of professional stress of public school principals in the Sultanate of Oman from their perspective?
3. What is the degree of the impact of digital transformation on the professional stress of public school principals in the Sultanate of Oman from the perspective of the study sample?

Objectives of the Study:

The objectives of the study are:

1. To identify the level of digital transformation in public schools in the Sultanate of Oman from the perspective of the study sample.
2. To find out the level of professional stress for public school principals in Oman from their perspective.
3. Revealing the degree of the impact of digital transformation on the professional stress of public school principals in the Sultanate of Oman.

Importance of the Study

The study sheds light on the degree of the impact of digital transformation on the professional stress of public school principals in the Sultanate of Oman from the perspective of the members of the study sample, and thus its results may help the school principal in revealing the strengths and shortcomings in the level of digital transformation in the school and the degree of absorption of the administrative and teaching staff members to digital transformation, and the impact of digital transformation on the stress faced by school principals, whether in a positive way such as reducing the stress or in a negative way such as increasing the stress . It can also help those concerned in the Ministry of Education to develop a developmental and enrichment program through which it can achieve high rates of digital transformation and provide administrative and teaching staff members with the skills and knowledge that enable them to deal with digital software and harness it in performing their administrative and teaching tasks. The study also derives its importance by contributing scientific and theoretical knowledge about the level of digital transformation in public schools as well as among administrative and teaching staff members and also regarding the professional stress of school principals and their impact on principals' performance, refining their personalities and providing feedback.

Study Terminology

Digital transformation: Al-Balushiya et al. (2020) define it as: “a governmental project that includes all the services of various institutions and sectors in the country, and is represented in the transformation of vital and essential services related to serving individuals, institutions, and various investments, from their traditional form to the smart electronic form, relying on modern and advanced technologies” (p. 4).

Digital transformation is procedurally defined as: The score obtained by public school principals in the Sultanate of Oman, through the responses of the study sample on the areas of the digital transformation tool, namely (school adaptation to the era of digitization, planning for digital transformation, cooperation and communication, and digital competence of students).

Occupational stress: Samahi and Khawi (2019) define it as: “emotional responses that occur to the employee as a result of his interaction with the environment and the incompatibility of his abilities with the requirements of the work and the profession he is practicing” (p. 9).

Occupational stress is procedurally defined as: Positive or negative responses resulting from the lack of compatibility and ability to deal with the tools and programs of digital transformation, and is expressed in this study by the degree obtained by the paragraphs of the professional stress tool for managers.

Limitations of the Study:

Objective Limitations: The current study is limited to addressing the degree of the impact of digital transformation on the professional stress of public school principals in the Sultanate of Oman.

Temporal Limitations: The current study was applied in the second semester of the year 2024-2023

Human Limits: The current study was limited to a sample of public school principals in the Sultanate of Oman

Spatial Boundaries: The study was conducted in public schools in the Sultanate of Oman.

Theoretical literature

Digital transformation

The digitization of society began in the late 20th century and saw a rapid acceleration in the first two decades of the 21st century, demonstrating the growing need for digital transformation across industries. In fact, many organizations believe that they must either adapt to changing market forces driven by digitalization or face extinction. In other words, many organizations believe that they must invest in digital transformation or be left behind, citing the need to keep up with technological innovation as one of their biggest threats (Verina & Titko, 2019).According to Salesforce (Subramanian, at el. , 2021), digital transformation is: “the process of

modifying the way business is done, paving the way for a new way of doing business, so that organizations can provide an improved customer experience, enhance decision-making processes, and add more value to their products and services" (para. 4).
(Căpuşneanu, et al., 2021) states that the main benefits of digital transformation include increased efficiency and productivity, better management of resources, more flexibility, improved customer engagement, greater responsiveness to market demands, IT modernization, and more innovation. Although there is no single application or technology that enables transformation, several digital transformation technologies are considered critical, including cloud computing, which is the foundation for transformation initiatives, along with customer relationship management systems, and information technology, which gives the organization the ability to focus investment funds and personnel resources. as well as machine learning and artificial intelligence (Boskovic et al., 2019).
(Jadertrierveiler, et al., 2019) points out that there are several barriers to digital transformation: the absence of a clear strategy, digital transformation is more than just a trendy term, however, it is often used without a specific meaning, and this leads organizations to navigate in unclear concepts, as well as a change-resistant organizational culture, which hinders development and progress, however, this resistance to change can be observed both at the level of senior executives and employees at ground level, there is a degree of reluctance to adopt new technology. Other barriers include the emerging shortage of digital skills, and the lack of sufficient budget as some organizations do not view digital transformation as a strategic expenditure.
There are some of the challenges facing the implementation of digital transformation in educational institutions, including legislative, administrative, organizational, financial, and information security risks in the digital environment, and there are human challenges, as the human side is a key axis in the implementation of digital transformation, as any weakness in this aspect constitutes a challenge to activating digital transformation in the educational institution, and these challenges include the resistance of some workers to the change involved in the transformation from traditional ways of accomplishing work to a digital pattern, and the existence of doubts and lack of confidence among some human resources in their readiness to employ platforms of processing systems
The Ministry of Transport, Communications and Information Technology in Oman is working to transform Omani society into a sustainable knowledge society, by leveraging ICT to enhance government services and empowering people to participate digitally. In addition, it is spearheading plans to implement the Digital Oman Initiative. It is a plan that includes a series of projects and mechanisms aimed at increasing the efficiency and effectiveness of government services and providing citizens with the skills and knowledge needed to interact with e-services (Schuchmann & Seufert, 2015).

Occupational Stress

Stress has become a serious health issue in the twentieth century, because it is not only an issue regarding the physical and mental health of individuals, but it is a concern for various organizations as well, and although stress can be a motivator for an employee at some level, if not handled properly, the effect can be organizational stress. Job stress exists in every organization, whether large or small, because no matter how small the workplace is, the complexity involved can have a significant impact on the emotional state and well-being of employees (Landy, 2016; Anderson, 2003).
Occupational stress refers to unacceptable physiological conditions and psychological consequences that arise in individuals due to their inability to cope with the demands placed on them (Miller, 2005). Research has shown that workforce turnover rates increase when occupational stress increases. Therefore, occupational stress contributes to a number of difficulties and obstacles in organizations in various forms such as absenteeism, inefficiency and poor health resources (Wadesango, 2015). There are different causes of occupational stress in different organizations such as; overwork, conflicts between colleagues and management, role ambiguity, annoying relationships with people at work, and lack of social support as the main causes of stress, while Sutherland and Cooper (Sutherland & Cooper, 2000) and Boyland (Boyland, 2011) add a change in working conditions as the characteristic causes of stress at work include mistreatment, unreasonable continuous performance demands, and long working hours (Boyland, 2011).
In the context of educational institutions, we observe that administrative leadership at the school level is responsible for harnessing and sustaining the human resources needed to provide quality education. This is manifested in improving student learning outcomes and fostering a professional community among teachers, and the principal is seen as having the task of shaping the vision of academic success for all students, promoting high standards, and creating a favorable climate (Juma & Simatwa, 2016). Rees (Ravichandran, at el., 2007) argues that principals play a vital role in society by helping students acquire knowledge, as well as creating a favorable environment for faculty members and other staff; therefore, principals are exposed to professional stress , in addition to feelings such as stress, frustration, anger and depression, as professional stress affect personal and psychological health leading to low job satisfaction (Juma & Simatwa, 2016).
In a study conducted by Kendi (Kendi, 2012), the (physical) and (family) environment was identified to include children, spouse and other family members, supervising teaching staff, hosting visitors, monitoring the school's health record, and dealing with the school's budget, while regarding the daily operations of the school, workload, lack of resources, and social support were identified as stress factors, and Goma and

Simatua (Mitchell, 2010) also identified limited opportunities for professional development.) Limited opportunities for professional development, deadlines, delayed disbursement of school funds, interpersonal relationships, and shortage of assistants among others. Teachers have also been found to contribute to the stress level of principals through unprofessional teacher behavior, such as late school attendance and lack of seriousness towards work (Göker, 2012).

The relationship between occupational stress and digital transformation

The way ICT solutions are implemented in the organization may be an important source of stress in the workplace, some studies have indicated the difference between the stress associated with change as a result of ICT applications and the stress associated with the process of improper implementation of this change, due to the increased work demands and the lack of technical and social support, triggered by the digital transformation at work, so the negative emotional reactions of employees towards the changes that occur in the workplace of the organization during the implementation of new IT solutions and technologies must be tracked and identified (Holmgreen et al., 2017)

Dubois et al. (Dubois et al., 2014) argue that the competencies and skills that employees possess at work are less relevant in the new situation, due to changes in ICT solutions, and as a result individuals may experience negative emotions, such as distress, which is a reduced sense of influence or control over the technological changes occurring in the organization, and the threat of losing their positions or even their jobs.

Schlachter et al. (Schlachter et al., 2018) distinguish between digitalization stress and technical stress.) between digitization stress and technical stress, where technical stress is defined as the stress experienced by an individual due to their inability to adapt to new technologies that are indispensable due to a low level of competence, although many employees understand that ICT solutions and digitization are very important for the competitiveness and effectiveness of organizations, and their general attitudes and reactions to new technology are very positive, however, improper implementation may lead to increased job demands on employees, as well as the threat of losing their jobs. As a result, this increases work stress, even among highly competent employees.

Makowska et al. (Makowska et al., 2021) argue that digitization stress arises not because of negative attitudes towards new technology per se, or a lack of ICT skills or communication, but because of a combination of factors such as: Improper implementation in the workplace, inappropriate digital transformation project management, increase in ICT requirements, uncertainty about the professional future triggered by the change, and stress resulting from organizational changes, so digital transformation is a broader and more complex concept compared to technical stress, due to the many factors that may be caused by it.

Although conceptualizations of technological stress have contributed significantly to the understanding and consequences of IT-related stress, they were generally not designed to assess stress caused exclusively by digital transformation. Distinguishing digital transformation stress from other types of occupational stressors is necessary in order to allow organizations to address and mitigate the consequences of technological stressors in the workplace context (Gu et al., 2020). It can be said that digital transformation in educational institutions has become a holistic process, covering the entire educational system, and many educational institutions, such as schools, universities, and other educational institutions, have integrated the digital environment and digital technologies into their programs as a model for the educational process (Zizikova et al., 2020).

Previous Studies

The researcher addressed previous studies related to the axes of digital transformation and professional stress , both Arab and foreign, in chronological order from the most recent to the oldest.

Study of (Delgado, 2016) conducted a study that aimed to identify the professional stress of secondary school assistant principals. The descriptive-analytic approach was used, and data was collected using an interview and questionnaire, which amounted to (720) assistant principals. The study found that poor diet and reduced exercise are the most common among new assistant principals, as well as the need to maintain minimal relationships, avoid fatigue, and maintain a healthy work-life balance.

Study of Abu-Ghazaleh (2017) conducted a study aimed at investigating the relationship between work pressure and job performance among principals of public secondary schools in Oman. The researcher used the descriptive-correlational method, and data were collected by applying a questionnaire to (882) workers in public secondary schools, and the study came out with a number of results, the most important of which is that the level of work pressure among public school principals came at a medium level, while the level of job performance came at a high level. Study of (Bedi & Kukemelk, 2018) aimed to critically analyze the issue of work pressure among school principals and provide some recommendations to reduce this phenomenon, and the qualitative method was used, where the theoretical literature related to the subject of the study was reviewed, and the study found that workload and lack of resources were ranked the highest on the pressure scale.

Study of Samahi and Khawi (2019) aimed to identify the relationship between professional stress and job performance among primary school principals. To achieve the aim of the study, the researchers built two questionnaires, the first to measure professional stress and the second to measure job performance after ensuring their psychometric properties. The sample included (40) male and female principals of primary schools in Messila Municipality and Barhoum Messila by 50%, and the study found a statistically significant

relationship between role burden and job performance among primary school principals, and a statistically significant relationship between the total score of professional pressure and the total score of job performance among primary school principals and the total score of job performance among primary school principals in Messila Municipality.

Study of (Navaridas-Nalda et al., 2019) conducted a study that aimed to identify and analyze the key factors for successful digital transformation of schools through the use of educational digital resources, with special attention to school principals and their leadership from a strategic pedagogical perspective. Data was collected using the interview, which was collected from (142) principals. The study found that the extent to which principals perceive educational digital resources is the most influential variable in the digital transformation of schools, as well as the extent to which school principals perceive educational digital resources as the most influential variable for the digital transformation of schools. Other key factors include school contextual variables, technical support and services related to digital resource records, and the principal's personal and professional profile. Thus, educational policies for digital transformation should incorporate school principals into its core definition.

The study of Abdul-Jabbar and Abdul-Khaleq (2022) aimed to identify the digital transformation and its reflection on knowledge building and identify the roles that educational institutions play digitally, the researchers used the descriptive-analytical approach, and collected data using the questionnaire, interview, observation and focus groups, where the study sample consisted of (274) individuals from different educational administrative specialties in the Ministry of Education, and the study came out with a number of results, the most important of which is that digital transformation is one of the most important factors that greatly affect knowledge building in educational institutions, as it represents the ability to influence the individual on the group within the group.

While the study of (Padanad & Pujar, 2022) conducted a study that aimed to determine the impact of work pressure on secondary school principals, the descriptive-analytic method was used, and data was collected using the questionnaire, by applying it to (120) principals, and the study found that the majority of public school principals had moderate scores in the level of professional pressure.

Study of (Mogas et al., 2022) also conducted a study that aimed to identify how school principals approach the future of education in the fourth industrial revolution. The descriptive-analytical approach was used, and data was collected using the interview, which was applied to (37) principals, and the study found that schools are far from applying modern technologies accompanying digital transformation, due to the lack of economic resources.

Study of (Ruloff et al., 2022) conducted a study that aimed to identify secondary school principals' educational goals and leadership styles for digital transformation, using a descriptive-analytic approach, and data were collected using an interview, by applying it to (9) school principals. The study found that principals show a clear orientation towards student-oriented teaching when integrating technology in their schools, however, there are fundamental differences in terms of leadership processes to keep up with this change, and the study found that principals show a clear orientation towards student-oriented teaching when integrating technology in their schools.

Study of (Yuliandari et al., 2023) conducted a study to identify the state of the art of digital transformation research in secondary schools and the key indicators of digital transformation in them. A qualitative approach was used, where theoretical literature related to the topic of the study was reviewed, and the study found six key factors that were successfully implemented in digital transformation: leadership (limited participation of principals in shaping digital policies), digital competence, professional development, access to technology, school evaluation, and school efficiency.

Commentary on Previous Studies

Agreements and Differences

In terms of the general objective: The current study agreed with most of the previous studies in terms of the general objective; it dealt with the digital transformation in school educational institutions and the role of digital transformation in the production of knowledge and its reflection on the skills of the school principal, and as for the axis of occupational stress , the studies dealt with occupational stress resulting from job performance and job tasks.

In terms of methodology: Most of the previous studies used the descriptive method except for (Yuliandari et al., 2023) and (Navaridas-Nalda et al., 2019), which used the qualitative method, while (Bedi & Kukemelk, 2018) used the critical analysis method for the issue of work stress among school principals.

In terms of instrument: Most of the previous studies used the questionnaire as a study tool, which is the same as the tool of this study, except for (Yuliandari et al., 2023), (Navaridas-Nalda et al., 2019), the interview tool, and (Bedi & Kukemelk, 2018), the tool was a critical analysis of previous studies.

In terms of sample: The sample of this study agreed with most of the sample of previous studies, namely school principals, except for the study of Abdul-Jabbar and Abdul-Khaliq (2022), which were educational administrative specialties, Abu-Ghazaleh (2017) study of school staff, Yuliandari et al. (2023), Navaridas-Nalda et al., 2019, and Bedi & Kukemelk, 2018) study, which was a review of theoretical literature and previous studies.

Method and Procedure

Methodology of the Study

The current study followed the descriptive method because of its suitability for the nature of the current study, as through the descriptive method, the degree of the impact of digital transformation on the professional stress of public school principals in the Sultanate of Oman can be identified from the perspective of the study sample (Al-Badri, 2016).

Study Population

The study population consisted of all male and female public school principals in the Sultanate of Oman, whose number (1200) according to the statistics of the Ministry of Education in the Sultanate of Oman (Ministry of Education, 2021).

Study Sample

The current study was applied by the available method to a sample of (266) of all school principals in the educational governorates in the Sultanate of Oman through the electronic link of the questionnaire: https://forms.gle/cqpXpnb6TB8PDsACA and Table (1) shows the distribution of the sample members according to gender.

Table (1) Distribution of sample members by gender

	Male	Female	Total
Number	87	179	266
Percentage	%32.7	%67.3	%100

Study Instrument

To achieve the objectives of the study and answer its questions, a questionnaire was developed consisting of two axes, the first axis deals with digital transformation in schools and has (4) areas and the second axis deals with professional stress and has (10) paragraphs, and the study tool adopted the five-point Likert scale (5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, and 1 = strongly disagree).

Reliability and validity of the study instrument

In order to ascertain the reliability and stability of the study instrument, the apparent reliability, construct validity, and internal consistency were used by extracting Pearson's correlation coefficient and Cronbach's alpha coefficient.

Virtual Validity

The study instrument was presented to a group of arbitrators with specialization in educational administration and information technology, in order to determine the validity and clarity of the paragraphs and their belonging to the field in which they were placed, and the arbitration process resulted in amending the wording of some paragraphs, in the first axis, paragraphs (2, 8, 15, 17) were amended, and in the second axis, paragraphs (2, 5) were amended. No paragraphs were deleted from the paragraphs of the two axes, so the tool in its final form consisted of two axes, the axis of digital transformation, which has four domains and each domain has four paragraphs, while the axis of professional stress consisted of (10) paragraphs. Item Validity.

Item Validity (Item Validity) Digital Transformation

The validity of the paragraphs was calculated to indicate the consistency of the scale paragraphs with each other by calculating the corrected Pearson correlation coefficients to know the degree of correlation of each paragraph of the scale with the degree of the dimension to which it belongs, in a survey sample from outside the study sample consisting of 30 male and female employees. Table (2) shows the Pearson correlation coefficient between the score of each paragraph of the scale with the total score of the dimension to which the paragraph belongs.

Table (2) Corrected Pearson correlation coefficient between each paragraph of the scale and the total score of the dimension to which the paragraph belongs

The first dimension:		The second dimension:		The third dimension:		The fourth dimension:	
Paragraph	Correlation coefficient	Paragraph	Correlation coefficient	Paragraph	Correlation coefficient	Paragraph	Correlation coefficient
1	0.744	5	0.681	9	0.702	14	0.453
2	0.630	6	0.620	10	0.478	15	0.398
3	0.649	7	0.706	11	0.710	16	0.476
4	0.740	8	0.668	12	0.442	17	0.454

	13	0.546

Table (2) shows that all paragraphs are well related to the dimension under which they fall, as the paragraph correlation coefficients were close and all more than (0.20), and therefore the scale paragraphs can be considered valid and valid for what they were designed to measure.

Reliability: Digital Transformation Scale

To ensure the stability of the study instrument, the reliability coefficient was calculated using the internal consistency method according to the Cronbach Alpha equation, by applying it to a group from outside the study sample consisting of (30) male and female managers, as shown in Table (3).

Table (3) Cronbach's alpha coefficient values for the dimensions and the scale as a whole

Scale dimensions	Paragraph no.	Cronbach's alpha
Adapting the school to the digital age		0.85
Planning for digital transformation		0.83
Collaboration and communication		0.79
Students' digital competence		0.66
The scale as a whole		**0.93**

It is noted from Table (3) that the Cronbach's alpha coefficient for the scale as a whole reached (0.93) and the stability coefficients for the dimensions ranged between (0.66 - 0.85). The stability coefficient in each dimension of the scale, as well as the stability coefficient for the total score of the scale, are values with an appropriate degree of stability in the humanities, and an indicator of the extent of internal consistency of the scale dimensions. Accordingly, all dimensions were considered valid for the purposes of the current study as well. Item Validity Professional Stress Item Validity was calculated to show the extent of consistency of the scale items with each other by calculating the corrected Pearson correlation coefficients to determine the degree of correlation of each item of the scale with the total score of the axis. Table (4) shows the Pearson correlation coefficient between the score of each item of the scale with the total score of the axis.

Table (4) Corrected Pearson correlation coefficient between each paragraph of the scale and the total score of the axis

Professional Stress

Paragraph	Correlation coefficient	Paragraph	Correlation coefficient	Paragraph	Correlation coefficient
1	0.600	5	0.656	8	0.615
2	0.651	6	0.782	9	0.693
3	0.573	7	0.735	10	0.580

Table (4) shows that all paragraphs are well related to the dimension under which they fall, as the paragraph correlation coefficients were close and all more than (0.20), and therefore the scale paragraphs can be considered valid and valid for what they were designed to measure.

Reliability: Professional Stress Scale

To ensure the stability of the stress scale, the researcher extracted the stability through Cronbach's alpha equation for the scale, which reached (0.90), which is a high stability for such studies by applying it to a group outside the study sample consisting of (30) male and female managers.

Study Procedures

After the study tool was constructed in its initial form, its validity and stability were confirmed based on a survey sample and then applied to the study sample; then the data was collected, processed and the results were extracted.

Statistical Methods Used in This Study

The statistical program (SPSS) was used to extract the study results and answer its questions based on the following statistical treatments:

1. Cronbach's alpha equation (Cronbach - Alpha) to calculate the stability coefficient of the study instrument.
2. Pearson correlation coefficients to calculate construct validity and correlation.
3. Arithmetic means and standard deviations to answer the first and second questions.

4. Multiple linear regression analysis to answer the third question.

Criteria for judging the results The five-point Likert scale was adopted to correct the study tools, by giving each paragraph one score out of its five scores (very high, high, medium, low, very low), which are represented numerically (5, 4, 3, 2, 1) in order. The following scale was adopted for the purposes of analyzing the results according to calculating the length of the category, by subtracting the highest value from the lowest value (5 - 1 = 4). To obtain the length of the category, the range was divided by the highest value in the levels (4/5 = 0.8), then adding the result we obtained, which is (0.8), to the lowest value among the levels, which is (1), to determine the upper limit of the first category, which is equal to (0.8 + 1 = 1.8). With this process, the remaining values were found to determine all levels of the questionnaire, and the scale shown in Table (5) was adopted in interpreting the results of the study.

Table (5) The statistical standard adopted for judging the interpretation of the results of the study tool paragraphs.
Lower and upper limits of a five-point Likert scale.

Mean	Level
4.20 -5	Very High
3.40 -4.19	High
2.60 -3.39	Medium
1.80 -2.59	Low
1 -1.79	Very Low

Study results and discussion

First: Presentation of the results related to the first question and discussion:
The answer to the first question, which stated: What is the level of digital transformation among government school principals in the Sultanate of Oman from their perspective ? To answer this question, the arithmetic means and standard deviations were extracted for each dimension of the scale and the total score, and Table (6) shows the results of the first question.

Table (6) Arithmetic means and standard deviations of the level of digital transformation among managers

No.	Ranking	Field N= 266	Mean	standard deviation	Level
2	1	Planning for Digital Transformation	4.2	.59021	Very High
3	2	Collaboration and Communication	4.0128	.61625	High
4	3	Students' Digital Competence	4.0047	.72732	High
1	4	Adapting the School to the Digital Age	3.9	.59747	High
		The Scale as a Whole	4.0347	.52847	High

The average values in Table (6) show that the average response to the overall scale of digital transformation in the study sample was (4.04), with a standard deviation of (4.0347), which is a high average. The rest of the dimensions were also high, with response average values ranging between (3.9 -4.2), with close standard deviations, all of which indicate a high interest of principals in digital transformation processes. The field of planning for digital transformation came in first place, while the school's adaptation to the digital age came in last place. This may be explained by school principals' awareness of the importance of the school's adaptation to contemporary digital innovations, and the necessity of providing technological tools and computer labs and increasing technological programs for both teachers and students by providing an appropriate budget from the school to implement digitization. It may also be attributed to the importance of school principals having a strategic vision for school digital transformation, and working to encourage teachers to explore new digital teaching methods, while developing a professional development plan for IT teachers to keep pace with digital developments. These results are consistent with the study (Navaridas-Nalda et al., 2019) which showed that principals are aware of the factors that achieve digital transformation and use them in planning for digital transformation, and differ from the study (Yuliandari et al., 2023) and the study (Mogas et al., 2022). The field of planning for digital transformation came in first place at a very high level, and this can be explained by the fact that school principals are aware of the significant role of planning towards digital transformation within their institutions, as the rapid acceleration of digital transformation has highlighted the need for planning, which includes reimagining curricula, reshaping course delivery, and enhancing student support mechanisms to meet evolving societal expectations, as planning is necessary to assess the level of maturity of digital transformation efforts, which enables it to adapt to changes and provide added value to all stakeholders, and ensure that educational institutions remain competitive and innovative in the digital age. The results of the field differ from the study (Mogas et al., 2022) which concluded that principals

are far from planning in implementing school transformation in their schools. The last rank was for the field of school adaptation to the digital age, at a high level. This may be attributed to the importance of schools adapting to the digital age as a crucial matter in the digital transformation of education, as this adaptation involves making schools more attractive, specifically designed to meet students' needs, and effective in developing skills and lifelong learning. The implementation of educational technologies in schools is also a task that requires sustainable changes at all levels, which imposes new challenges on school principals. These results are consistent with the study (Ruloff et al., 2022), which showed a clear orientation of principals towards using technology in their schools, and differ from the study (Yuliandari et al., 2023), which concluded that school principals' limited participation in shaping digital policies

The answer to the second question, which stated: What is the level of professional stress among government school principals in the Sultanate of Oman from their perspective ? To answer this question, the arithmetic mean and standard deviation were extracted, as well as a (t) test for the single sample with a hypothetical mean of 2.5, given that it is the degree that is in the middle of the scale. Table (7) shows the results of the second question.

Table (7) Arithmetic means, standard deviations and T.test for the study sample estimates on the paragraphs of the occupational stress scale

N=266	Mean	standard deviation	t	Df	sig	Cohen's d	Level
Occupational stress scale	2.83	0.717	7.493	265	<.001	0.459	High

The average values in Table (7) show that the average response to the overall scale of professional stress in the study sample was (2.83), with a standard deviation of (.7170), which is an average higher than the hypothetical average and statistically significant, with a strong moral significance on the Cohen et al. (2016) scale of (0.459), meaning that the professional stress among school principals was high, and perhaps the increase in professional stress was affected by what was mentioned in the first question about the increase in aspects of digital transformation among them, as they are making a great effort to keep pace with development, which affects their professional stress. This effect will be addressed in the third question, and this can also be explained by the role of most school principals in creating a school environment that helps in the teaching and learning process, and solving problems related to the educational environment, as the digital transformation has imposed a great challenge and pressure on school principals. The role of the school principal is no longer limited to his traditional administrative job, but he must be a digital leader who seeks to develop himself, his tools and strategies, and be familiar with new digital technologies and have digital skills that help him deal with the crises facing the educational process. This is consistent with the study of (Padanda & Pujar, 2022), the study of Samahi and Khawi (2019), the study of (Bedi & Kukemelk, 2018), and the study of Abu Ghazaleh (2017), while it differs from the study of Delgado, 2016). Presentation, discussion and interpretation of the third question, which states: Is there an impact of digital transformation on professional stress among school principals in the Sultanate of Oman? To answer this question, a multiple regression analysis was conducted for the impact of digital transformation areas on professional stress, and Tables (8) illustrate this.

Table (8) Correlation and Analysis of Variance (ANOVA) for the regression of digital transformation in predicting psychological stress among school principals

	sum of squares	degrees of freedom	Mean squares	value f	Statistical significance	R	R^2
Regression	15.064	4	3.766	8.118	<.001[b]	.333	.111
The remains	121.087	261	.464				
Total	136.151	265					

It is clear from Table (8) that the multiple regression model is statistically significant, as the F value reached (8.118) with a significance of <.001, which means that the model can be used to predict professional stress through digital transformation among school principals in the Sultanate of Oman, as the model can explain 10.1% of the variance in professional stress, as the correlation coefficient reached (.3330), which is a positive correlation with a direct relationship between the two variables. Therefore, the regression coefficients shown in Table (9) can be extracted.

Table (9) Results of multiple linear regression analysis of the digital transformation variable in predicting the level of professional stress among school principals in the Sultanate of Oman

independent variable	Regression coefficients	Standard error	Beta (coefficient(B	T value	Sig.
(Constant)	3.622	.340		10.651	<.001
Adapting the school to the digital age	-.034	.088	-.028	-.383	.702
Planning for digital transformation	-.283	.104	-.233	-2.730	.007
Collaboration and communication	.520	.119	.447	4.352	<.001
Students' digital competence	-.389	.091	-.395	-4.258	<.001

It is clear from table (9) that the areas of digital transformation contribute to professional stress except the area of adapting the school to the digital age, and through the significance (t) of the multiple regression coefficients shows that it can predict and influence professional stress through the areas of digital transformation (digital transformation planning, cooperation and communication, digital competence of students) although the beta coefficient is considered strong as all of them are more than (0. 08) which is negative except in the area of cooperation and communication. This may indicate that the increase in professional stress caused by digital transformation may contribute to increasing the process of cooperation and communication while the other areas decrease it, and the following regression equation can represent the result of multiple regression analysis:

Professional Stress = 3.622 - .283 x digital transformation planning + .520 x collaboration and communication - -.389 x students' digital competence.

It can be explained that the variable of adapting the school to the era of digitization does not contribute to professional stress significantly, because in light of the scientific and technological explosion, it was accompanied by the inevitable necessity to keep pace with this development in all fields, especially the field of education, and this can be observed through the Ministry of Education's efforts in this context to provide modern electronic technologies, including electronic computers and the Internet and provide electronic content to students in addition to training teachers and school principals to employ such technologies, and this is consistent with the study (Navaridas-Nalda et al., 2019).

Increased collaboration and communication can also be explained by the fact that this variable imposes challenges on school principals to achieve professional development for staff, improve the quality of the educational process, and expand the learning and teaching environment to include school, home, and the environment to develop learners' abilities. As for the variable of increasing students' digital competence, this is due to the availability of ICT skills and 21st century skills among students, which contributes to reducing the efforts made by school principals towards digital transformation. As for the variable of planning for digital transformation, this is due to its being an important factor in achieving digital transformation on the one hand and on the other hand to the awareness of school principals of the importance of planning as a key factor towards digital transformation according to a clear strategy that supports general trends in Oman, this is consistent with the study (Ruloff et al, 2022), and the study of Abduljabbar and Abdulkhaleq (2022).

Recommendations

In light of the results of the study, the researcher recommends the following:

- School principals should continue to adapt their schools to the era of digitization, and provide the necessary physical and human infrastructure.
- School principals should continue to develop plans to develop a digital strategy for school digital transformation with the participation of teachers and relevant authorities in the directorates of education.
- School principals to partner with digital learning organizations outside the school to transfer knowledge and expertise to the school environment.
- Ongoing work by school principals to hold dialog and discussion sessions with teachers about the use of technology in the teaching process.

Suggestions

In light of the results of the study, the researcher suggests conducting another study such as:

- The requirements of digital transformation in basic education schools in the Sultanate of Oman.
- The degree to which digital transformation contributes to achieving competitive advantage in basic education schools in the Sultanate of Oman.

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