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Requisite Skills for University Students Considering Future Job Demands and Saudi Arabia's Vision 2030

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Abstract

The study aims to investigate the necessary skills for university students in light of the Kingdom's Vision 2030 and the requirements of future professions. The study adopted a descriptive and analytical method, relying on two data sources: secondary data obtained through the analysis of relevant previous studies, resulting in a proposed list of future professions and the main categories of required skills. The second source was primary data, presenting proposed professions and skills to 76 experts and academics in various core disciplines. After verifying the validity and reliability of the survey, it was applied, and data were collected and analyzed using descriptive statistical methods (Mean, standard deviation, and Percentage) to estimate the sample's responses to professions and skills. Inferential statistics (T-test & ANOVA) were used to detect the impact of sample variable differences on their estimation of professions and skills. The study identified 15 suggested future professions and a list of future skills categorized into three main groups: Personal Skills (7 key skills), Learning Skills (5 key skills), and Technical and Digital Skills (9 key skills).

Keywords: *Necessary Skills, University Students, Kingdom's Vision 2030, Requirements of Future Professions*

INTRODUCTION

The world is witnessing unprecedented changes due to rapid developments in various technological, political, social, and economic fields. Amid the transformations brought about by globalization and the shift towards knowledge-based and globally competitive societies, the future will see intense competition for human resources. Human resources are the focal point and foundation for development and progress. These developments have also posed numerous challenges in various aspects of life, particularly in education systems. These challenges are linked to the need for educational systems to adapt to such changes. For education systems to keep pace with these transformations and address the accompanying challenges, fundamental changes in education are required. The focus should shift towards the quality and effectiveness of the educational process, emphasizing the anticipation of the future of education. This aims to generate practical solutions to the issues faced by educational systems, along with anticipating the risks and opportunities they may encounter in the future.

The Kingdom's Vision 2030 has presented several strategic solutions to keep pace with successive changes and developments in various fields. In the education sector, the vision focuses on seeking a deep understanding of knowledge, its production mechanisms, and the skills required to apply it. This approach aims to contribute to building the integrated personality of the learner and empowering them to acquire 21st-century skills. These skills include critical and creative thinking, metacognitive thinking, digital literacy, self-directed learning skills, research and investigation skills, innovation skills, planning and leadership skills, problem-solving, decision-making, negotiation, and persuasion skills. Additionally, it emphasizes hard skills in fields such as medicine, engineering, computer science, space, economics, and energy, along with related skills (Allmnakrah & Evers, 2020).

Several survey studies (Frey & Osbornem, 2017; Manyika et al., 2017; OECD, 2018) have mentioned that many professions are likely to disappear in the future due to the emergence of automated operating systems and processes. Statistics indicate that approximately 14% of professions are expected to be automated, and 32%

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will undergo significant changes in performance methods and associated skills. This necessitates the presence of a comprehensive and collaborative vision that requires a reconsideration of skills and specializations.

In addition to the emergence of new professions and specializations, technological changes and future visions have increased the demand for new skills that meet future needs. Particularly, there is a demand for skills that involve blending knowledge and technology, problem-solving, and pattern thinking. Furthermore, skills such as perseverance, collaboration, empathy, and self-directed learning are becoming increasingly important. Future professions are characterized by their non-permanent nature, relying on what is known as the non-permanent knowledge economy, where individuals may occupy multiple roles throughout their professional lives (Mahdi, 2019).

Statement of Problem

Through Vision 2030, the Kingdom of Saudi Arabia aims to engage its citizens in the transition towards a knowledge-based economy. This has led to increased interest from institutions and educational systems in introducing specializations and programs with new skills. However, the types of knowledge and skills required to deal with the knowledge economy and respond to future job requirements are still not keeping pace with the rates of acceleration and changes that are occurring. A report from the World Economic Forum (WEF) in September 2018 emphasized the need for a comprehensive workforce strategy to address the challenges, rapid changes, innovations, and continuous advancements in all fields, especially in areas like artificial intelligence and automation (Thompson, 2019).

The Kingdom of Saudi Arabia has planned various programs and strategies to transform its Vision 2030 into a tangible reality. Despite these efforts, there remains a pressing need to predict future professions, skills, and competencies. These are essential for the Saudi labor market to develop in response to the requirements of the new era, particularly considering the rapid changes and innovations associated with this new era. Understanding how professions will be affected by accelerating technological changes is crucial.

Recent studies have highlighted the importance of future studies, both from institutions and academics, in designing strategies, planning scenarios, and visions. These studies play a significant role in enabling decision-makers to develop strategies and solutions. Touahmia et al. (2020) emphasize that, despite the growing research in the field of future studies, studies predicting future professions and the associated new skills remain limited. Within the scope of Saudi Arabia's efforts to provide the foundation for achieving Vision 2030 in education, some studies have been conducted. Abdullateef et al. (2023) identified the needs of the labor market in line with the vision's goals, including the creation of a dynamic and sustainable economy by providing quality job opportunities for youth. They recommended exploring the skills required by students for future professions. Allmnakrah and Evers (2020) stressed the need for further reforms in the education systems to equip students with the necessary skills to deal with the knowledge economy and future professions. Yusuf and Jamjoom (2022) highlighted the importance of higher education institutions predicting the specializations and professions needed in the future and working towards equipping students with the associated skills. Mohiuddin et al. (2023) recommended identifying the skills necessary to deal with industrial and technological advancements, urging further predictive studies, especially in exploring future professions and their associated skills.

There is no doubt that these rapid technological advancements will necessarily lead to a change in the priorities of the labor market. Some jobs will disappear while others emerge. The workforce will need to align its skills and competencies with the pace of these changes. Many studies have recommended the adoption of research approaches that focus on anticipating future professions and the required skills. Nurunnabi (2017) conducted a study aimed at exploring issues related to the transition towards a knowledge-based economy in Saudi Arabia and the transformations in interests and priorities required. The study recommended the necessity of equipping the human capital with skills and competencies that qualify them to deal with future professions and the associated challenges and changes. Touahmia et al. (2020) conducted an exploratory study to identify the knowledge and skills associated with the future of specialists in quality fields. The study emphasized the importance of continuous research in exploring the skills and competencies necessary to deal with future challenges and associated professions.

The preceding information highlights the urgent need for further studies exploring future specializations and professions, along with the associated skills. Consequently, the research problem is formulated in the following two questions:

1. What skills are necessary for university students in light of the requirements of future professions and Vision 2030 in the Kingdom of Saudi Arabia?

2. Do demographic variables of the sample influence their estimation and expectations of future professions and the skills associated with them?

Research Objectives

The study aims to investigate the viewpoints of experts and academics to identify future professions reflecting Vision 2030. Also, it identifies the skills required for university students in light of future professions and Vision 2030 from the perspectives of experts and academics. In addition, it explores the influence of sample characteristics on their responses regarding proposed future professions and the required future skills.

METHODS

The current research adopted a descriptive-analytical methodology, where the results of previous studies related to specializations, future professions, and Vision 2030 were analyzed. Among these studies are Taha (2019), Alotaibi (2020), Van Laar et al. (2019), Baghdad (2020), Zomrani (2023), Di-Battista et al. (2023), Eslite (2023), the World Economic Forum report in 2023, and the recommendations from the World Economic Forum in Riyadh (2020). Additionally, the report from the Future Outlook Foundation in Abu Dhabi (2018), the World Economic Forum (2018), and Fajaryati et al. (2020) were consulted. These studies identified 21st-century skills, digital and social transformation skills, university adaptation skills, self-organization skills, learning skills, and thinking skills. The World Economic Forum 2023 report discussed the future of professions and jobs. Eslite's study focused on how universities can prepare students for jobs in 2023. The recommendations from the World Economic Forum in Riyadh (2020) were titled "Towards Sustainable Economic Development." The Future Outlook Foundation's report in Abu Dhabi (2018) and the World Economic Forum (2018) were also considered. Fajaryati et al. (2020) aimed to identify employment skills needed to meet future job requirements, highlighting cognitive, personal, and technical skills as essential categories. The study identified key skills such as technical skills, complex problem-solving skills, initiative and innovation skills, teamwork skills, learning skills, as well as planning, project management, entrepreneurship, and self-organization skills. The literature analysis yielded a list of future professions and another of corresponding future skills reflected in those professions.

In light of the list of future professions and the corresponding skills, there was a need to present them to experts and academics. A questionnaire was designed using Google Forms to gather responses from experts and academics regarding future professions in the context of Vision 2030, as outlined in the list, and the skills necessary for those professions that university students should possess. The validity and reliability of the questionnaire were verified using Cronbach's alpha. The finalized questionnaire consisted of three sections. The first section gathered demographic data, including name, major, age, occupation, and years of experience. The second section presented a list of future professions derived from Vision 2030 and related literature analysis. This section aimed to identify future professions reflecting Vision 2030 from the perspective of experts and academics. The third section focused on the skills needed for university students in light of future professions and Vision 2030. This section aimed to identify the necessary skills from the perspective of experts and academics. The Likert Scale was used in designing the questionnaire. Once the questionnaire was designed, validated, and confirmed for reliability, it was distributed online through various platforms to 76 experts and academics. Their responses were collected and analyzed using a descriptive statistical method.

Reliability and Validity

The questionnaire's validity and content accuracy were verified by presenting it to a group of specialists and academics to ensure the linguistic formulation's integrity and precision. Additionally, the questionnaire's stability was examined by calculating internal consistency using Cronbach's alpha, as shown in Table 1.

Table 1. Tool's reliability

Domain		No of items	Cronbach's alpha Coefficients
Future professions		15	0.89
Skills needed for university students in light of the KSA's Vision 2030 and future professions	Personal skills	7	0.91
	Learning Skills	5	0.94
	technical and digital skills	9	0.86
Scale		36	0.88

Table 1 shows that the consistency coefficients for the questionnaire dimensions ranged between 0.86 and 0.94, indicating the consistency of the questionnaire dimensions. The Cronbach's alpha value for the entire tool was 0.88, signifying a high level of reliability and consistency of the questionnaire. Pearson's correlation was also calculated between the items of each dimension and the dimension to which they belong, as illustrated in Table 2.

Table 2. Tool's validity

Future professions				Skills needed for university students in light of the KSA's Vision 2030 and future professions					
				Personal skills		Learning skills		Technical and digital skills	
items	Per.Corr	items	Per.Corr	items	Per.Corr	items	Per.Corr	items	Per.Corr
1	0.617**	9	0.603**	1	0.811**	1	0.911**	1	0.622**
2	0.636**	10	0.502*	2	0.877**	2	0.844**	2	0.514*
3	0.711**	11	0.676**	3	0.759**	3	0.864**	3	0.597**
4	0.802**	12	0.807**	4	0.901**	4	0.769**	4	0.477*
5	0.587**	13	0.618**	5	0.689**	5	0.687**	5	0.633**
6	0.623**	14	0.488*	6	0.878**			6	0.574**
7	0.744**	15	0.577**	7	0.652**			7	0.486*
8	0.502*							8	0.458*
								9	0.503*

(*) Significant at (0.05), (**) Significant at (0.01)

Through Table 3, it is evident that the correlation coefficients for future professions and the required future skills were all statistically significant. This result indicates the correlation of the items with the dimensions to which they belong.

Sample's Profile

The survey was distributed via email and social media to a total of 89 experts and academics from various disciplines. They were asked to assess their responses to each statement in the questionnaire to identify their priorities and expectations for the skills needed for university students in light of Saudi Vision 2030 and future professions. The responses of 76 participants were recorded and analyzed using descriptive statistics (frequencies, percentages, means, and standard deviations). Additionally, one-way ANOVA analysis was employed to investigate whether demographic variables impacted their responses and expectations regarding future professions and the required future skills.

SPSS V25.0 software was utilized to analyze the data collected from the participants' responses. Descriptive statistical methods, including percentages and means, were employed to describe the sample's demographic characteristics and categorize them according to these characteristics, as illustrated in Table 3.

Table 3. Sample distribution

Characters	Variable	No.	Percent
Gender	Male	48	63%
	Female	28	37%
Academic rank	Professor	10	13%
	Associate Professor	24	32%
	Assistant Professor	33	43%
	Others	9	12%
Specialization	Human and Social Sciences	25	33%
	Engineering and Computer Science	21	28%
	Health sciences	19	25%
	Management sciences	11	14%
Experience	Less than 5 Years	18	24%
	5 to 10 Years	31	41%
	More than 10 Years	27	35%

Total	76	100%

Data Analysis

The data was processed using SPSS V25.0 software. Descriptive statistical methods, including means, standard deviations, frequencies, percentages, ranking, and range calculation, were employed. The degree of the participants' responses was assessed according to Table 4.

Table 4. Criteria for assessing responses

Mean Range	Response estimation
1.00 : 1.80	Very week
1.81: 2.60	Week
2.61: 3.40	Moderate
3.41: 4.20	Strong
Above 4.21	Very Strong

Then, the means, standard deviations, and rankings for professions and skills, based on the sample responses, were calculated without categorizing the respondents according to sample variables, as shown in Table 5.

Table 5. Means, standard deviations, and rankings for professions and skills

Dimension		items	Mean	Std.dev	Rank	Response estimation
Future professions		Developer and programmer of smart applications	4.26	0.18	11	Very Strong
		Data specialist/analyst	4.61	0.24	2	Very Strong
		Artificial intelligence and robotics specialist	4.64	0.25	1	Very Strong
		Systems and information security specialist	4.53	0.11	4	Very Strong
		Nano technology expert	4.42	0.45	8	Very Strong
		E-content designer and developer	4.45	0.31	6	Very Strong
		Virtual Store Management Specialist	4.39	0.24	10	Very Strong
		Digital software and application developer	4.40	0.18	9	Very Strong
		3D Product Developer	4.26	0.18	12	Very Strong
		Blockchain architect and developer	3.17	0.14	15	Moderate
		Programmer and developer of programming languages and codes	4.51	0.36	5	Very Strong
		Power engineering and renewable energy expert	4.44	0.41	7	Very Strong
		Digital currency management expert	3.84	0.67	14	Strong
		Personal health expert	4.14	0.32	13	Strong
		Professionals in different specializations enhanced by artificial intelligence capabilities	4.55	0.15	3	Very Strong
Skills needed for university students in light of the KSA's Vision 2030 and future professions	Personal skills	Creativity and initiative skills	4.45	0.15	6	Very Strong
		Complex problem solving skills	4.51	0.35	2	Very Strong
		Negotiation and persuasion skills	4.64	0.25	1	Very Strong
		Emotional intelligence skills	4.53	0.11	2	Very Strong
		communicating with others skills	4.50	0.14	4	Very Strong
		Team work skills	4.47	0.17	5	Very Strong
		decision making skills	4.44	0.27	7	Very Strong
	Learning Skills	Self-learning skills	4.39	0.24	5	Very Strong
		Higher-order thinking skills	4.57	0.23	2	Very Strong
		Cognitive flexibility and adaptation skills	4.64	0.25	1	Very Strong
		analysis, organization, and strategic planning Skills	4.53	0.11	3	Very Strong
		Specialized skills (medical, engineering, computer, entrepreneurship...)	4.51	0.46	4	Very Strong
	Technical and digital skills	Big data analysis skills	4.26	0.18	7	Very Strong
		Software development and digital applications skills	4.47	0.17	2	Very Strong
		artificial intelligence applications Skills	4.51	0.35	1	Very Strong
		programming, operating and maintaining robots Skills	4.30	0.44	6	Very Strong
		website programming and e-content development Skills	4.38	0.39	5	Very Strong
		E-marketing skills	4.45	0.42	3	Very Strong
		Digital literacy skill	4.14	0.32	8	Strong
		using technology in different disciplines Skills	4.40	0.18	4	Very Strong
		using blockchain technology Skills	3.79	0.72	9	Strong

RESULTS AND DISCUSSION

Research question 1: What skills are necessary for university students in light of the requirements of future professions and the Vision 2030 in the Kingdom of Saudi Arabia?

Through Table 5, it is evident that the sample overwhelmingly agreed on (12) of the proposed professions, with the highest rankings going to "Artificial intelligence and robotics applications specialist," with averages ranging from (4.26 to 4.64). Two professions, "Digital currency management expert" with an average of (4.14) and "Personal health expert" with an average of (3.84), received strong or significant agreement. One profession, "Blockchain engineer and developer," received moderate agreement with an average of (3.17). These results indicate a substantial consensus on the proposed professions as future careers.

The results for the first category, "Personal skills," of the skills necessary for university students in light of Saudi Vision 2030 and future professions, show that all (9) skills in this category received very strong agreement, with averages ranging from (4.44 to 4.64). This result indicates a high expectation and strong necessity for all the skills mentioned in the first category from the sample. For the second category, "Learning skills," consisting of (5) skills, all of them received strong agreement and expectation, with averages ranging from (4.39 to 4.64). In the third category, "Technical and digital skills," which includes (9) skills, (8) skills received very strong agreement and expectation, while one skill, "Blockchain Technology Usage," received a strong agreement and expectation with an average of (3.79). These results highlight the importance and necessity of future professions and the required skills. The findings align with previous studies (Di-Battista et al., 2023; Fajaryati et al., 2020; Manyiha et al., 2017; Yusuf & Jamjoom, 2022), emphasizing the need to investigate future professions and their associated skills. The results also align with the general frameworks of jobs and professions in the future, emphasizing the importance of technology-enhanced professions, artificial intelligence, and the outputs of industrial revolutions. The current study is consistent with previous research analyzing Saudi Vision 2030 and its requirements for future professions and skills (Abdullateef et al., 2023; Allmnakrah & Evers, 2020; Nurunnabi, 2017; Thompson, 2019).

Research question 2: Do demographic variables of the sample influence their estimation and expectations of future professions and the skills associated with them?

The results of the one-way analysis of variance (ANOVA) presented in Table 6 show the statistical differences between the sample categories (males and females) regarding future professions and the required future skills.

Table 6. Statistical differences between the sample categories (males and females)

Dimension		T-test			
		mean	Std.deviation	t	Sig.
Future professions		4.32	0.38	0.898	Insignificant
		4.28	0.39		
Skills needed for university students in light of the KSA's Vision 2030 and future professions	Personal skills	4.49	0.13	0.262	Insignificant
		4.51	0.11		
	Learning Skills	4.54	0.56	0.336	Insignificant
		4.51	0.18		
	technical and digital skills	4.32	0.23	0.376	Insignificant
		4.27	0.26		

Table 6 indicates that there was no statistically significant effect of gender on the respondents' level of estimation and agreement regarding the proposed future professions, as well as the three main categories of skills, considering them necessary for university students to qualify to meet the requirements of Vision 2030 and fulfill the needs of future professions.

To explore the impact of differences in the sample's majors (Humanities and Social Sciences, Engineering and Computer Science, Health Sciences, Business Sciences) on the respondents' responses of future professions and the required future skills, one-way analysis of variance (ANOVA) was utilized, as illustrated in Table 7.

Table 7. Impact of differences in the sample's majors on the respondents' responses

Dimension		ANOVA test				
		Sum of Squares		Mean square	F	Sign
Future professions		Between Groups	0.820	0.273	1.34	Insignificant
		Within Groups	11.43	0.204		
		total	12.25			
Skills needed for university students in light of the KSA's Vision 2030 and future professions	Personal skills	Between Groups	0.306	0.102	2.98*	Significant at 0.05 level
		Within Groups	0.921	0.034		
		total	1.127			
	Learning Skills	Between Groups	0.509	0.17	3.39*	Significant at 0.05 level
		Within Groups	0.799	0.05		
		total	1.308			
	technical and digital skills	Between Groups	0.918	0.459	2.99*	Significant at 0.05 level
		Within Groups	3.68	0.153		
		total	4.598			

Table 7 indicates that there was no statistically significant effect of the specialization variable (Humanities and Social Sciences, Engineering and Computer Science, Health Sciences, Business Sciences) for the respondents on their level of estimation and agreement on the proposed future professions. The results showed a statistically significant effect of specialization differences on the degree of agreement on the three main categories of skills, necessitating the conduct of post hoc tests (Tukey-HSD & LSD). The results of these tests, for the first category of skills "Personal skills," showed statistically significant differences at a significance level of 0.05 between the Engineering and Computer Science specialization and the Humanities and Social Sciences specialization in favor of the Engineering and Computer Science specialization in increasing the degree of agreement. The results did not show differences between the other specializations. In the second category of skills "Learning skills," the post hoc tests revealed statistically significant differences between the Engineering and Computer Science specialization and the Business Sciences specialization in favor of the Engineering and Computer Science specialization. In the third category of skills "Technical and digital skills," the results showed statistically significant differences at a significance level of 0.05 between the Engineering and Computer Science specialization and the Humanities and Social Sciences specialization in favor of the Engineering and Computer Science specialization. The post hoc tests did not indicate statistical significance for differences between the other specializations. These results can be attributed to the focus of future professions on engineering, computer science, and health sciences due to the rapid changes in industrial revolutions, digital transformations, and technological advancements. These findings align with studies (Di-Battista et al., 2023; Eslite, 2023; Riyadh Economic Forum, 2020) that agree on the pattern of future jobs, professions, and required skills, emphasizing sectors such as engineering, technology, entrepreneurship, and artificial intelligence applications.

To determine the impact of the variation in the academic rank of the sample (Professor, Associate Professor, Assistant Professor, Other including Lecturer and Teaching Assistant) on the responses and evaluations of the sample for future professions and the required future skills, one-way analysis of variance (ANOVA) was utilized, as illustrated in Table 8.

Table 8. Impact of the variation in the academic rank on the responses of the sample

Dimension	ANOVA test				
	Sum of Squares		Mean square	F	Sign
Future professions	Between Groups	0.377	0.126	0.807	Insignificant
	Within Groups	8.733	0.156		

		total	9.11			
Skills needed for university students in light of the KSA's Vision 2030 and future professions	Personal skills	Between Groups	0.222	0.074	6.59**	Significant at 0.01 level
		Within Groups	0.269	0.011		
		total	0.491			
	Learning Skills	Between Groups	0.137	0.046	2.27	Insignificant
		Within Groups	0.321	0.020		
		total	0.458			
	technical and digital skills	Between Groups	0.107	0.054	1.007	Insignificant
		Within Groups	1.279	0.053		
		total	1.386			

Table 8 shows no statistically significant effect of the academic rank (Professor, Associate Professor, Assistant Professor, Other) on the degree of agreement of the sample with the proposed professions. This indicates a clear consensus among respondents in their expectations and appreciation of the importance of the proposed professions as future careers. The results for the second category, "Learning skills," and the third category of skills, "Technical and digital skills," indicate no significant impact of the academic rank on the response and evaluation of these skills. However, for the first category of skills, "Personal skills," there is a statistically significant difference at the 0.01 level for differences between respondents based on their academic rank. Applying Tukey-HSD and LSD tests revealed differences in favor of the Professor rank compared to other academic ranks in terms of higher approval ratings for the skills included in the first category. This result can be interpreted as all respondents, regardless of their academic rank, recognizing the necessity and importance of learning skills and technical and digital skills as essential requirements for university students to meet the demands of future professions and achieve the aspirations of Vision 2030. The existence of differences in favor of the Professor rank in the higher approval of personal skills may be attributed to the accumulated experiences and professional expertise associated with this academic rank.

To investigate the impact of differences in the number of years of experience within the sample (Less than five years, 5 to 10 years, more than 10 years) on the sample's responses and assessments of future professions and the required future skills, a one-way analysis of variance (ANOVA) was employed. Table 9 shows the results.

Table 9. Impact of differences in the number of years of experience within the sample on the sample's responses

Dimension		ANOVA test				
		Sum of Squares		Mean square	F	Sig.
Future professions		Between Groups	0.002	0.001	0.013	Insignificant
		Within Groups	2.94	0.06		
		total	2.96			
Skills needed for university students in light of the KSA's Vision 2030 and future professions	Personal skills	Between Groups	0.02	0.007	1.021	Insignificant
		Within Groups	0.134	0.006		
		total	0.154			
	Learning Skills	Between Groups	0.010	0.005	0.300	Insignificant
		Within Groups	0.217	0.018		
		total	0.228			
	technical and digital skills	Between Groups	0.01	0.001	0.008	Insignificant
		Within Groups	1.25	0.052		
		total	1.26			

Table 9 demonstrates no statistically significant impact of the number of years of experience (less than 5 years, 5 to 10 years, more than 10 years) on the sample's agreement regarding proposed future professions and the

required future skills that align with the aspirations of Vision 2030. This result indicates a clear consensus among respondents in their expectations and assessments of the importance of the suggested future professions and skills. These results can be interpreted in the context of respondents anticipating future professions and the corresponding skills needed for university students to align with those professions.

CONCLUSION

The study aimed to identify the necessary skills for university students required for future professions and Vision 2030 in Saudi Arabia. The results regarding future professions indicated agreement among experts and academics on 15 proposed professions. Additionally, the study identified essential skills for university students classified into three categories: Personal Skills (7 skills), Learning Skills (5 key skills), and Technical and Digital Skills (9 key skills). This study serves as an extension to future studies aiming to predict the economic and future job requirements. The findings are valuable for decision-makers, educational system developers, and program and university specialization planners. The results can be utilized to bridge the gap between the current outputs and curricula of higher education institutions and the future requirements of professions, specializations, jobs, and skills.

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