



RESEARCH ARTICLE

Bridging the Gap: Higher Education Outputs and Labor Market Needs in Shaping Graduate Employment Dynamics

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ARTICLE INFO	ABSTRACT
Received: Sep 21, 2024 Accepted: Nov 19, 2024	The challenge faced with regard to the employment of graduates is primarily due to the imbalance between higher education institutions and the requirements of the Saudi labor market. It's critical to address this imbalance through adjusting curricula to the real labor market requirements, including the actual needs of employers. The main target of this research is to evaluate how well higher education programs correspond to the demands of the labor market and how they increase the chances of the graduates to find a job. To achieve this aim, the authors applied a multi-method, both qualitative and quantitative. It included the collection of information about graduates, faculty of the University of Bisha, and employers from different fields of activity using surveys, semi-structured interviews, observations, and document analysis. The results show support collaboration and research focus on information sharing and relationships to assist what higher education graduates do and what the labor market requires. Such collaborative effort is necessary so as to integrate the universities with the social and economic environment and thereafter be able to efficiently satisfy the quantity and quality needs of the labor market.
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Higher education	
Labor market	
Graduate employment	
Complex relationship	
Training	
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INTRODUCTION

Education in higher learning institutions is considered a central pillar in fostering development in a country, among other activities, such as tackling both economic and social matters within nations all over the globe. Moving on to the case of Saudi Arabia, the mismatches between the requirements of the labor market and the education level of the higher education institutions' graduates pose a number of problems regarding the employment opportunities of these individuals. The interaction between education and employment is quite an intricate one and has been the focus of a number of researchers due to its significance to the nation in realizing and deploying its human capital resources for development and growth in the long run (Al-Ajmi, 2010; Al-Asmari & Humanities, 2008; Alzubaidi, 2021; Aman, 2020; Brika, Chergui, Algamdi, Musa, & Zouaghi, 2022; Maroun et al., 2008; Mitchell, Alfuraih, & Development, 2018; Olmos-Gomez, Luque Suarez, Ferrara, & Olmedo-Moreno, 2020; Roy, 1992; Sharma, Paliwal, & Management, 2021; Waterbury & relevance, 2019)

In the previous decades, Saudi Arabia has significantly invested in its higher education system by building new universities and expanding the existing ones. This development has resulted in a high increase in the number of graduates coming out into the labor market (Allmnakrah & Evers, 2020; Alshuwaikhat, Adenle, & Saghir, 2016; Ismail, Lai, Ayub, Ahmad, & Wan, 2016; Smith & Abouammoh, 2013). At the same time, however, this expansion has brought about further concerns regarding the preparedness of the graduates in relation to the shifting face of the labor market and its increased complexities. Hamdan (2015) noted a gap in critical assessment and evaluation of the pedagogy and content of higher education institutions within the Kingdom.

Proportion of higher education outputs to the expectations of the labor market is already a big challenge, and even a lack of appreciation of the mechanics of the labor market makes it worse. Allui and Sahni (2016), in turn, note that for higher education institutions to effectively adjust their programs to labor market needs, they do not necessarily require much active involvement in this process but rather a comprehensive and detailed knowledge of the constantly evolving labor market and the skills and competencies in demand.

This study seeks to investigate further the complexities of such an interrelationship with particular reference to the degree of employability of Saudi graduates relative to the needs and aspirations of the labor market and the consequences, if any, for the employability of graduates. To this end, we employ a methodological triangulation in which various methods of data collection, like quantitative and qualitative approaches, focus sufficiently on alumni, faculty of the institution, and employers' perspectives in different sectors within the institutions. We intend to make a thorough assessment to assist in understanding the current aspects of the relationship between the graduates' outputs of higher education institutions and the labor demand in Saudi Arabia and to suggest some possibilities for its enhancement in the future.

Bearing in mind what other researchers have shown, the first part of this paper proceeds with a number of difficulties and impacts that arise due to the complex nature of the relationship between the output of Saudi higher education institutions and the demands of the labor market. We then turn to the methods applied in this research, pointing out the need for both quantitative and qualitative data collection. Thereafter, we highlight the results and conclusions of our research, stressing the need to exercise this relationship if graduate employment is to be improved. Lastly, we present the conclusions of our study and how it may contribute to decreasing the disparity existing between higher education and the employment context in Saudi Arabia as well as the rest of society in relation to national development.

LITERATURE REVIEW

Harmonizing the interrelationship of higher education graduates with the requirements of the job market is a worldwide concern, and it is not different with Saudi Arabia. Several researchers have been concerned with the interaction between higher education and the labor force market, more so its interplay (Assaad, Krafft, & Salehi-Isfahani, 2018). One of the critical factors in this interplay is the employability rate of graduates. Graduates are required to meet the requirements of the job market unambiguously, as put forward by Al-Rashaidan and Al-Thwaini (2021) and Ibeaheem, Elawady, and Ragmoun (2018). It is shown in the research that the gap between the labor market requisites and higher education inputs results in graduate unemployment, suggesting that this gap is crucial to be bridged in terms of career as well as economic development of the country.

By intending to expand higher education in Saudi Arabia, the issue of relevance of the curriculum took center stage. Allmnakrah and Evers (2020) outline the need for critical curriculum and teaching assessment at the universities within the country. Such an expansion has seen the number of graduates increase, thus requiring the scrutiny of the existence and relevancy of university programs.

It is clear from the research that an imbalance between the output of higher education and the net demand from the job market can be a drag on economic growth.

One of the key issues in addressing this problem concerns the knowledge of the labor market and its features. Rivera, Azam, and Ajwad (2022) argue that in order to meet the necessary requirements of the job market, every higher education institution or college warrants substantial awareness about the job market. The study stresses the need for universities to plan and be responsive to the changing requirements of the labor market.

As it has been with numerous studies, a deeper study on the scope of the market and see if the employment market does affect higher education shows otherwise. In the work of Al-Rashaidan and Al-Thwaini (2021); Aleisa, Beloff, and White (2023) and Olmos-Gomez et al. (2020), low-quality education was able to account for this disparity between graduates' market output. In this context, the focus on enhancing the quality of higher education will continuously correspond to the rising demand for graduate employability in the labor market.

However, there are issues from the demand side that need to be addressed. Graduates may possess the skills that the employers are looking for, but they may not be able to articulate what the skills are specifically. Adham (2023) argued in support of this, saying that this gap in communication between the employers and the educational institutions can successfully bench-mark higher education from the actual needs of the labor market.

Higher learning and labor markets are multifaceted and interact with multiple players. In the view of Al-Malki and Tariq (2019), it is important to understand the mechanics of this interaction and seek to establish links between the higher education institutions, graduates, and employers in order to address this issue. Effective communication and cooperation also provide graduates with the chance to gain relevant skills and competencies..

The literature reviewed indicates that this complex relationship between the outputs of higher education in Saudi Arabia and the requirements of the labor market is important in respect of employment for graduates. Frustrations with their skills, knowledge, and expectations can make graduates remain unemployed and underemployed. To tackle this problem of low employment rates among graduates, integrated efforts are needed, including just focusing on the employment market, the skills and relevance of programs offered, and collaborations and interactions among the participants of the employment marketplace. These observations provide good premises for the current study designed to investigate ways of improving the link between higher education provision and labor in Saudi Arabia.

Objective and Contribution:

This study aims to evaluate the complex and multifaceted dynamics between the graduates produced by Saudi higher education institutions and the shifting requirements of the labor marketplace in Saudi Arabia. In particular, we seek to identify how well higher education institutions in Saudi Arabia meet the labor market's needs and the consequences of this, or the lack of this, for the employability of the graduates. The need for graduate employability and the benefits associated with it, as well as the above for the whole country of Saudi Arabia, are the main reasons for this research (Ahmed et al., 2023; Faggian, 2005).

Additionally, we aim to investigate the approaches and tools which can be used to actively shape and strengthen the link between higher education institutions and the labor market. This research attempts to add information and familiarity regarding the intricacies of such a relation and provide suggestions that can be useful in formulating policies and practices to better the standards and relevance of higher education programs in the Kingdom of Saudi Arabia. Achieving these objectives, we expect higher education outputs will be more relevant to the requirements of the economy, and

be in demand in the labour market. As a result, this will create opportunities for graduates and the country's economic and social development objectives will be achieved.

The objective of study in this section has been to find out the extent to which Saudi education outputs correlate with the needs of the labor market in this region. In this section, we provided an overview of the sampling techniques and research design we employed. We employed a mixed methods design to understand the quite complex relationship between higher education and the employment market. This included quantitative as well as qualitative data from graduates, faculty, and employers of different disciplines. The triangulation of these various sources enables us to analyze the complexities of this relationship and some of the micro-level variables that determine the graduates employability in Saudi Arabia. This is an exhaustive analysis, and we expect it will greatly enhance your appreciation of the problems and the opportunities that come with the matching of the requirements of the labor market with the university programs. Such insights will be important to policymakers and educators (Abdullateef, Musa Alsheikh, & Khalifa Ibrahim Mohammed, 2023).

The literature is advanced by this study through providing a thorough grasp of the complex interplay between the outputs of Saudi higher education and the demands in the employment sphere. The study does not only identify and analyze the challenges this interplay poses but also offers practical recommendations to policymakers, educational institutions, and other relevant parties in Saudi Arabia. It emphasizes the need to systematically adjust and orient the higher education institutions to the needs of the labor market in order to increase the employability of graduates. The study also provides a deep analysis of the supply and demand factors within this framework that bring about variability in this relationship. This gives a clear illustration of how intricate the issues are that ought to be addressed so as to narrow the gap between education and employment. The consequences of this research allow the latter to become the basis of evidence-based policies and practices oriented towards enhancement of the quality and relevance of higher education in Saudi Arabia.

The implications of the research in question go beyond the confines of this specific work and into the context of the national development of Saudi Arabia. The country aims to broaden its economic base and cut back on oil export earnings, which means the employability of its graduates will be critical in attaining these objectives. The study contributes to the economic diversification and social development of the country by improving the coherence between higher education and employment. It is just the case that the findings of this research are advantageous for Saudi Arabia and its economy, but they also represent experiences and insights that can be relevant in many other countries in which the relation between higher education and the economy is an issue and a point of policy direction (Mohiuddin et al., 2023).

METHODS

Question: In what way the correspondence or the deficiency thereof between the higher education outcomes in Saudi Arabia and the labor market as it is affects the chances of securing employment by the graduates, and what are the inferential effects of this interplay on the economy of the country?

Hypothesis: There is a mismatch between the skills brought by the graduates from Saudi higher education institutions and the requirements of the job market. This also creates barriers for graduates to secure employment, thereby resulting in higher unemployment and underemployment rates. Furthermore, it is our view that bridging this gap, with respect to proactively optimizing the relationship between tertiary education and the job market, would also enhance the employment chances for the graduates, promote economic diversification, and be in line with the overall Saudi development strategy.

The conceptual model of the research developed to describe the effect of HE outputs on the labor market needs is shown in Figure 1.

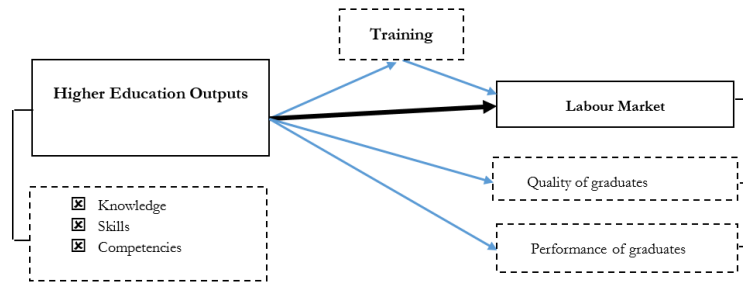


Figure 1: Theoretical framework

To investigate the complicated link between what the job market needs and the results of higher education, we used a pragmatist theoretical framework and a mixed-methods research design based on the guidelines given by Creswell (2013) and Creswell and Poth (2016). The selection of a pragmatic approach was motivated by our recognition of the significance of both quantitative and qualitative data sources and analyses in unraveling the complexities of the asymmetrical relationship between higher education outputs and labor market needs. To gain a comprehensive understanding, we found it necessary to incorporate data from various sources.

We chose a mixed-methods research approach that includes ideas from Cohen, Manion, and Morrison (2002) and Creswell and Creswell (2017). This allowed us to investigate the labor market's role in improving higher education in more detail. Seeking out industry and academia practitioners as well as students helped us to achieve a comprehensive view concerning the issue. In addition, the study concentrated specifically on the case of the University of Bisha in Saudi Arabia owing to the rich multiplicity of its academic programs, its wide reach, and other distinctive structural attributes, which in turn help to foster and prepare her graduates for the world of work.

According to Creswell's (2013) advice, the data collected underwent a thorough analysis process using both qualitative and quantitative techniques. This analysis encompassed a diverse range of faculties at the University of Bisha. Survey responses were subjected to principal component analysis (PCA) using tools such as AMOS and Nvivo. To gather data, we conducted a field study, employing an electronic questionnaire as part of the research process. This survey reached a sample of 610 graduates, and it was distributed through multiple media channels. The questionnaire was designed and administered via Google Forms, following an exploratory pre-survey phase.

RESULTS OF RESEARCH

QUALITATIVE ANALYSIS APPROACHES (INTERVIEWS)

The interviews are presented and analyzed in accordance with the four qualitative analysis approaches as identified by Fallery and Rodhain (2007): The lexical approach, the thematic approach, cognitive mapping, and the linguistic approach. Further, qualitative modeling, or the examination of a model of study in relation to qualitative data is posited in the objective of the lexical approach as describing what is under discussion in descriptive sources of qualitative analysis data.

Table 1 (Appendix 1) illustrates an elevated level of consensus among the respondents regarding the interview questions. Additionally, the responses point to a significant delay in the implementation of a comprehensive quality management system and academic accreditation processes. Consequently, the University of Bisha needs strategies for enhancing quality development that align with labor market demands. This alignment should encompass various aspects, including registration procedures, learning processes, and curriculum design. Here are some key observations and comments on the table:

Date and Demographics: The table introduces the respondents' last date of the interviews (11/11/2023) and some bios of those who participated in the study—the interviewees, University of Bisha membership, their status, i.e., student or administrative students, and their academic level (Master or Bachelor). This kind of information supplements the biases in the viewpoints of the respondents.

Reasons for the Decline in International University Rankings: As the last question in the questionnaire, respondents were solicited to provide their opinions on the organizational standards existing within the universities and whether it is realistic to try and implement total quality systems in the organization in order to perform better. The views expressed were different; some tended to be optimistic on the idea of compatibility, some others were not so positive, while some others pointed out that the standards in question are variable in nature. This points to the existence of differences among the members of the institution about the relationship of standards and quality enhancement activities.

Perception of Organizational Standards: A few of the questions asked the respondents' opinions regarding the organization's existing standards and if they are such that the universities can integrate total quality systems and strive to perform better. Responses were mixed as some had faith in its compatibility while others had the opposite perception or think that the standards vary. This shows the existence of different views in the quality management system concerning the integration of quality advancement plans with the existing quality standards.

Importance of Applying Total Quality Standards: The table also captures the views of the respondents on the most important spheres in relation to the total quality standards application. Their replies underscored the importance of the curricula and study programs and outputs of the educational process, research work, applied research, and the administrative units. These opinions provide the direction as to which particular area or areas within the university focus on in terms of quality improvement.

Suggestions for Applying Total Quality: Respondents were asked for their suggestions on applying total quality and meeting the labor market's needs in Saudi universities. Their suggestions encompass a wide range of strategies, including directing students toward in-demand specializations, expanding programs according to labor market needs, enhancing on-field training, improving curriculum, activating e-learning, seeking academic accreditation, providing necessary resources, and creating a quality unit. These recommendations offer a roadmap for universities seeking to bridge the gap between higher education outputs and labor market requirements.

Table 1 (Appendix 1) presents the general picture regarding the participants' views, opinions, and suggestions about the quality of higher education institutions and its relevance to the labor market, which the study focused on. This information is important for analyzing the gaps and prospects of the Saudi Arabian education system and for developing measures aimed at improving education quality and the employment preparedness of the graduates.



Figure 2. The most frequent words

The attention that respondents give to the key words used in the study is evidenced in Figure 2 and Table 2 (Appendix 2). Such key terms focus points include educators, the universities, students, the quality, higher education institutions, government, managers, researchers, and others. Thus, thematically, this word cloud depicts the key areas of concern during the interviews: the quality of the educational and research activities, management, quality of students and graduates, structuring of the activities, and relevancy to the labor market. These areas represent pivotal variables that require targeted attention to enhance the overall quality standards of the University of Bisha with respect to the labor market requirements.

The thematic approach: It aims at carrying out an investigation into the various sources of the qualitative analysis project so as to establish the parts that the respondents have been treated in the answer, in accordance with:

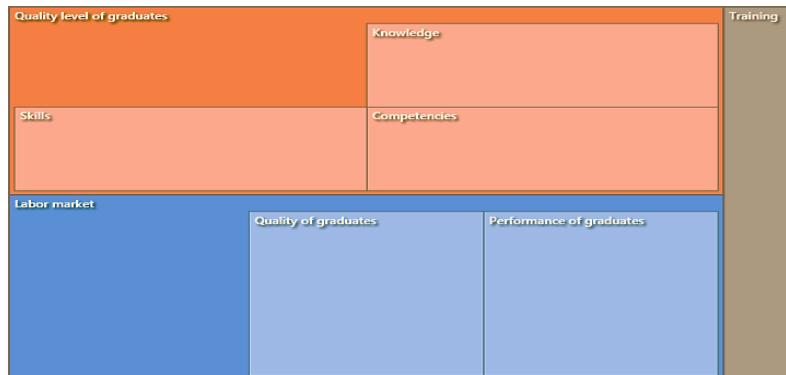


Figure 3. Focus on study variables.

As illustrated in Figure 3 and Table 3 (Appendix 3), there was almost a uniform share of the participants' discussions with regard to the variables of interest. There seems to be greater concern regarding the graduates and their performance as opposed to the concern on the labor market. Furthermore, quite a number of debates focused their discussions on the quality level of graduates in terms of three interrelated dimensions: knowledge, skills, and competencies. On the other hand, the topic of training was given relatively less emphasis. This kind of distribution is attributed to the fact that the interviews were conducted in a highly structured manner whereby the questions were specific to the variables of the study.

Cognitive mapping: The underlying objective of cognitive mapping, depicted in Figure 4, is to order and arrange several ideas relative to the key study constructs. In this case, the hierarchy of intermediate goals that connects the levels of the graduates' quality and performance needs mainly to the job market standards. This indicates that respondents understand the importance of quality level adjustment towards labor market requirements, depicted in figure 5.

The linguistic approach: Its aim is to assess the degree of interrelation of speech level of respondents as well as the relationship between the dimensions and other variables of the study, as follows:



Figure 6. Clusters of study variables

The diagram presents two distinct clusters of study variables. The first cluster interconnects the variable of graduate quality levels with its fundamental dimensions, including competencies, skills, and knowledge. The second cluster establishes associations between the labor market variable and its dimensions, which include graduate performance and quality, along with the variable of training. The correlation coefficients shown in Table 2 prominently show that the first cluster exhibits a strong association with the second. These coefficients reveal robust correlations among most study variables, with correlation coefficients exceeding 0.9. This points to two fundamental aspects: the alignment of dimensions with their corresponding variables and the validation of the study's hypotheses and model, which delineates the intricate connections between graduate quality levels, the labor market, and training. Further elucidation of these relationships will be provided in the subsequent section dedicated to qualitative modeling.

The primary objective of the qualitative analysis in this study is to empirically examine and validate the study's model. The main idea of the study, which says that matching the needs of the job market depends on the quality of graduates, is strongly supported by this result. This alignment is endorsed by all the respondents who are confident that the meeting of labor market needs rests on the quality of its graduates and the success of training. According to Fallery and Rodhain (2007), which comprises four approaches to qualitative analysis (lexical, thematic, cognitive mapping, and also linguistic) combined with qualitative modeling, the scientific model in question warrants strong qualitative justification.

The first list (Table 4) in (Appendix 4) presents the Pearson correlation coefficients with respect to several study variables, which variables are relevant to the study. The value of this coefficient denotes the strength and direction of the linear relationship with the variables in question. The following are some of the dominant points as depicted in the table and in Fact 4: Tables 4:

The variable X processes several entries, which correlate with a coefficient of 1.0. All these differences point towards a perfect positive linear relationship between the variables. This means that these variables move together in perfect synchronization. The coefficients of correlation on self-

efficacy of “core competency aim of graduates\Knowledge,” “core competency aim of graduates\Competencies,” and the self-efficacy of “core competency aim of graduates” bear a correlation coefficient of 1. There are also perfect coefficients of correlation of 1 between "labor market\quality of graduates" and "labor market\performance of graduates."

Several other correlations are very close to 1.0, which also indicates a strong positive linear relationship. For instance, "Training" has a high correlation with various other variables, such as "Labour market," "Performance of graduates," "Quality of graduates," and "Quality level of graduates." These high correlations suggest that these variables tend to move closely together.

Notable Correlation: The "Labour market" variable has a high correlation of 0.953 with "Quality level of graduates," which underscores the strong relationship between labor market indicators and the quality of graduates. This is an important conclusion, as it indicates that the graduate’s quality should be optimal for good labor market outcomes. In fact, in their equations, graduates’ performance and quality features are one of the most important parameters in the labor market.

The correlations reveal clusters of variables that are closely related. For example, the variables related to the quality of graduates (knowledge, competencies, skills) and labor market indicators (performance of graduates and quality of graduates) are highly correlated, emphasizing their interdependence.

Furthermore, Table 4 explains the strength of associations across various constructs in the study, such as graduate performance and employment, and employability were important associations in graduate training and/or pedagogical studies. These correlations are eloquently illustrative of the interrelations between the outputs of higher education and indicators of labor market activity and training. The perfect and high correlations suggest a substantial application of these variables, which is necessary to appreciate the intricate relationship that exists between higher education and the labor market from a Saudi perspective.

Quantitative Analysis Approaches (Path Analysis Model)

The results of the path analysis model indicate that the fit criteria are not within desired ranges. To clarify, several problems are reported. First, both the Chi square and the relative Chi square values are out of the recommended limits, that is, five or more. Second, the goodness-of-fit index is recorded below the minimum level of 0.9. Third, the Tucker-Lewis index also registers lower than the minimum cut off level of 0.9. Last but not the least, the root mean square error of approximation is also recorded more than the cut off level of 0.1 depicted in Figure 7

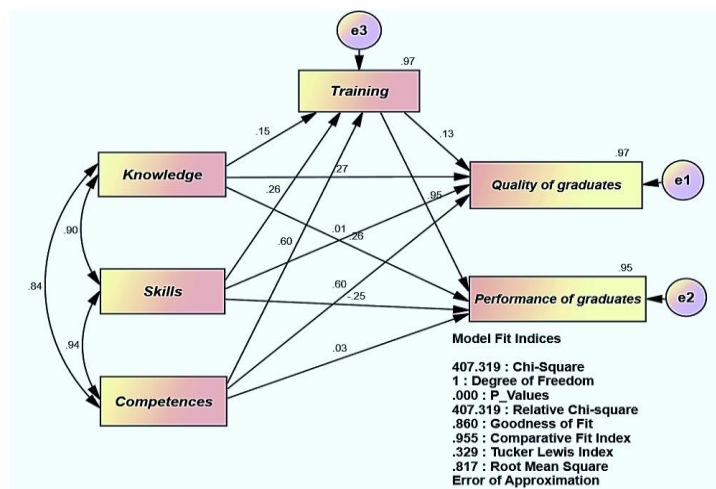


Figure 7. Path analysis model

Accordingly, the proposed model should be modified according to the results of the following table:

Table 1:Regression weights of the path analysis model

Path			Estimate	S.E.	C.R.	P	Label
Training	<---	Knowledge	.153	.016	9.700	***	par_1
Training	<---	Competences	.619	.021	29.914	***	par_3
Training	<---	Skills	.270	.026	10.379	***	par_4
Quality of graduates	<---	Training	.124	.038	3.241	.001	par_2
Performance of graduates	<---	Skills	-.248	.036	-6.834	***	par_5
Performance of graduates	<---	Knowledge	.253	.022	11.615	***	par_6
Performance of graduates	<---	Training	.910	.052	17.509	***	par_7
Performance of graduates	<---	Competences	.028	.042	.672	.501	par_8
Quality of graduates	<---	Competences	.599	.031	19.489	***	par_9
Quality of graduates	<---	Skills	.015	.027	.554	.580	par_10
Quality of graduates	<---	Knowledge	.266	.016	16.605	***	par_11

Table 1 presents the regression weights of the path analysis model. Here are some key comments on the table:

The diagram explains the numerous pathways in the path analysis model, as well as the interdependence and sequential effect that the variables possess on each other. Each path is described and evaluated in terms of measurement with the estimates, standard error (S.E.), critical ratio (C.R.), significance level (P), and par_x while in the background. There are asterisks in the table so that it is easy to tell the paths' level of significance, which a P value is the best approach to explain with. For three asterisks (***) , that is the highest level of significance with an indicator that the connection is high in terms of statistical significance.

The column that has been titled "estimates" in the output shows how each relationship is strong on the one hand and whether it is a direct or reverse relationship on the other hand. In these alternative hypothesis estimations, a positive number means that the relationship is direct, while a negative one means the relationship is an inverse. For example, a path in which the 'performance of graduates' graduates is said to possess a "negative estimate" of -0.248 in "skills."

The ratio, which has been titled C.R., is used to evaluate how significantly the estimate in which the measure is used is. The number of C.R. would increase as the evidence goes higher in terms of significant relationships that last for quite some time. As an example, the line "training and competences" has a C.R. equal to 29.914, meaning teaching and learning of these two words have a strong relationship rather than a weak one.

Interactions Between Variables: The table puts forward the dynamics of interaction of various variables. For example, „Training" has very much effect on the latter variables, i.e., "Knowledge," "Competences," and "Skills," while there are quite a number of variables like "Skills," "Knowledge," "Training," and "Competences" that have a significant effect on "Performance of Graduates." It is also noteworthy that "quality of graduates" is determined by other variables of "competences," "skills," and "knowledge."

Some directions are more like the relation between “quality of graduates” and “skills,” which have low C.R. values and, consequently, should be considered as having no statistical significance; the sources of that can be attributed to the greater p-value (0.580). These relationships, which are not significant, are important as to how these non-significant relationships functional shifts in the model would look like.

In Table, the path analysis model has been broken down into various components explaining the relationships that exist among the various variables, their strengths, and their statistical significance. This information is highly relevant in explaining how various factors are related to each other in interactions as far as the Saudi higher education outputs and the labor market demands are concerned.

Thus, therefore, it is observed that in this case, the paths established to be statistically insignificant are illustrated by the arrow connecting competences to the performance of graduates as well as the indicator of skills to the quality of graduates. These non-significant paths should be considered for future modification with the changes as illustrated in Figure 8.

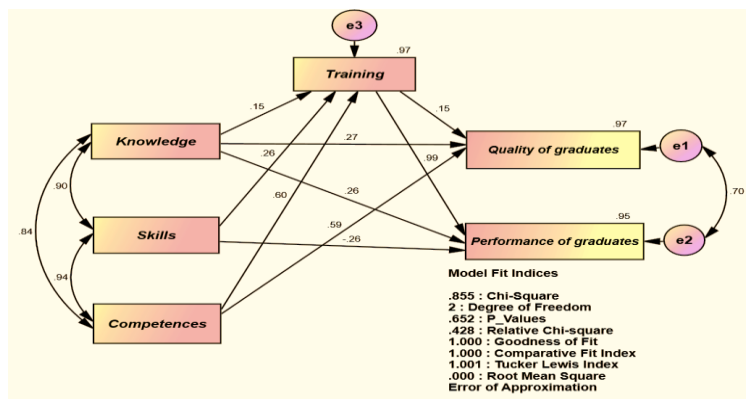


Figure 8. Modified path analysis model

The figure outlined above graphically shows that all fit indices comply with the required standards and thus makes this model acceptable as it accurately reflects real life. The table below shows that all the paths in the model are statistically significant, which confirms this form of alignment. Structural as well as principal component analysis indicates the existence of a relationship between effectiveness of higher education output quality and labor market indicators. These results underscore the central position of the labor market in shaping the quality of higher education being offered in the context of the available global trends. This is the conclusion of the study that is sustained by the results of the survey. They conclusively state that all faculty respondents from the evaluation study have been of their separate opinion: first, their agreements are based on three levels: the global significance of higher education output quality, its relevance to the actual job market, and finally the necessity of changing the items of output.

Table 2 provides insights into the regression weights of the modified path analysis model. Here are some key comments on the table:

Table 2: Regression weights of the modified path analysis model

Path			Estimate	S.E.	C.R.	P	Label
Training	<---	Knowledge	.153	.016	9.700	***	par_6
Training	<---	Competences	.619	.021	29.914	***	par_8
Training	<---	Skills	.270	.026	10.379	***	par_9
Quality of graduates	<---	Knowledge	.267	.015	18.353	***	par_1
Quality of graduates	<---	Training	.149	.027	5.474	***	par_7

Quality of graduates	<---	Competences	.586	.022	26.833	***	par_10
Performance of graduates	<---	Skills	-.259	.026	-10.070	***	par_11
Performance of graduates	<---	Knowledge	.251	.020	12.551	***	par_12
Performance of graduates	<---	Training	.949	.027	34.870	***	par_13

This table is a modification of the path analysis model as presented before. It specifies the different paths among the variables, how they are associated, and their relative strengths. Apart from Table 3, in this table asterisks are also included to denote the significance of various paths. Among the paths Three asterisks (***) are the most noticed since they correspond to the highest levels of significance and robust relationships.

Values given the “estimate” in the third column denote directions and strengths about the relationships. For stated estimates, a positive value means a relationship is there, whereas an increase in the prevalence of a negative value indicates that the relationship is negative. For instance, the path “performance of graduates”: “skills” has an estimate of -0.259, which means they stand in an inverse relationship. Hence the critical ratio C R among CnPm, where m is the estimate under consideration, is also of most relevance since its measure shows how significant each estimate is. Evidence for a relation being meaningful is that with increasing values of C, there is more strength there is. For example, the relationship between the path who undertakes training competent people C R = 29.914, which infers that there is a positive relationship and indeed people who do so will be competent.

The table highlights the interaction of multiple variables. For instance, “training” has a great effect on ‘knowledge,’ “competences,” and “skills,” while “knowledge,” “training,” and “competences” impact the ‘quality of graduates.’ “Skills,” “knowledge,” and “training” have bearing on the “performance of graduates.” In a model, not all relationships are statistically sufficient, and one should take them into consideration. For example, the relationship ‘quality of graduates’ and ‘training’ has the lowest C.R. (5.474) but is statistically significant. Non-significant relationships should be examined from the point of view of the overall picture model.

Table 6 extends the previously discussed model through its conceptualization of the modified path analysis, which demonstrates the causal links between the different variables, the strength of such links, and the probability that the tested links might not be true. These findings are important for explaining the interrelationship of heterogeneous factors and the complexity of the relationship between the outputs of higher education and the requirements of the labor market in Saudi Arabia.

In accordance with table 6 presented in the paper, there is an excellent correlation between the output in terms of higher education provided and the specifications within the economic domain for which such education has been intended. This connection has many facets: knowledge (education), skills (qualification), and training offered by the University of Bisha, as well as the concern of the quality of the graduates and their performance, especially opportunities to interact and work with the labor market. This meets the objectives from the recommendations made by Algarni and Talib in their 2014 study. The AMOS output data show that all regression coefficients are significant at $p = 0.000$, which excels all the cut-off thresholds, and the Student Test C.R.’s value of all variables in a model does not fall below 1.96, which is also the cut-off level for all variables in a model. All pieces of evidence taken together can be perceived as grounds for the general acceptability of the model stated. The analytic results bring out the role of higher education output quality in addressing labor market needs and more specifically how grade quality and their performance become variables of interest in satisfaction of such needs.

DISCUSSION & CONCLUSION

The argument advanced in this paper regarding the complex outputs of higher education in Saudi Arabia and the appropriate labor market needs gives an indication of the graduate employability

challenges and opportunities. Clearly, this complex relationship between education and the labor market in Saudi Arabia is central and significant as it determines the progress of the economy and the social structure of the country.

Another critical outcome of the research is the gap between the graduates of higher education institutions and the labor market requirements. This gap is broad-based and encompasses both the labor supply and demand sides of the economy. On the supply side, this picture is even more loaded, as the outputs of higher education seem to be among the many reasons behind the buoys and sinks in the performance of graduates in the job market. This brings to the fore the need to pay attention to the standard of higher education in Saudi Arabia. Attention must be paid to developing the content, pedagogy, and general experience so as to enhance the employability of graduates in Saudi society.

The study also puts emphasis on the demand-side issues as far as the labor market is concerned. It may also be challenging for employers and students for various reasons to voice out and engage in meeting their requirements of skills. Such faint signals from the labor market can make it very hard for providers of education to appreciate the changing needs of the employers and transform their programs to that effect. This points to the fact that there is a need to enhance interactions between the education sector and the market. Employers' needs concerning the staff should be made more explicit, and students should know better what the required skills and competences are.

But it is clear that, in all likelihood, the results represent at least part of the higher education scenery of Saudi Arabia. As such, there is a need for consequent studies to be undertaken so as to include a larger scope that encompasses many different institutions.

There are arguments related to the aspect of quality of graduates and their performance in the labor market. Here, the emphasis is on equipping graduates with the required knowledge, skills, and competencies that are necessary for the labor market. The research puts forth that with the enhancement in quality of higher education outputs, such enhancement affects the productivity and employability of the graduates.

Furthermore, the research also calls for the need to make more labor market conditions more accessible, together with their link to qualification standards. This is important in ensuring that the graduates' skills and capabilities will be honorably paid in the labor market.

In relation to how the labor market requirements in Saudi Arabia are fit for the higher education outputs, there are several areas that need to be emphasized. These include improving the standards of higher education, enhancing the relationships between employers and education providers, exploring new possibilities for students regarding labor market standards, and fostering a more vigorous and more competitive economy. In the first place, it is important to deal with the complex interaction between higher education and the labor market for the purposes of sustainable economic and social development in Saudi Arabia.

Additionally, the investigation participates with respect to and demonstrates crucial understanding regarding weaknesses and openings as regards the reconciliation of higher education products and labor market requirements in the kingdom of Saudi Arabia. It emphasizes the scale of intricate policy frameworks and concerted interventions by university systems, industry, and the state to bridge any existing gaps and improve upon graduate employment outcomes. The dynamic nature of the problem warrants further examination and a comprehensive strategy to improve the readiness of the Saudi higher education graduates for the labor market.

The findings of the current study illuminate the more complex linkages that exist between the outputs of Saudi higher education institutions and the labor requirements of the marketplace, with the resultant effects on the post-graduation employment environment opportunities of the graduates. The narrative discusses the major spokes of the research along with its wider implications.

Furthermore, the analysis shows that in the Saudi labor market there is a complicated picture in which higher education affects the employment and performance of graduates. Such a scenario calls for a paradigm shift in the quality and relevance of education in the country. They need effective strategies and policies so that quality is not compromised through measures like curriculum overhaul and strategies for improving the teaching workforce, all of which are necessary for producing graduates who are able to satisfy labor market requirements.

Moreover, the research highlights the need for improvement of the communication and interaction between employers and higher education establishments. The weak signals from the labor market make it impossible for education institutions to tailor their offerings to the actual needs of the economy. Employers have to be more aggressive in stating their needs of human capital, and on the other side, universities must listen to such needs in order to enhance graduates' employability.

The outcomes of the research proved that the outcomes of the higher education institutions in Saudi Arabia do not meet the requirements of the labor market. This gap exists because of the supply side, where the higher education performance is not adequate, and also the demand side, where there are employers and students who cannot specify or satisfy their many skill needs. Then, the quality of higher education inputs, in this case graduates, is a determinant of how these graduates perform in the labor market. The gap between what education programs deliver and what employers require further emphasizes the need for improving quality in the education system of Saudi Arabia. There is a need for curriculum changes, improvement of teaching strategies, and training of teachers for graduates to fit the job market.

Moreover, the research brings out the necessity of establishing stronger partnerships and communication frameworks among the higher learning institutions and the employers. Employers ought to be more vocal about their requirements while the universities are able to modify their training to meet these needs. The employment chances of the graduates, together with competence, are dependent on the number of skills mastered by the graduates and how the masters are compatible with the prospective positions.

Limitations : This study has some limitations which should be considered. Firstly, the study was directed towards the University of Bisha only, which could lead to an unfounded view about all institutions of the higher education in Saudi Arabia. The inclusion of several institutions in a bigger sample could give a better insight into the problem. Furthermore, the alumni and employers' responses who were surveyed in the study were self-reported which may have response bias.

Policy Implications: The results of this research beget a number of significant policy recommendations with the aim to connect outputs of higher education in Saudi Arabia and the needs of the labor market, namely as follows:

Quality Enhancement: Take steps aimed at improving the quality of higher education in their country, focusing on curriculum development, modernization of pedagogic materials, and providing the academic staff with training.

Communication and Collaboration: A more efficient system of communication and joint activities should be built between higher education institutions and employers. Employers should be more explicit when describing their expectations towards the workforce, and educational institutions should prepare the appropriate curricula.

Student Guidance: Students should expect better career guidance and counseling services to assist them in their studies. It would also be important that students know the skills needed in the labor market so that they can make appropriate choices with regards to their education and future careers.

To conclude, the intricate Saudi education structure and the demands of the employment market need to be understood at multiple levels. Should Saudi Arabia address these recommendations, it will

go a long way in ameliorating the issues brought out in this paper and reinforcing the employability of its graduates in a fast-changing labor market.

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CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

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ANNEXES:**Appendix1:****Table 1: Attitudes of respondents in answering the interview questions**

Questions	Answers
The date of the interview	11/11 / 2023
Foundation	University of Bisha
Qualification	student / administrative students
Academic degree	Master / Bachelor
What is your interpretation of the decline in the international classification of universities?	Weak application of quality and total quality / weak control/lack of application of quality models/lack of attracting competencies / not keeping pace with technological development and innovation/lack of scientific research and inventions/lack of interest in scientific research / weak materials/lack of seriousness and leniency by students
Do you not think that the failure to implement TQM models in universities is a reason for that?	Yes
Do you think that universities' prevailing organizational standards are compatible with adopting total quality systems and improving performance?	Yes / some of them are compatible a / no / vary in their standards
In your opinion, where is the importance of applying total quality standards at the institutional level?	Curricula and study programs / outputs / educational process outputs / scientific research / practical practice of research
While the importance of total quality standards lies at the level of improving the performance of the academic process (scientific and educational processes)	Applying that in school curricula / scientific research / administrative departments / and administrative tasks
While the importance of total quality standards at the level of improving the administrative process's performance (especially the performance of human resources and financial resources).	Adopting training, qualification, and empowerment strategies for the teaching staff and employees/experience and competence qualifications and courses
While the importance of total quality standards lies at the level of improving the performance of the community process (community service)	Reaching educational outcomes that serve different groups of society and contribute to its development and adoption, and adopt social responsibility/community participation and awareness
What are your suggestions for applying total quality and responding to the labour market's needs in Saudi universities?	Directing students to the most required specializations in the labour market. Expansion according to the needs of the labour market. Relying on more on-field training for students. Training and qualification of employees and workers therein. Curriculum development and improvement. Activate e-learning.

	Academic accreditation for programs and institution. Providing human, material, and financial capabilities. Create a quality unit.
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Appendix2:**Table 2: Keyword frequency of the study**

Word	Length	Count	Weighted Percentage (Pavan)	Similar Words
Education	9	1837	1,86	educate, educated, educating, education, educational, educators
University	10	1407	1,42	universal, universalism, universities, universality, university
institutions	12	1315	1,33	institute, instituted, institutes, instituting, institution, institutional, institutions
Higher	6	1154	1,17	higher
students'	9	869	0,88	student, students, students', students'
Governs	7	795	0,80	govern, governance, governed, governing, government, governments, governs
Managers	8	692	0,70	manage, manageable, managed, management, manager, managers, manage, managing
Saudis	6	640	0,65	Saudi, Saudis
Research	8	629	0,64	research, researched, researcher, researchers, researches, researching
Quality	7	628	0,64	qualities, quality, quality'
Privatized	10	605	0,61	private, privately, privatization, privatize, privatized
Academics	9	536	0,54	academe, academic, academically, academics
development	11	457	0,46	develop, developed, developing, development, developments, develops
Standards	9	457	0,46	standard, standardize, standardized, standards
Study	5	447	0,45	studied, studies, study, studying
Arabia	6	446	0,45	Arabia, arabias
Programs	8	409	0,41	program, programs
Performed	9	385	0,39	perform, performance, performances, performed, performers, performing, performs
Level	5	378	0,38	level, levelled, levels
Provided	8	373	0,38	provide, provided, provider, providers, provides, providing
Staff	5	364	0,37	staff, staffs
Within	6	355	0,36	within
Systems	7	352	0,36	system, systemic, systems
Stating	7	348	0,35	state, stated, states, stating
Process	7	328	0,33	process, processed, processes, processing
improving	9	311	0,31	improve, improved, improvement, improvements, improves, improving
national	8	310	0,31	nation, national, nationalities, nationales, nations
important	9	299	0,30	import, importance, important, important, imported, importing, imports
following	9	290	0,29	follow, followed, following, follows
indicator	10	289	0,29	indicate, indicated, indicates, indicating, indication,

s				indications, indicative, indicator, indicators, indices
administrative	14	284	0,29	administration, administrations, administrative, administratively, administrator, administrators
include	7	282	0,29	include, included, includes, including
teaching	8	277	0,28	teach, teaching, teachings
requirements	12	276	0,28	require, required, requirement, requirements, requires, requiring
version	7	270	0,27	version, versions
ministry	8	269	0,27	ministries, ministry
applied	7	257	0,26	applied, applies, apply, applying
publicly	8	256	0,26	public, publication, publications, publicize, publicly
differs	7	256	0,26	differ, differed, difference, differences, different, differently, differing, differs
establishing	12	254	0,26	establish, established, establishes, establishing, establishment, establishments
interviews	10	250	0,25	interview, interviewed, interviewer, interviewers, interviewing, interviews
countries	9	248	0,25	countries, country
policy	6	245	0,25	policies, policy
markets	7	240	0,24	market, marketable, marketing, marketization, markets
responsible	11	237	0,24	response, responses, responsibilities, responsibility, responsible, responsive, responsiveness
available	9	233	0,24	availability, available
decentralized	13	223	0,23	decentralism, decentralization, decentralize, decentralized
effective	9	221	0,22	effect, effective, effectively, effectiveness, effects
training	8	221	0,22	train, trained, training, training
social	6	219	0,22	social, socialism, socialization, socially

Appendix3:**Table 3: Focus ratios on study variables**

Nodes	Number of coding references	The aggregate number of coding references	Number of items coded	The aggregate number of items coded
Nodes\\Labour market	189	567	29	29
Nodes\\Labour market\\Performance of graduates	189	189	29	29
Nodes\\Labour market\\Quality of graduates	189	189	29	29
Nodes\\Quality level of graduates	144	576	29	29
Nodes\\Quality level of graduates\\Competencies	144	144	29	29
Nodes\\Quality level of graduates\\Knowledge	144	144	29	29
Nodes\\Quality level of graduates\\Skills	144	144	29	29
Nodes\\Training	121	121	29	29

Appendix4:**Table 4: Pearson correlation coefficient between study variables**

Node A	Node B	Pearson correlation coefficient
Nodes\\Quality level of	Nodes\\Quality level of graduates\\	1

graduates\Knowledge	Competencies	
Nodes\\Quality level of graduates	Nodes\\Quality level of graduates\ Competencies	1
Nodes\\Quality level of graduates	Nodes\\Quality level of graduates\ Knowledge	1
Nodes\\Labour market\Quality of graduates	Nodes\\Labour market\Performance of graduates	1
Nodes\\Quality level of graduates\Skills	Nodes\\Quality level of graduates\ Competencies	1
Nodes\\Quality level of graduates\Skills	Nodes\\Quality level of graduates\ Knowledge	1
Nodes\\Quality level of graduates\Skills	Nodes\\Quality level of graduates	1
Nodes\\Labour market\Performance of graduates	Nodes\\Labour market	0,999886
Nodes\\Labour market\Quality of graduates	Nodes\\Labour market	0,999886
Nodes\\Training	Nodes\\Labour market	0,977875
Nodes\\Training	Nodes\\Labour market\Performance of graduates	0,977656
Nodes\\Training	Nodes\\Labour market\Quality of graduates	0,977656
Nodes\\Training	Nodes\\Quality level of graduates\ Competencies	0,97416
Nodes\\Training	Nodes\\Quality level of graduates\ Knowledge	0,97416
Nodes\\Training	Nodes\\Quality level of graduates	0,97416
Nodes\\Training	Nodes\\Quality level of graduates\ Skills	0,97416
Nodes\\Labour market	Nodes\\Quality level of graduates\ Competencies	0,953577
Nodes\\Labour market	Nodes\\Quality level of graduates\ Knowledge	0,953577
Nodes\\Quality level of graduates	Nodes\\Labour market	0,953577
Nodes\\Quality level of graduates\Skills	Nodes\\Labour market	0,953577
Nodes\\Labour market\Performance of graduates	Nodes\\Quality level of graduates\ Competencies	0,951049
Nodes\\Labour market\Performance of graduates	Nodes\\Quality level of graduates\ Knowledge	0,951049
Nodes\\Quality level of graduates	Nodes\\Labour market\Performance of graduates	0,951049
Nodes\\Labour market\Quality of graduates	Nodes\\Quality level of graduates\ Competencies	0,951049
Nodes\\Labour market\Quality of graduates	Nodes\\Quality level of graduates\ Knowledge	0,951049
Nodes\\Labour market\Quality of graduates	Nodes\\Quality level of graduates	0,951049
Nodes\\Quality level of graduates\Skills	Nodes\\Labour market\Performance of graduates	0,951049
Nodes\\Quality level of graduates\Skills	Nodes\\Labour market\Quality of graduates	0,951049

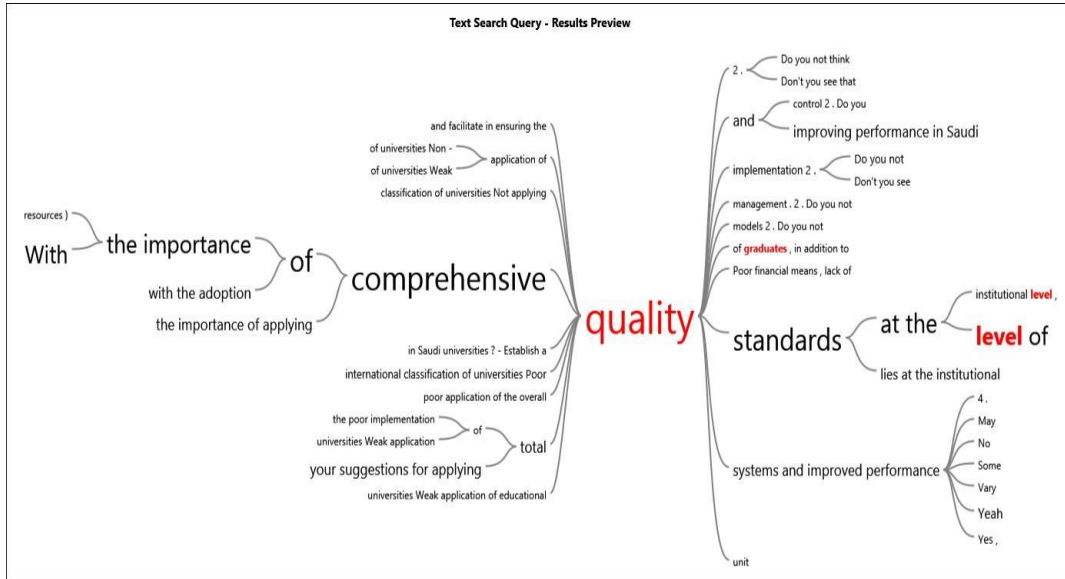


Figure 4. Synapse of the Quality level of graduates (Appendix5)

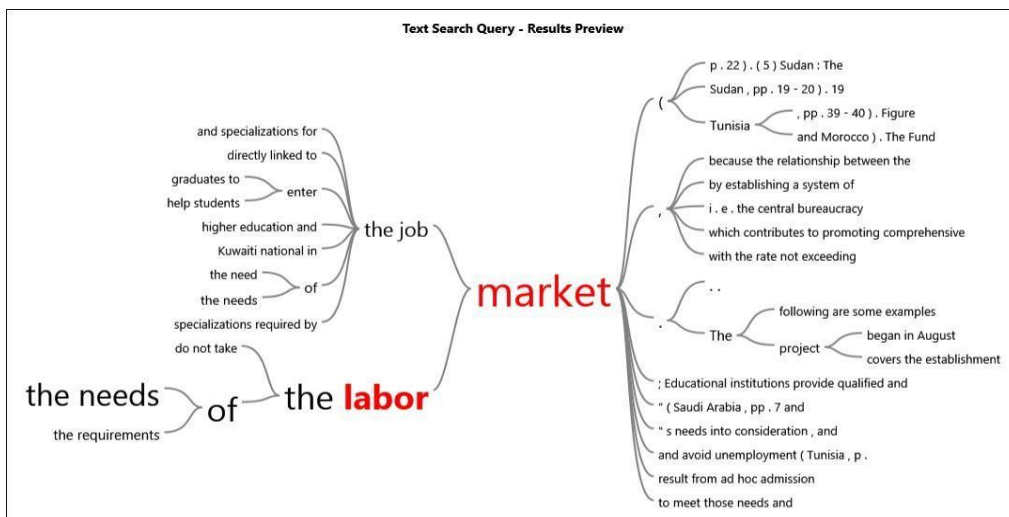


Figure 5. Synapse of labor market (Appendix6)