

The Development of Academic Human Resources in the Digital Age: Realities and Future Scenarios

M. Almanie Abdullah

Educational Administration, College of Education, King Saud University, Saudi Arabia
<https://orcid.org/0000-0002-8769-0002>

KEYWORDS Assessment. Digital Age. Future Scenarios. Realities. University Teaching

ABSTRACT The purpose of the current study was to investigate the development of academic human resources in the digital age. Participants were 160 academic staff. A cross-sectional study was performed in three colleges. Components of academic human resource development survey, a self-administered, close-ended questionnaire was used to collect and analyse data. The questionnaire was built on a network platform and then was shared on social media including *Messenger*, *WhatsApp* and *Facebook Pages*. Results were analysed using frequencies and percentages. Findings indicated that respondents were satisfied to a large extent with methods used in academic scientific contact, university teaching, assessment, and research. The scenario calls for some aspects of reform, renewal and improvement, and it is called progressive, and represents the transformational path, as it assumes gradual reform to consolidate and deepen the positives of the present and treat the negative aspects of reality.

INTRODUCTION

At the end of the twentieth century, and the beginning of the twenty-first century, humanity has known a tremendous revolution in the field of modern information and communication technology data, which leads to a different world and tools (Mallik and Mallik 2017; Ates and Ali 2021; Lazer et al. 2021). Text, sound and image are transferred and dealt with through the internet world, which creates a new world through which to design learning environments and creating virtual worlds are more creative than they are in the current reality (Sun and Stranieri 2020). This made the current era characterised by amazing developments in the field of information and communication technology, which contributed to establishing new milestones, as modern information systems in light of the digital age are analytical and diagnostic systems that give wide possibilities for analysis, planning and flexible and effective response to the changes surrounding the work environment, and there is no doubt that the digital age requires resources of humans with a high degree of skill in the use of information and communication technology, so that these skills enable individuals to adapt to the

changes occurring in the work environment, and qualify them to be more able to create and invest opportunities (Mohammed et al. 2020).

Based on the fact that educational institutions do not live alone from these global variables, especially higher education institutions, as the future of universities today is linked to those rapid developments in the field of knowledge and technology and the accompanying infinite flow of visions, trends, goals, ideas and ideologies, the reality and nature of the challenges facing universities have imposed many transformations. What is important in university education systems is that any development depends on the university's ability to recognise the importance of change and monitor its long and short-term effects, and this requires the formation of highly efficient human resources as an important component of survival in the digital age, so it has become imperative to seek to participate in making this future, defining its roles in preparing human resources and building individuals with competence and distinction to deal with the challenges of the third millennium (Lee et al. 2019). It must make reasonable planning of the staffs' horizontal and vertical development channels, and ensure that the enterprise and talents promote each other and develop together in the process of continuous matching, while effectively and rationally resolving differences and contradictions between the

*Address for correspondence:

M. Almanie Abdullah

Associate Professor

E-mail: abdullah.almanie2020@yahoo.com

enterprise and personnel, making adequate exchanges, coming into contact with the communication barriers, and ensuring smooth completion of related work (Liu and Fu 2019).

Digital Human Resource will assist organisations through the optimisation of the Social, Mobile, Analytics, and Cloud (SMAC) technology, towards management and responsibility in helping them to ensure that assumptions and expectations within the organisation drive the right behaviour (Varadaraj and Wadi 2021).

So, it is of great importance to investigate respondents' satisfaction with methods used in academic scientific contact, university teaching, assessment, and research, realities and scenarios for the future. The digital age empowers university staff to assume their personal and professional life.

Literature Review

Academic Human Resources in the Digital Age

In the context of educational societies, endeavours to make more efforts to rehabilitate their operating systems in accordance with what global systems have become, and to adopt comprehensive development strategies to establish institutions based on knowledge and information by investing in the best opportunities available for data and global trends (Mahjoub 2006: 163), it will not become relying only on physical assets or raw materials and natural economic resources, but the utilisation of human resources, as the necessary assets to achieve success and progress will be maximised by transforming ideas and visions into valuable products that can be used in development processes (Hafinas et al. 2020).

Human resources have become the main source on which institutions depend to achieve the desired progress in the light of the digital age, as the human resource is the element capable of modern concepts, philosophies and ideas that help to benefit from the challenges of the digital age and its implications for the performance of organisations (Banu 2019). It is very important for the HR professionals to get comfortable with the technology (Sharma 2020).

New HR strategies are needed to fill the digital skills gap, to build loyalty and engagement

(Chytiri 2019). Wahiba (2012) indicates that investing in human resources, directing, managing and developing them is the guiding factor for progress and capital accumulation, and that competition in light of the globalisation of the market depends primarily on the development of human resources that depend on innovation, creativity, technological innovation and information investment being the main source of preparation and implementation of strategies and plans of the organisation to adapt to new and ongoing challenges.

This goes in the same line with Yahyaoui and Umm Al-Saad's study (2010), which confirms that the technological revolution and the pace of rapid change that is occurring in the world has made institutions reformulate their strategies in developing their human resources, as they take into account the various basic features of information technology, and represent resource development. Humanity is one of the necessary components in moving capabilities and competencies in light of information technology, so that it is not considered a goal in itself, but a means to achieve a greater goal, which is the optimal use of this desired level of resources to reach the desired level, and therefore human resources must be developed on new information technology technologies and the trend towards spreading the culture of dealing through it, and organisational structures must be developed to become more flexible and work methods developed in line with the gradual trend towards the use of technology, and the need to change the culture of the institution from paper culture to electronic culture.

The development of academic human resources in universities is one of the important elements in mobilising capabilities and competencies in light of information technology, which made universities reformulate their strategies in building their academic human resources so that they do not consider them a goal in itself, but rather a means to reach the desired level and achieve their goals. Institutions are able to make optimal use of the available human resources efficiently by meeting their needs and supporting them in order to keep pace with the rapid changes in the world of information technology (Hung and Chou 2015).

Learning in the Digital Age

Digital advocacy in university work stems from the fact that the problem today does not lie in the lack of knowledge and information but in the excessive increase in them, in addition to the existence of a change in their structure to take its role as an effective tool in society in absorbing global and technical changes as well as cognitive creativity, and thus it is responsible for the scientific and cultural progress of its society (Bahdin 2020).

The philosophy of education in the digital age is based on the principle of lifelong education and university education for all, by providing educational opportunities for all individuals within the community from their place of residence through the global Internet by creating an integrated electronic learning environment based on the latest technological developments, as well as providing the necessary support for learners through a virtual gathering that includes experts and university faculty members, and academic communication between them is done via the electronic network (Anette et al. 2020).

The philosophy of the digital age is based on a new model of education in which the learner is active in obtaining knowledge through research in the abundant flow of information and multiple sources of knowledge, and this new approach to education in research and exploration focuses on developing the learner's personal motivation and abilities to control educational activities to obtain scientific knowledge through teaching and interactive application (Domalewska 2014).

Learning in the digital age differs from traditional learning in the formulation of content and its presentation style, teaching methods, and the time and place in which the learning process takes place, and teaching methods in the digital age are characterised by attracting and motivating learners to learn, so the learner participates and interacts with the scientific content in a positive way, and through it the ability to develop learners to self-manage and increase their awareness through the exchange of ideas and opinions through social networks and blogs (Anette et al. 2020; Mohammed et al. 2020).

Aim of the Study

The purpose of the current study was to investigate the development of academic human resources in the digital age.

Problem Statement

Based on the foregoing, universities today are the link on the line of contact with the digital age as leaders of change in society and are able to adapt to the new surrounding changes, which makes it difficult to justify their reluctance to deal with the digital age, absorb its contents, and then they are the most able agents to operate the mechanisms of their educational, research and administrative systems. The employment of information and communication technology in the educational reality has imposed the necessity of providing new components in the university educational system in terms of reference in a way that cannot be ignored, as new information technology leads to new types of teaching performance arts for the teacher, in terms of methods and strategies of interaction, communication and participation in the new educational environment, and the acquisition of knowledge and the development of the ability to self-learning and facilitate communication and interaction with others through a variety of means of interaction.

This leads to the necessity of providing the basic elements necessary for the development of academic human resources at King Saud University in the digital age, which has become a reality that cannot be ignored. The digital age has cast a shadow over the university, which leads to radical changes in many traditional contexts of university tasks, including re-innovation. Teaching activities, research activities, community service activities and charting the paths of its relations with all internal and external parties in light of the digital revolution in a way that reduces the routine and the rigidity of educational systems.

This study seeks to give answers to the following question, that is, what are the components of academic human resources development in Saudi universities in the digital age?

From the main question, a group of sub-questions as follows:

1. What is the philosophical intellectual framework of the digital age?
2. What are the implications of the digital age on the university education system?
3. What are the basic components of the university education system in the digital age?
4. What is the reality of the components of academic human resources development at King Saud University in the digital age?
5. What are the proposed scenarios for developing academic human resources in the digital age?

METHODOLOGY

The current research used the descriptive method that provides a description of what is being, as well as defined the circumstances and relationships that exist between the facts. It is not limited to collecting and classifying data, but rather extends beyond that because it includes a degree of interpretation and comparison, and then it is possible to identify the current situation of the constituents for the development of academic human resources in Saudi universities in light of the digital age. The current research also used the scenario method as one of the methodological methods in the field of future studies, which is a "description of a future situation or a possible, potential or desirable future event with the frequency of events that continue from the basic situation to the future situation, provided that these situations and events are characterised by a certain consistency" (Zaher 2002). Data were collected during the academic year 2020-2021.

Study Group and Procedure

A cross-sectional study was performed in three colleges (College of Computer and Information Sciences, College of Business Administration and College of Education), King Saud University, Saudi Arabia. The questionnaires were all built on a network platform and then was shared on social media including *Messenger*, *WhatsApp* and *Facebook Pages*. The informed consent form and the questionnaires were sent through the Google Drive™ software. College academic staff were asked to fill them out

by an access link. A convenience sampling method was used to recruit participants in this study. The inclusion criteria were as follows, that is, lecturers, assistant professors, associate professors and full professors. After a brief written informed consent at the beginning of the survey, the questionnaire was required. While constructing the online questionnaire, the integrity check function of the platform was used, meaning the questionnaire could not be submitted unless all questions were answered. After extracting the data from the platform, the quality of the questionnaire was re-checked to eliminate those with missing data independently until one hundred percent consensus was reached. The data were collected within a period of about a month. Participants were 160 academic staff.

Instrument

Components of the Academic Human Resource Development Survey (by the Researcher)

It is a self-administered, close-ended questionnaire. The first part for the academic scientific contact contains 6 items. For example, "The University trains a faculty member in the controls of using social media to communicate with students outside the university". The second part about university teaching contains 6 items too. For example, "The University offers continuous courses for faculty members to develop their skills in the field of teaching skills remotely via the Internet". The third part, which is about assessment, contains 6 items as well. For example, "The University trains a faculty member on how to prepare question banks in electronic courses". The fourth part about research contains 6 items as well. For example, "The University provides an electronic library that includes full-text databases". Items were rated on a 3-point scale of fulfilled (3ms), somewhat (2ms), not fulfilled (1m). The reliability of the scale in terms of internal consistency was assessed by Cronbach's α . The items demonstrated a satisfactory level of internal consistency reliability for the four subscales of academic scientific contact, university teaching, assessment, research and the scale as a whole ($\alpha = 0.89, 0.88, 0.90, 0.88$ and 0.92), respectively. The content validity of the scale was examined by a group of 10 experts.

They assessed the relevance of each item using a four-point Likert scale (where 1 represents “irrelevant” and 4 represents “highly relevant”). They provided suggestions and comments. The 28 items were judged to be quite or highly relevant. A content validity index was calculated at the item level (I-CVI = 0.90).

Data Analysis

Field study results were analysed using frequencies and percentages.

RESULTS

The questionnaire items have been grouped into four groups representing components of academic human resource development, and therefore the results will be discussed within the same grouping methodology.

1. Academic Scientific Contact

Concerning the first item, as shown in Table 1, for “The university trains a faculty member on the controls of using social media to communicate with students outside the university”, fifty-six percent of the respondents believe this is fulfilled, while thirty-three percent believe it is

fulfilled somewhat. However, eleven percent believe that it is not fulfilled at all. As for the second item, that is, “The university provides opportunities for interaction via interactive video conferencing between faculty members and learners”, fifty-one percent of the respondents believe this is fulfilled, while thirty percent believe it is fulfilled somewhat. However, nineteen percent believe that it is not fulfilled at all. As for the third item, that is, “The university provides a university email for each faculty member to communicate with academic colleagues in the field of university work”, ninety-two percent of the respondents believe this is fulfilled, while five percent believe it is fulfilled somewhat. However, three percent believe that it is not fulfilled at all. Concerning the fourth item, that is, “The university trains faculty members in time management in digital learning environments”, fifty-two percent of the respondents believe this is fulfilled, while thirty-one percent believe it is fulfilled somewhat. However, seventeen percent believe that it is not fulfilled at all. As for the fifth item, that is, “The university provides the faculty member with the possibilities and facilities to hold meetings and webinars directly to communicate with students to solve their problems”, fifty-two percent of the respondents believe this is fulfilled, while twenty-eight percent

Table 1: Frequencies and percentages for academic scientific contact

Item	Fulfilled		Somewhat fulfilled		Not fulfilled at all	
	Frequency	percentage	Frequency	percentage	Frequency	percentage
1. The university trains a faculty member on the controls of using social media to communicate with students outside the university	90	56	53	33	17	11
2. The university provides opportunities for interaction via interactive video conferencing between faculty members and learners	82	51	49	30	29	19
3. The university provides a university email for each faculty member to communicate with academic colleagues in the field of university work	148	92	8	5	4	3
4. The university trains faculty members in time management in digital learning environments	84	52	50	31	26	17
5. The university provides the faculty member with the possibilities and facilities to hold meetings and webinars directly to communicate with students to solve their problems	84	52	46	28	30	20
6. The university provides a university email for every student at the university to create official communication channels between the faculty member and the learners	82	51	38	24	40	25

believe it is fulfilled somewhat. However, twenty percent believe that it is not fulfilled at all. As to the sixth, and last item, that is, “The university provides a university email for every student at the university to create official communication channels between the faculty member and the learners”, fifty-one percent of the respondents believe is fulfilled, while twenty-four percent believe it is fulfilled somewhat. However, twenty-five percent believe that it is not fulfilled at all.

2. University Teaching

Concerning the first item, as shown in Table 2, that is, “The university offers continuous courses for faculty members to develop their skills in the field of teaching skills remotely via the Internet”, fifty-two percent of the respondents believe this is fulfilled, while thirty-one percent believe it is fulfilled somewhat. However, seventeen percent believe that it is not fulfilled at all. As for, the second item, that is, “The university trains a faculty member on how to manage interactions and use communication tools in a digital learning environment”, fifty-one percent of the respondents believe this is fulfilled, while thirty percent believe it is fulfilled somewhat. However, nineteen percent believe that it is not fulfilled at all. As for the third item, that is, “The University offers training programs

that provide faculty members with self-development skills in using digital technology”, fifty-two percent of the respondents believe this is fulfilled, while thirty-one percent believe it is fulfilled somewhat. However, seventeen percent believe that it is not fulfilled at all. Concerning the fourth item, that is, “The University allocates rewards for distinguished people in the field of online teaching”, fifty-one percent of the respondents believe this is fulfilled, while thirty percent believe it is fulfilled somewhat. However, nineteen percent believe that it is not fulfilled at all. As for the fifth item of “The university trains a faculty member on how to build e-courses in digital learning environments”, fifty-six percent of the respondents believe this is fulfilled, while thirty-three percent believe it is fulfilled somewhat. However, eleven percent believe that it is not fulfilled at all. As to the sixth, and last item, “The University encourages the faculty member to use electronic lectures and publish them on social media pages”, ninety-two percent of the respondents believe this is fulfilled, while five percent believe it is fulfilled somewhat. However, three percent believe that it is not fulfilled at all.

3. Assessment

Concerning the first item, as shown in Table 3, the “The university trains a faculty member in

Table 2: Frequencies and percentages for university teaching

Item	Fulfilled		Somewhat fulfilled		Not fulfilled at all	
	Frequency	percentage	Frequency	percentage	Frequency	percentage
1. The university offers continuous courses for faculty members to develop their skills in the field of teaching skills remotely via the Internet.	84	52	50	31	26	17
2. The university trains a faculty member on how to manage interactions and use communication tools in a digital learning environment.	82	51	49	30	29	19
3. The university offers training programs that provide faculty members with self-development skills in using digital technology.	84	52	50	31	26	17
4. The university allocates rewards for distinguished people in the field of online teaching.	82	51	49	30	29	19
5. The university trains a faculty member on how to build e-courses in digital learning environments.	90	56	53	33	17	11
6. The university encourages the faculty member to use electronic lectures and publish them on social media pages.	148	92	8	5	4	3

Table 3: Frequencies and percentages for assessment

<i>Item</i>	<i>Fulfilled</i>		<i>Somewhat fulfilled</i>		<i>Not fulfilled at all</i>	
	<i>Frequency</i>	<i>percentage</i>	<i>Frequency</i>	<i>percentage</i>	<i>Frequency</i>	<i>percentage</i>
1. The university trains a faculty member in how to prepare question banks in electronic courses	84	52	26	17	50	31
2. The university provides learners with immediate feedback to learners about their learning results in electronic tests.	82	51	29	19	49	30
3. The university relies completely and mainly on electronic tests over the Internet.	84	52	26	17	50	31
4. The university provides opportunities for cooperation between a faculty member and educational technology experts in preparing electronic exams.	82	51	38	24	40	25
5. The university trains a faculty member in how to create plans to improve student learning outcomes.	90	56	53	33	17	11
6. The university provides self-evaluation methods for learners via the Internet.	84	52	46	28	30	20

how to prepare question banks in electronic courses”, fifty-two percent of the respondents believe this is fulfilled, while seventeen percent believe it is fulfilled somewhat. However, thirty-one percent believe that it is not fulfilled at all. As for, the second item, “The university provides learners with immediate feedback to learners about their learning results in electronic tests”, fifty-one percent of the respondents believe is fulfilled, while nineteen percent believe it is fulfilled somewhat. However, thirty percent believe that it is not fulfilled at all. As for the third item, “The university relies completely and mainly on electronic tests over the Internet”, fifty-two percent of the respondents believe this is fulfilled, while seventeen percent believe it is fulfilled somewhat. However, thirty-one percent believe that it is not fulfilled at all. Concerning the fourth item, “The University provides opportunities for cooperation between a faculty member and educational technology experts in preparing electronic exams”, fifty-one percent of the respondents believe is fulfilled, while twenty-four percent believe it is fulfilled somewhat. However, twenty-five percent believe that it is not fulfilled at all. As for the fifth item, “The University trains a faculty member in how to create plans to improve student learning outcomes”, fifty-six percent of the respondents believe is fulfilled, while thirty-three percent believe it is fulfilled somewhat. However, eleven percent believe that it is not fulfilled at all. As to the sixth, and last item, “The University pro-

vides self-evaluation methods for learners via the Internet”, fifty-two percent of the respondents believe this is fulfilled, while twenty-eight percent believe it is fulfilled somewhat. However, twenty percent believe that it is not fulfilled at all.

4. Research

Concerning the first item, as shown in Table 4, “The university provides an electronic library that includes full-text databases”, fifty-one percent of the respondents believe this is fulfilled, while thirty percent believe it is fulfilled somewhat. However, nineteen percent believe that it is not fulfilled at all. As for, the second item, “The university shares global databases that allow access to sober sources of knowledge”, fifty-one percent of the respondents believe is fulfilled, while twenty-nine percent believe it is fulfilled somewhat. However, thirty percent believe that it is not fulfilled at all. As for the third item, “The University adopts computerisation of libraries to cope with the huge increase in information and its various sources”, fifty-two percent of the respondents believe is fulfilled, while seventeen percent believe it is fulfilled somewhat. However, thirty-one percent believe that it is not fulfilled at all. Concerning the fourth item, “The University provides a joint system for cooperation with local and international research centres via the Internet”, fifty-one percent of the respondents believe is fulfilled, while

Table 4: Frequencies and percentages for research

<i>Item</i>	<i>Fulfilled</i>		<i>Somewhat fulfilled</i>		<i>Not fulfilled at all</i>	
	<i>Frequency</i>	<i>percentage</i>	<i>Frequency</i>	<i>percentage</i>	<i>Frequency</i>	<i>percentage</i>
1. The university provides an electronic library that includes full-text databases.	82	51	49	30	29	19
2. The university shares global databases that allow access to sober sources of knowledge.	82	51	29	19	49	30
3. The university adopts computerisation of libraries to cope with the huge increase in information and its various sources.	84	52	26	17	50	31
4. The university provides a joint system for cooperation with local and international research centres via the Internet.	82	51	38	24	40	25
5. The university publishes the dates of various conferences and scientific events on its website.	90	56	53	33	17	11
6. The university provides the rooms of faculty members with internet lines for scientific research purposes.	148	92	8	5	4	3

twenty-four percent believe it is fulfilled somewhat. However, twenty-five percent believe that it is not fulfilled at all. As for the fifth item, “The University publishes the dates of various conferences and scientific events on its website”, fifty-six percent of the respondents believe it is fulfilled, while thirty-three percent believe it is fulfilled somewhat. However, eleven percent believe that it is not fulfilled at all. As to the sixth, and last item, “The University provides the rooms of faculty members with internet lines for scientific research purposes”, ninety-two percent of the respondents believe it is fulfilled, while five percent believe it is fulfilled somewhat. However, four percent believe that it is not fulfilled at all.

Suggested Scenarios for Developing Academic Human Resources in the Digital Age

The research revealed, in its field framework, some aspects of the university’s shortcomings in providing the components of faculty development in the digital age and thus the inefficiency of faculty development in the digital age, which necessitated drawing the features of a set of alternatives and possible future scenarios for the development of faculty members in the light of the digital age, so that their performance is improved in light of the future trends of the university.

The scenario is considered one of the methodological methods used in future studies, as these studies usually end with a scenario equal or more, and appear more like a small story about the future or a group of narrative visions that provide visions about the future, including components of various dimensions and possible or possible events that are placed in the form possible alternatives or future possibilities (Hafiz and Buhari 2006).

The Extension Scenario: This scenario expresses the continuity of the current conditions, and it is called several scenarios, including continuity, reference, trend, pessimistic, regression, typical, Andalusian, and this scenario assumes the continuation of the existing situation, as it is in the future. From the deterioration of the current conditions and their deterioration, and the failure to provide the basic elements for the development of academic human resources in the digital age, which is reflected in the lack of any significant change in the development of faculty members in the university system, which negatively affects the development of their academic practices.

The Reform Scenario: This scenario bears some aspects of reform, renewal and improvement, and it is called progressive, and represents the transformational path, as it assumes gradual reform to consolidate and deepen the positives of the present and treat the negative aspects of reality, which represents the picture that can

occur if there are non-radical reform amendments and a partial response about providing some. The basic foundations for the development of academic human resources in the digital age, which affects the development of faculty members in the university system as a result of partial response to the knowledge and technological changes that the digital age poses to the university system.

The Innovative Scenario: This scenario envisages a distinct active role, and it is called optimistic, innovative, creative, evolutionary, which represents the ideal picture that the development of faculty members in the university system can be as a result of the full response to the revolutionary changes imposed by the digital age on the university. This will reflect positively on the university's education system, which leads to providing the basic ingredients for the development of academic human resources in the digital age in universities, which affects the emergence of new patterns and practices for faculty members that raise the efficiency of the educational process to its maximum potential.

DISCUSSION

Findings indicated that respondents were satisfied to a large extent with methods used in academic scientific contact, university teaching, assessment, and research. The scenario calls for some aspects of reform, renewal and improvement, and it is called progressive, and represents the transformational path, as it assumes gradual reform to consolidate and deepen the positives of the present and treat the negative aspects of reality.

The findings of this study are in communion with existing literature (Wahiba 2012) that investing in, directing, managing and developing human resources is the factor that guides progress and capital accumulation, and that competition in light of the global market depends primarily on the development of human resources that depends on innovation, creativity, technological innovation and investment of information, as it is the main source for preparing and implementing strategies and special plans for an organisation to adapt to new and ongoing challenges.

The scenario calls for some aspects of reform, renewal and improvement, and it is called progressive, and represents the transformational path, as it assumes gradual reform to consolidate and deepen the positives of the present and treat the negative aspects of reality. This is consistent with Yehiawi and Umm Al-Saad (2015) that the technological revolution and the pace of rapid change that is taking place in the world have made the institutions reformulate their strategies in the development of their human resources, taking into account the various basic features of information technology, and human resource development is one of the necessary ingredients in mobilising capabilities and competencies in the shadow of information technology, so that it is not considered a goal in itself, but rather a means to achieve a greater goal, which is the optimal use of this desired level of resources to reach the desired level, and accordingly, human resources must be developed on new information technology techniques (Nicolás-Agustín et al. 2021) and the trend towards spreading a culture of dealing through them, and structures must be developed for the organisational structure to become more flexible and the development of work methods in line with the gradual trend towards the use of technology, and the need to change the culture of the institution from paper culture to electronic culture.

The development of academic human resources in universities is one of the important elements in mobilising capacities and competencies in light of information technology, which made universities reformulate their strategies in building their academic human resources so as not to consider them as a goal in itself, but as a means to reach the desired level and achieve its goals. The success of organisations depends on their ability to optimally use the available human resources with high efficiency by meeting their needs and supporting them in order to keep pace with the rapid changes in the world of information technology.

Therefore, the transformation from the traditional structure of the university, which depends on the traditional human elements, has become a necessity to shift to a comprehensive structure that relies on technology that facilitates performance and saves time and effort, by providing the ingredients for human resource development (Hafinas et al. 2020) to move from the

stage of knowledge preservation to innovators within the framework of informatics. Today, there is a demand to deal with global developments. With every technological development, attention is directed to universities in order to play their optimal role in the digital age (Junita 2020).

CONCLUSION

Digital technologies obviously affect HR activities. The development of academic human resources is one of the most important and urgent issues at the present time, as it is the main engine for the development and modernisation of processes in the university system. Raising the efficiency of the faculty members in line with the requirements imposed by the digital age leads to enabling academic human resources to contribute to building knowledge, investing it and then global competitiveness, and the universities should focus on their human capital and develop it because academic human resources represent the real key to entering the digital age and information technology by providing the basic ingredients for the digital transformation of universities.

RECOMMENDATIONS

Based on the results of this study, some recommendations are presented below. Additional research on human resources is needed, as they have become the main source on which institutions depend to achieve the desired progress in the light of the digital age. The employment of information and communication technology in the educational reality has imposed the necessity of providing new components in the university educational system in terms of reference in a way that cannot be ignored. Institutions must develop the skills of individuals according to specific priorities in order to be able to develop human resources in light of the new digital environment, and the most important of these skills are the skills to deal with modern information technology, communication skills, change management skills and development, the skills of developing the components of the human personality in the light of those developments in the work environment.

There is an increased need to pay attention to the employment of technological innovations

in the university education system, which is closely related to the professional work of the university faculty member, and then the responsibilities of renewal and development fall on the shoulders of the university faculty member, which imposes new roles on them. This requires their rehabilitation to renew their knowledge and skills in the light of the digital age.

LIMITATIONS

The research context is limited to King Saud University and due to limited reachability the sample size could not be large. For future research, more universities should be included in the target population to test and investigate the development of academic human resources in the digital age.

ETHICAL STANDARDS

This study is compliant with ethical standards.

DISCLOSURE

The author reports no conflicts of interest in this work.

REFERENCES

- Anette B, Anna M, Fabian M, Annerose N 2020. *Rethinking Education in the Digital Age*. PRS: European Parliamentary Research Service.
- Ates A, Ali Ü 2021. The relationship between teacher academic optimism and student academic achievement: A meta-analysis. *Psycho-Educational Research Reviews*, 10(2): 284-297.
- Bahdin N 2020. Human Resources (HR) in education management. *Budapest International Research and Critics in Linguistics and Education (BirLE) Journal*, 3(2): 1240-1249.
- Banu SR 2019. HR digital transformation. *Journal of the Gujarat Research Society*, 21(13): 946-951.
- Chytiri A 2019. Human resource managers' role in the digital era. *Journal of Economics and Business*, 69(1-2): 62-72.
- Domalewska D 2014. Technology-supported classroom for collaborative learning: Blogging in the foreign language classroom. *International Journal of Education and Development using Information and Communication Technology (IJEDICT)*, 10(4): 21-30.
- Hafinas H, Yusmani Yusoff, Somu H 2020. *The Relationship between Digital Human Resource Management and Organizational Performance*. Conference-First ASEAN Business, Environment, and Technology Symposium, Paris, France.

- Hafiz M, Al-Buhairy S 2006. *Educational Institutions Planning*. Cairo: The World of Books.
- Hung ML, Chou C 2015. Students' perceptions of instructors' roles in blended and online learning environments: A comparative study. *Computers and Education*, 81: 315–325.
- Junita A 2020. The Creative Hub: HR Strategic Function in the Digital Age. *Advances in Economics, Business and Management Research*, Volume 176. *Proceedings of the 4th International Conference on Sustainable Innovation 2020-Accounting and Management* (ICoSIAMS 2020), Paris, France.
- Lazer D, Hargittai E, Freelon D et al. 2021. Meaningful measures of human society in the twenty-first century. *Nature*, 595: 189–196. doi.org/10.1038/s41586-021-03660-7
- Lee C, Young A, Cheung K 2019. Learner perceptions versus technology usage: A study of adolescent English learners in Hong Kong secondary schools. *Computers and Education*, 133:13-26. doi.org/10.1016/j.compedu.2019.01.005
- Liu X, Fu Z 2019. Exploration and analysis of the new paradigm of human resources management in the digital age. *Open Access Library Journal*, 6: 1-8. doi:10.4236/oalib.1105863
- Mahjoub B 2006. *Strategy of Transformation into a Digital University, Symposium on Development Strategies in Arab Institutions*. Egypt, Cairo: Arab Administrative Development Organization - League of Arab States.
- Mallik A, Mallik L 2017. A review of education technology in digital age: Classroom learning for future and beyond. *Psycho-Educational Research Reviews*, 6(3): 80-92.
- Mohammed A, Derek A, Amber G 2020. Connecting to the digital age: using emergent technology to enhance student learning. *Education and Information Technologies*, 25: 1625-1638.
- Nicolás-Agustín Á, Jiménez-Jiménez D, Maeso-Fernandez F 2021. The role of human resource practices in the implementation of digital transformation. *International Journal of Manpower*, ahead-of-print. doi.org/10.1108/IJM-03-2021-0176
- Sharma N 2020. Human resources in the digital age (Issues impact and challenges of e-HR in the Indian Scenario). *International Journal of Advanced Science and Technology*, 29(2): 2632-2638.
- Sun Z, Stranieri 2020. A knowledge discovery in the digital age. *PNG UoT BAIS*, 5(1): 1-11.
- Varadaraj DA, Wadi DBMA 2021. A study on contribution of digital human resource management towards organizational performance. *International Journal of Management Science and Business Administration*, 7(5): 43-51.
- Wahiba S 2012. *Human Resources Development Strategy as an Entrance to Sustainable Performance Improvement in the Economic Corporation - Case Study of the Industrial and Health Supplements Manufacturing Company in Ain El Kabira Setif*. Master's Thesis. Algeria: Faculty of Economic Sciences, Commercial Sciences and Management Sciences, Ferhat Abbas Setif University.
- Yehiawi N, Umm Al-Saad F 2015. Information technology and its implications for human resource development: A field study by the Sonelgaz Foundation, the Regional Directorate of Distribution Batna, *The Algerian Journal of Economic Development*, University of Batna, 2(2): 101-187.
- Zaher D 2002. *Introduction to Future Studies (Concepts - Methods - Applications)*. Cairo, Egypt: Futures Series, First Book, Arab Center for Education and Development.

Paper received for publication in November, 2021
Paper accepted for publication in December, 2021