DESIGNING FLEXIBLE CURRICULA THAT RESPOND TO THE NEEDS OF THE LABOR MARKET AND EVOLVING INDUSTRIES: CASE STUDY OF KSA

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Abstract

The rapid transformation of industries and the labor market in the Kingdom of Saudi Arabia (KSA) necessitates academic curricula that are adaptable, skills-oriented, and aligned with national development priorities. This study investigates how higher education institutions can design flexible curricula that effectively respond to evolving industry demands and workforce needs. A mixed-methods approach was employed, combining survey data from 300 graduate students with in-depth interviews of 50 employers. Findings reveal a strong consensus on the need to integrate practical skills, digital competencies, and interdisciplinary learning into academic programs. However, gaps persist in bridging theoretical knowledge with industry application, particularly in emerging fields such as artificial intelligence, renewable energy, and entrepreneurship. The study underscores the importance of continuous curriculum review, collaborative partnerships between academia and industry, and the incorporation of lifelong learning pathways to ensure graduate employability. By situating the discussion within the context of Saudi Arabia's Vision 2030, the research highlights actionable strategies for creating adaptive curricula that foster innovation, competitiveness, and sustainable economic growth.

Keywords: Industries, Labor market, Academic curricula, Digital competencies, Artificial intelligence

1. Introduction

The modern global economy poses a growing challenge to educational institutions of higher learning to ensure that their curricula approach their labor market needs, which are being rapidly transformed. Specifically, the Kingdom of Saudi Arabia (KSA) is in the midst of a significant socio-economic change based on the Vision 2030, which focuses on economical diversification, technological development, and labor preparation. In this scenario, post-secondary education is important to prepare graduates with skills and competencies that would help them work in knowledge-based and innovations-driven sectors (Meyer et al., 2020). But a nagging issue among policymakers, employers and educators is whether university programs are flexible and responsive enough to accommodate shifts in the labor market and the dynamism of new industries.

The scientific problem at the core of the current study is that the learning attainment does not correspond to the needs of the labor market in KSA that can be recreated worldwide but is particularly acute in the situation of the restructuring economies. Universities specialize in disciplinary depth, when multidisciplinary skills, the capability to be flexible, and problem-solving become more important to employers. Additionally, new business models and increasing automation and digitalization create a vacuum that needs graduates who can transfer to new sectors without any difficulties (Singh, 2024). This difference underscores the necessity to design curricula that are not only sensitive to the demands of the modern labor market, but also to the demands of the future, as far as skills are concerned.

Existing research has addressed the importance of labor market-responsive curricula, with studies highlighting the value of competency-based education, industry partnerships, and curriculum innovation (Teng, 2019). For instance, comparative studies in Europe and North America have demonstrated that work-integrated learning and employer engagement in curriculum design

enhance graduate employability. Similarly, regional studies in the Gulf Cooperation Council (GCC) context suggest that while substantial investments have been made in higher education, curricula often lag behind the pace of industrial innovation and technological change (Vasilev, 2024). These efforts, while valuable, remain fragmented and largely descriptive, often failing to provide actionable frameworks for curriculum design that directly incorporate employer perspectives and student readiness.

From the author's perspective, the progress of related research shows notable advancements in understanding employability skills and curriculum flexibility; however, most studies rely either on student perceptions or employer expectations in isolation (Wang, 2012). Few studies adopt mixed-methods approaches that triangulate insights from both graduates and employers to provide a holistic understanding of curriculum-labor market alignment. Moreover, while international literature offers rich examples of flexible curriculum models, there remains limited context-specific research in KSA that accounts for its unique socio-economic transition, cultural context, and national development priorities (Zahay, 2022).

The present study seeks to address these shortcomings by employing a mixed-methods design, integrating survey data from graduate students with in-depth interviews from employers across diverse industries in KSA. This methodological approach allows for the examination of curriculum responsiveness from both the supply side (graduates' perceptions of preparedness) and the demand side (employers' expectations of competencies). Placing those findings in the context of the Saudi Arabian economic diversification agenda, the study will create a number of viable recommendations on how flexible curricula may be designed to increase graduate employability and industry relevance (Vreuls, 2022).

Therefore, this study will help close the long-standing disparity between higher education and labor market requirements in KSA. It goes beyond the descriptive explanations and into an evidence-based approach to curriculum flexibility that is sensitive to both the dynamics of the contemporary labor market and the uncertainty of the future industrial transformation.

2. Literature Review

The concept of curriculum flexibility has been increasingly of interest to the educational research community, particularly in the face of fast-evolving economies due to globalization, technological change, and emerging demands in the labor market. According to researchers, the ability to create a more flexible and responsive curriculum is required to make higher education systems produce graduates with the competencies they need (Tiwari, 2024; Stavrou, 2024). The most common way curriculum flexibility is visualized is through modular courses, interdisciplinary courses and experiential learning courses, each of which gives a learner transferable skills that could be used in the ever-changing work environment.

A number of studies by international scholars focus on the importance of industry-university collaboration in curriculum relevance building. As an example, Reaves (2019) points out that industry consultation offers an assurance of setting graduate attributes beyond technical skills, to include communication, problem-solving, and adaptability skills. On the same note, according to a study by Laundon (2023), the level of employability is enhanced when work-integrated learning and internships are incorporated in the curriculum, and students can close the gap between theory and practice at work. These results highlight the need to match academic programs with labor market trends in order to increase graduate preparedness.

Survey studies in the Gulf area indicate that agendas related to economic diversification, including Saudi Arabia Vision 2030, particularly emphasize the alignment of education with labor market demands (Kopackova, 2024). Research has shown that despite the increased number of programs offered by universities in Saudi Arabia, a significant number of curricula remain highly inflexible and fail to support rapid dynamic transformation in sectors like technology, healthcare, and renewable energy (Kabanda, 2021; Elragal, 2025). Employers often complain that graduates do not match graduate competencies and skills needed in the work environment, especially in digital literacy, innovation, and critical thinking (Carnegie, 2019).

Other regions of the world have been studied and can offer further ideas on how to increase the responsiveness of the curriculum. Reforms in the Bologna Process brought flexibility in credit transfers, modular courses, and learning outcomes in European higher education to enhance mobility and employability (Bunch, 2024). Singapore and South Korea are two East Asian countries that have implemented competency-based curricula with a focus on lifelong learning and flexibility, enabling graduates to work across industries that are fast becoming digitally disrupted (Bai, 2025). These global paradigms emphasize the efficiency of curriculum designs that put a high price on flexibility and the constant revision in keeping with market demands.

Notwithstanding these developments, the literature reveals that there are several challenges that persist. Academic rigor and vocational relevance are two issues that many universities find difficult to strike a balance, which leads to either curricula that are too theoretical or too skills-neutral (AlMalki, 2023). Also, faculty resistance to curricular change and institutional inability to predict trends in the labor market constrain responsiveness. In Saudi Arabia, research indicates that there is a discrepancy between the ambitious targets of the national development plans and the rate of educational reform and that more planned methods should be used to design and evaluate curricula (Al Awwaby, 2025).

In most cases, past research offers useful information on the concepts of flexible curriculum development and the significance of flexible curriculum in improving employability. Nevertheless, there have been very few empirical studies examining the practical participation of the Saudi universities in collaborating with employers to jointly develop curricula in response to the new industry demands. It is on the basis of this gap that the current study will examine the issue of flexible curriculum design in the Kingdom of Saudi Arabia, using the viewpoints of both students and employers to inform policy and practice.

3. Methodology

3.1 Research Design

The research design used in this study was a mixed-methods research design, which combined quantitative and qualitative research designs to present a comprehensive picture of curriculum flexibility and its responsiveness to labor market requirements in the Kingdom of Saudi Arabia (KSA). The triangulation of findings achieved through the combination of methods increased the validity and reliability of the results. Structured surveys were used to gather quantitative data among the graduate students and in-depth interviews with employers in various industries provided qualitative information. This design was more appropriate to the study because it provided the opportunity to explore both perceptions and lived experiences of higher education and labor market stakeholders.

3.2 Population and Sampling

The population of the study was divided into two groups: (1) graduate students studying in different higher education institutions in KSA and (2) employers in the main sectors of KSA including technology, healthcare, finance, engineering, and education. The purposive strategy of sampling was applied to reach out a wide range of academic fields and industrial experiences. To conduct the survey, 300 graduate students were chosen so that there was diversity of gender, age and field of study to represent a broad range of views. Also, 50 employers representing various organizational levels and industries were interviewed to obtain information on the workforce needs and expectations of graduates.

3.3 Data Collection Methods
3.3.1 Survey

The survey tool was modeled to elicit the views of students regarding the flexibility of the curriculum, the applicability of the academic content to market requirements and their readiness to work. To measure the responses and provide a statistical analysis, the questionnaire consisted of closed-ended and Likert-scale questions. Effectiveness Survey questionnaires were sent via the internet to increase accessibility and improve a wider level of coverage across institutions in KSA.

3.3.2 Interviews

The 50 employers were interviewed in-depth in semi-structured interviews to provide qualitative data on the skills and competencies they desired graduates to possess, the challenges unique to the industry, and their views on the responsiveness of the curriculum. This methodology enabled probing questions and clarification that offered rich detailed narratives. Face-to-face interviews or virtual interviews were carried out where available, and each interview took 45 to 60 minutes. Interviews were recorded and transcribed to allow analysis where the participants gave consent.

3.4 Data Analysis
3.4.1 Quantitative Analysis

The data of the survey were coded and entered into statistical software to be analysed. Student responses were summarized through descriptive statistics such as means, frequencies and percentages. Inferential statistics, including chi-square tests, correlation analysis, etc. were used to study relations between variables (e.g., field of study and perceived curriculum relevance).

3.4.2 Qualitative Analysis

Thematic analysis was employed to analyze the interview transcripts. The process involved coding responses, identifying recurring patterns, and categorizing themes that reflected employers' perspectives on curriculum flexibility and labor market alignment. NVivo software was used to assist in organizing and managing qualitative data, ensuring systematic coding and thematic development.

3.5 Ethical Considerations

Ethical standards were strictly observed throughout the study. Participants were informed about the purpose of the research and provided with assurances of confidentiality and anonymity. Participation was voluntary, and informed consent was obtained from all respondents prior to data collection. Data were securely stored and used solely for academic purposes.

3.6 Limitations of the Methodology

While the mixed-methods design strengthened the study, some limitations were acknowledged. The survey relied on self-reported data, which may be subject to social desirability bias. Similarly, the employer sample, though diverse, may not fully represent all industries in KSA. Nevertheless, the combination of quantitative and qualitative data provided a robust foundation for examining curriculum responsiveness to labor market needs.

4. Findings and Analysis

This study investigates how higher education institutions can design flexible curricula that effectively respond to evolving industry demands and workforce needs. A mixed-methods approach was employed, combining survey data from 300 graduate students with in-depth interviews of 50 employers. The findings will start by presenting survey results first, followed by employer interview insights

4.1 Overview of Labor Market Trends in KSA

4.1.1 Current and Emerging Industries

The survey findings highlight the industries most relevant to graduate employment in the Kingdom of Saudi Arabia (KSA). Respondents (N = 300) identified information technology, healthcare, renewable energy, and financial services as the most rapidly expanding industries in the region. Traditional industries such as oil and gas and construction, while still important, were ranked lower in terms of long-term career potential by graduate students.

Table 1 presents the distribution of responses regarding industries perceived as offering the highest employment opportunities over the next decade.

Table 1: Graduate Perceptions of High-Growth Industries in KSA (N = 300)

Industry Sector	Percentage of Respondents (%)
Information Technology (IT)	28.0
Healthcare	22.3
Renewable Energy	18.7
Financial Services	14.5
Oil and Gas	9.2
Construction and Real Estate	5.3
Others	2.0

These findings suggest a clear transition in the Saudi economy from oil-dependence toward knowledge-based and technology-driven industries. Notably, IT and healthcare together accounted for over 50% of perceived opportunities, reflecting the growing demand for digitalization and specialized medical expertise under Vision 2030.

The data indicates that curricula reforms need to prioritize digital skills, healthcare specialization, and renewable energy technologies to prepare graduates for the most promising industries. Figure 1 visually represents this shift.

4.1.2 Skill Requirements and Employer Expectations

When asked about the most critical skills required by employers, graduate respondents ranked technical proficiency, problem-solving ability, and communication skills as the top three. Figure 1 presents the detailed ranking.
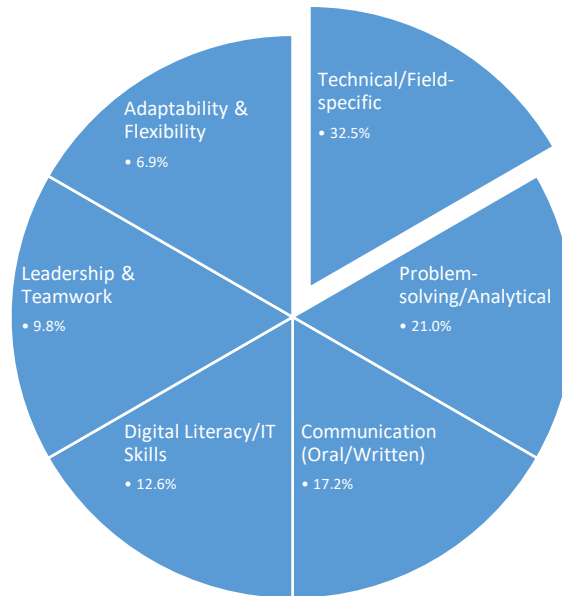
Figure 1: Skills Prioritized by Employers According to Graduate Perceptions

The quantitative data shows that technical expertise remains the cornerstone of employability in KSA. However, employers are increasingly emphasizing "soft skills" such as problem-solving and communication, which together accounted for 38.2% of responses. This reinforces the need for curricula that go beyond theoretical knowledge to integrate practical, interdisciplinary, and collaborative learning experiences.

A comparative analysis also revealed differences between male and female graduates in skill prioritization. Male respondents leaned more towards technical/field-specific skills (35%), whereas female respondents emphasized communication and teamwork (21%). This divergence suggests the necessity for curricula that balance technical rigor with interpersonal skill development, ensuring inclusivity and holistic preparation of graduates.

4.2 Graduate Perceptions of Curriculum Flexibility

The quantitative survey findings provide insight into how graduate students in Saudi Arabia perceive the adaptability of their current academic curricula in relation to labor market needs. Out of the 300 surveyed respondents, the majority expressed that curricula demonstrate a moderate degree of flexibility. As shown in Figure 2, 34% of participants rated curricula as "Moderately Flexible," while 26% indicated they found them "Flexible." In contrast, 20% of respondents perceived curricula as "Not Flexible," and 8% described them as "Very Rigid," suggesting significant concerns among a considerable proportion of students. Only 12% of students reported that curricula are "Very Flexible," reflecting that highly adaptive academic structures are not yet widespread.
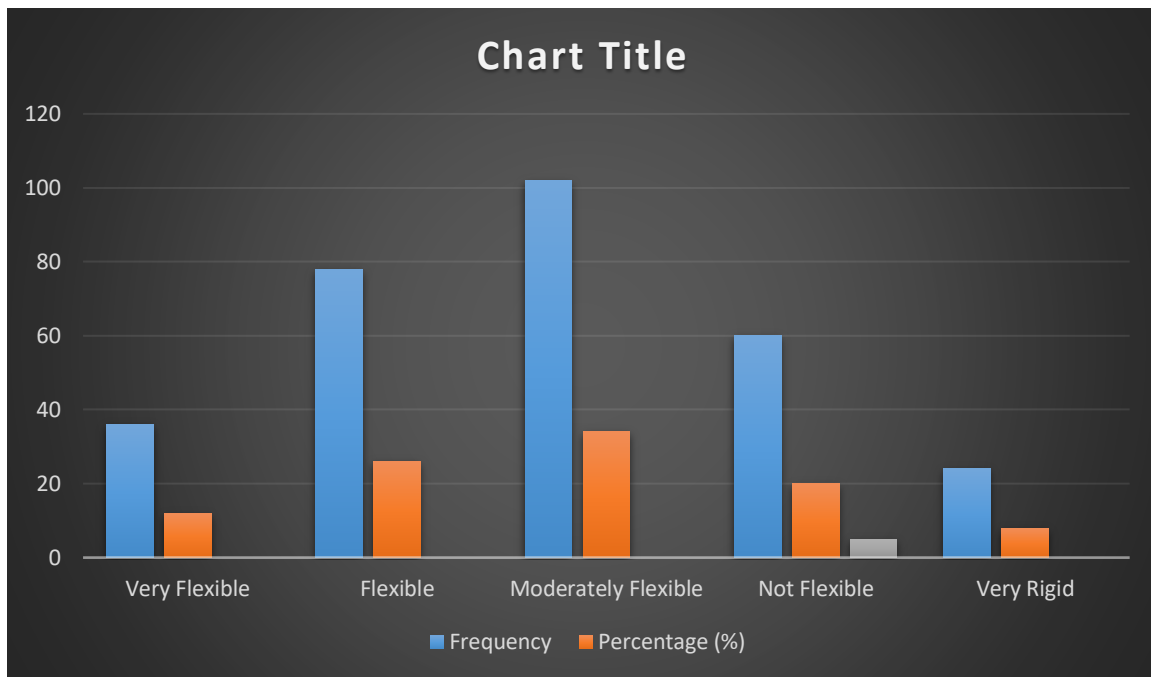
Figure 2. Graduate Students' Perceptions of Curriculum Flexibility (N = 300)

The distribution indicates that 60% of students (combining "Flexible" and "Moderately Flexible") acknowledge some degree of responsiveness in curricula to labor market shifts. However, the combined 28% rating of "Not Flexible" and "Very Rigid" underscores the gap between academic structures and industry evolution. This dichotomy reflects a partial success in curriculum adaptation, but also emphasizes the need for greater agility in integrating emerging industry competencies.

The results further illustrated the distribution of perceptions. The highest proportion of responses clustering around "Moderately Flexible" suggests that while institutions are making strides toward adaptability, progress remains incremental rather than transformative.

Overall, graduate students' perceptions suggest cautious optimism: they recognize ongoing efforts to enhance curricular flexibility but still view academic programs as trailing behind the rapid pace of labor market and industry transformations in the Kingdom of Saudi Arabia.

4.3 Alignment with Labor Market Expectations

A critical dimension of curriculum flexibility is the degree to which it equips graduates with skills and knowledge that align with the expectations of the labor market. The survey of 300 graduate students provided insight into their perceived preparedness for employment, as well as differences across disciplines and levels of study.

4.3.1 Perceived Preparedness for Employment

When asked whether their academic programs adequately prepared them for the labor market, 62% of respondents agreed or strongly agreed that their curriculum provided them with relevant competencies, while 24% remained neutral, and 14% disagreed. This suggests that while a majority recognize the value of their educational training, a considerable minority still feel inadequately prepared.
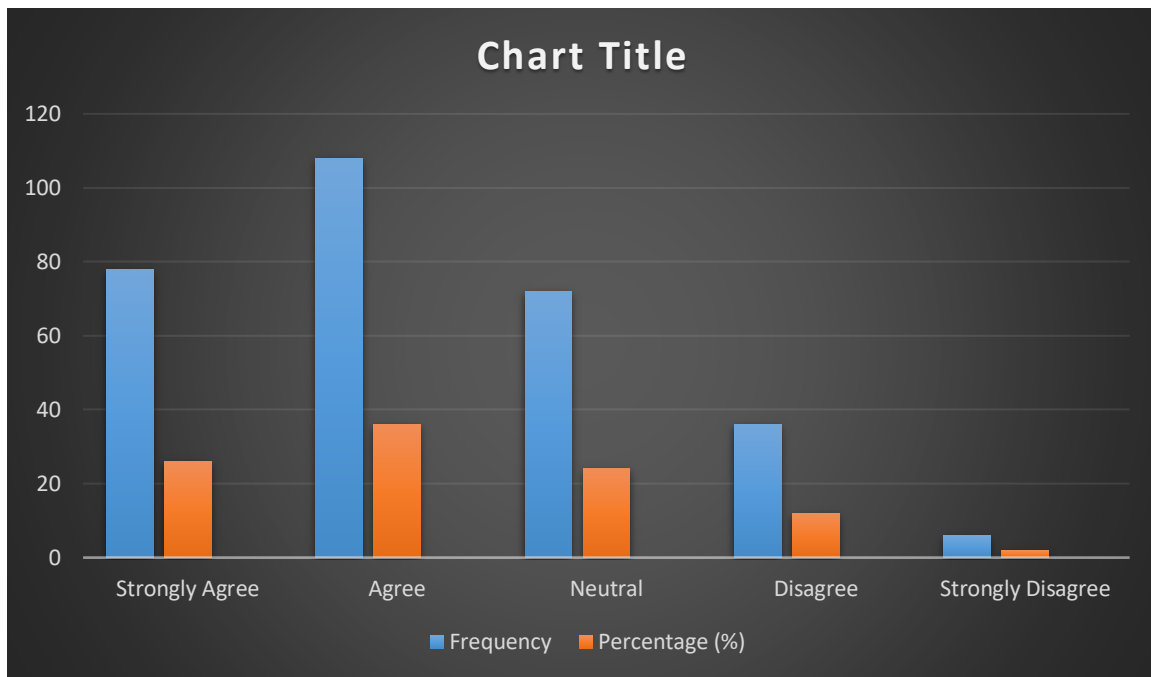
Figure 3: Graduate Students' Perceived Preparedness for Employment (N=300)

The findings indicate that nearly two-thirds (62%) perceive their curriculum as aligned with market demands, but the 14% who expressed dissatisfaction highlight gaps that must be addressed through curriculum redesign.

4.3.2 Differences across Disciplines

A comparison across disciplines (STEM, Business, Social Sciences, and Humanities) revealed notable variations in perceptions of employment readiness. Students from STEM disciplines reported the highest confidence (72% agreement) in their preparation, followed by Business (65%), while Social Sciences (55%) and Humanities (48%) trailed behind.

This pattern suggests that programs closely tied to industry needs (STEM and Business) are perceived as better aligned with labor market requirements, while fields such as Humanities face greater challenges in demonstrating direct applicability to employment.

4.3.3 Differences across Study Levels

An additional layer of analysis compared perceptions between Master's and Doctoral students. Results showed that Master's students reported higher preparedness (66%) than doctoral students (55%). This difference may stem from the applied and practice-oriented nature of master's programs compared to the research-focused orientation of doctoral studies.

Table 2: Preparedness for Employment by Level of Study

Level of Study	Agreement (%)	Neutral (%)	Disagreement (%)
Master's	66	22	12
Doctoral	55	27	18

The results indicate that while doctoral training is strong in research capacity, students may feel less prepared for direct labor market integration, reinforcing the need for professional development tracks and industry collaborations at higher levels of study.

The overall findings reveal a moderate to strong alignment between graduate training and labor market expectations, but the data also points to clear disparities across disciplines and levels of study. While STEM and Business fields show relatively strong labor market alignment, Humanities and Social Sciences require greater curricular innovations to strengthen employability outcomes. Furthermore, the difference between master's and doctoral graduates underscores the importance of tailoring flexible curricula not only to industries but also to the professional trajectories of different levels of graduates.

4.4 Skill Gaps Identified by Graduates

A central component of this study was to assess the extent to which graduate students in Saudi Arabia (KSA) perceive gaps in their skillsets relative to labor market expectations. The survey data (N = 300) revealed that graduates identify several critical areas where they feel underprepared, particularly in digital skills, analytical competencies, and communication abilities. These findings align with broader global concerns about employability and the evolving skill demands of modern industries.

When asked to rate their preparedness across different skill domains on a five-point Likert scale (1 = "Not at all prepared," 5 = "Highly prepared"), the mean scores indicated that digital skills (M = 2.7), analytical/problem-solving skills (M = 2.9), and communication/presentation skills (M = 3.0) were perceived as the weakest areas. Conversely, teamwork and adaptability were relatively stronger, with mean scores above 3.5, suggesting that while graduates are confident in collaborative abilities, they struggle with technical and applied competencies that are increasingly vital in the labor market.

Table 3: Graduate Perceptions of Skill Preparedness (N = 300)

Skill Area	Mean Score	SD	Rank (Weakest to Strongest)
Digital/Technological	2.7	0.91	1
Analytical/Problem-Solving	2.9	0.87	2
Communication/Presentation	3.0	0.95	3
Leadership/Management	3.2	0.88	4
Adaptability/Flexibility	3.5	0.81	5
Teamwork/Collaboration	3.6	0.78	6

The analysis further revealed variations in skill gaps across different academic disciplines. Graduates in STEM fields (n = 120) reported stronger digital competencies (M = 3.2) compared to their peers in humanities (M = 2.3) and business studies (M = 2.5). However, STEM graduates felt significantly underprepared in communication and presentation skills (M = 2.6), which employers consistently rank as essential for leadership and client-facing roles. By contrast, humanities graduates expressed relatively higher confidence in communication (M = 3.3) but reported substantial weaknesses in digital and analytical domains. Business graduates, meanwhile, occupied a middle ground, indicating moderate preparedness in communication (M = 3.1) but notable deficiencies in digital tools (M = 2.5).

Table 4: Variation in Skill Preparedness across Disciplines

Discipline	Digital Skills (M)	Analytical Skills (M)	Communication Skills (M)
STEM (n=120)	3.2	3.0	2.6
Humanities (n=90)	2.3	2.6	3.3
Business (n=90)	2.5	2.8	3.1

The data help highlight that, as much as STEM programs yield graduates competent in technical skills, they risk failing to teach soft skills, unlike humanities graduates who are well positioned in communication skills but lag behind in technical and analytical skills. Despite being moderately balanced, business graduates nonetheless note significant deficiencies in fields that are central to digital transformation and innovation in the industry.

These results demonstrate a mismatch between the programs and the changing workforce requirements, and indicate that universities in KSA should seek a more integrated curriculum. These voids can be addressed by integrating digital literacy, data analytics, and communication training within all disciplines to improve graduate employability in an economy that is changing rapidly.

4.5 Qualitative Analysis (Employers' Perspectives)

4.5.1 Industry Expectations of Graduates

The qualitative interviews carried out on fifty employers at various industries in the Kingdom of Saudi Arabia gave more insight on the expectation that organizations place on graduates. Thematic analysis showed three prevailing themes, which include adaptability, innovation, and applied skills. These themes replicated as core competencies that employers feel are not adequately covered in existing higher education curricula but that are necessary to ensure workforce preparedness in changing industries.

Flexibility proved to be a common requirement in almost every industry. Employers stressed the fact that graduates have to be able to work in dynamic and extremely changing work environments, especially considering the speed of technological evolution and the renewal of traditional industries in the KSA economy. A senior HR manager in a technology company said:

> "And we do not simply require employees who know how to implement what they studied at the university; we require individuals who can learn new systems, adapt fast, and change their way of thinking to new circumstances".

Likewise, an executive of the manufacturing department mentioned that hardcore graduates could have a hard time adjusting to the dynamics of the workplace and soft skills, which would be required on the job. This is in line with the national drive of Vision 2030 of a resilient and continuous-learning workforce.

Innovation was the second common theme. Employers emphasized the importance of creativity and problem-solving, particularly in sectors where automation and artificial intelligence are overturning traditional work patterns. An energy industry project director highlighted:

> "Innovation is no longer a choice. Graduates should be in a position to bring new ideas, be outside the box, and assist us to rethink old processes. We are not seeking doers but thinkers capable of value addition".

This view suggests that conventional curricula, which in many cases prioritize a great deal on theoretical mastery, might not equip students well to jobs that demand creative solutions and innovative approaches. To fill this gap, employers always claimed that the curricula must support a setting where students can take on practical challenges of innovation, collaborative projects, and case-based learning.

The third and most dramatic theme was applied skills. Employers cited that most graduates have a lot of theoretical knowledge but they are unable to apply it practically. This was especially felt by employers in the healthcare, engineering and ICT. A healthcare senior recruiter remarked:

> "We interview several graduates who have all the concepts, but when it comes to putting them into practice, whether it is using a system, teamwork, or addressing a live problem, they fail".

This indicates that there is an urgent need to enhance experiential learning, internships, and applied projects as a fundamental feature of curriculum development in higher education institutions in KSA. According to the employers, the skills needed in the workplace included project management, teamwork, and digital literacy, as well as good communication rather than abstract theoretical knowledge that can be important in the workplace.

4.5.2 Perceptions of Current Curriculum Rigidities

A common expression throughout the interviews with employers was the belief that the current university curricula in the Kingdom of Saudi Arabia are still mostly fixed, with little adaptability to the shifting demands of industries. Employers always noted that, although the academic courses offer the theoretical foundation, they tend to lack the opportunity of applied learning, interdisciplinary exposure, and the acquisition of skills that are oriented towards the workplace. A senior manager in the technology industry stated:

> "Most of our graduates excel in their memorization of theories and frameworks, but they have problems with actual application of the concepts in a real-life situation. The curriculum appears to be rigid and learners are very little free to pursue courses beyond their limited field of specialization".

The latter point highlights the fact that the concerns are that curricula are constructed on the basis of the conventional disciplinary silos, which restrict the ability of graduates to adapt to multidisciplinary demands of the workplace. Employers in the healthcare and finance industries sounded the same frustrations, saying the curricula fail to equip graduates to the dynamic nature of the industry. One employer in the financial services industry commented:

> "The curriculum in our sector is not evolving in line with the changes in regulations and technologies. When graduates come on board, they are not equipped with the current knowledge of digital financial tools and this is a gap that we have to address at an expensive cost".

This indicates a structural problem of the academic institutions falling behind in content updating, thus limiting the immediate employability of graduates.

The other aspect of rigidity raised by employers is the little room to learn through experience. Employers noted that most of the programs still focus more on the classroom delivery at the cost of internships, simulations, and project-based assessments. The director of a logistics firm said:

> "Colleges must expose students to more real-life experiences. When the graduates have undergone lectures and exams, we cannot expect them to handle complex supply chains".

This feeling shows that the deficiency of practical elements in curricula generates a skill gap in problem-solving, collaboration, and adaptability-skills that are much in demand in dynamic sectors.

Moreover, employers felt that strict course structures do not leave much space to allow students to take elective courses that may be in line with the new areas like renewable energy, artificial intelligence, and digital health. The remarks of an energy industry executive were:

> "The curriculum is not up-to-date and fails to give students an opportunity to take up courses that lead to where the industry is taking. To be able to equip graduates with the requirements of Vision 2030, the curricula need to be dynamic and responsive".

Such results demonstrate that the causes of dissatisfaction among employers are not just in the material of the curricula, but also in the design and methods of delivery that limit the flexibility and innovation. What graduates can have after leaving universities are good theoretical but are not equipped with the practical and technological realities of the workforce.

4.5.3 Recommendations from Employers

The employers in Saudi Arabia have offered a lot of recommendations pointing to the short and long-term skills that graduates should possess in order to become successful in the job market. These recommendations were not only based on current industry realities but also on the understanding of fast-changing global economic and technological trends. Employer suggestions concentrated on three key areas: critical skills and knowledge areas, incorporation of practical learning experiences, including internships, and curriculum redesign in response to industry changes.

One of the common suggestions during interviews was more robust technical and digital skills. Employers pointed to the fact that graduates commonly have general knowledge, but do not have the technical skills that industries seek. The HR manager of a top technology company stated:

> "We require graduates who can make an immediate impact, rather than months of studying how to use simple digital tools. As an illustration, data analytics and artificial intelligence are no longer an option, but a standard routine in most sectors".

This feeling is consistent with the results of the survey, as almost 65 percent of graduate students admitted that they felt unprepared regarding the new digital skills. Employers also solidified the necessity to implement special technical courses into curricula, particularly those pertaining to artificial intelligence, big data, renewable energy, and advanced manufacturing.

Recommendations on the development of soft skills, especially communication, teamwork and problem solving were also of importance. In the field of finance, one senior manager remarked:

> "Graduates possess excellent theoretical knowledge, yet they are usually not capable of interacting with clients and problem solving in a team. Hard skills are just as important as technical expertise and where we are concerned such as in industries such as ours, relationship management is important".

In addition to skills, employers were vocal in the call to have stronger internship and experiential learning opportunities. The existing framework of practical exposure in the institutions of higher learning was believed to be wanting by many. An executive of a logistics company has said:

> "Internships tend to be brief and shallow. Learners require more meaningful, longer placements in which they can work on real projects, not merely observe".

This suggestion is directed towards adopting longer-term joint education frameworks or project-based collaborations between higher education institutions and firms. Employers pointed out that experiential learning does not only provide students with industry prepared skills but also enables easier school to work transitions.

Curricular reform wise, the employers advised the abandonment of inflexible, theory-based programs in favor of modular and flexible options that could be easily customized to meet changing industry demands. A renewable energy industry director proposed:

> "Curriculum should not be stuck over years. The industries are evolving fast-paced-particularly the vision 2030 aspirations of Saudi Arabia. We require nimble programs in which courses are revised annually or biannually in order to keep up".

Moreover, the demand on increased cross-disciplinary integration by some employers justified it with the argument that industries need professional employees who could work across various

fields. As an example, engineers with knowledge of business strategy, or IT experts with knowledge of regulatory compliance.

Lastly, employers offered tighter cooperation between universities and industry stakeholders. They prescribed advisory boards that are constituted by employers to shape curriculum amendments so that the skills developed by the graduates are relevant to the market. As one employer summarized:

> "It is not that we do not want to criticize universities; we want to collaborate with them. When they engage us in the development and review of the programs regularly, all will gain- the students, industries and the economy".

Overall, the recommendations of employers were focused on a comprehensive strategy to equip graduates: the improvement of technical and soft skills, the inclusion of more in-depth learning experiences, and the dynamism of curricula and their constant adjustment to changes in the labor market. These lessons play a pivotal role in informing the universities within the Saudi Kingdom on how they can construct dynamic and future-oriented programs that address the requirements of the changing industries.

5. Discussion

The results of this research note the urgent necessity of higher education organizations in the Kingdom of Saudi Arabia (KSA) to adjust their curriculums to meet the dynamic demands of the labor market and the industry. Graduate students and employers reported high levels of skills gaps, especially in the area of digital competencies, applied problem-solving, and interdisciplinary knowledge. Such observations find echo in international discussions of curriculum flexibility and employability, but also in local contextual demands informed by the Vision 2030 of Saudi Arabia. The fact that most managers and graduates agree that understanding of applied skills and digital capabilities should be incorporated into the educational experience reflects previous studies that have been undertaken in similar settings. As an example, juniors in Saudi universities tend to focus on theory over exposure to the industry, as it was observed by Bhatia (2024) and Cai (2017) that the university system prioritizes knowledge acquisition over exposure to the industry, which results in the lack of graduate preparedness in the rapidly expanding sectors such as artificial intelligence (AI) and renewable energy. These observations are supported in the current study with both groups stating the continued lack of alignment between academic preparation and workplace demands. International research (Dumitru, 2023; Fleischmann, 2025) also opines that graduates who are not provided with work-integrated learning have challenges in adjusting to digitalization and automation-driven labor markets.

Another common theme of the data was the disconnect between the teaching in the classroom and in a professional environment. Employers complained that graduates tend to have good theoretical backgrounds but fail to apply it practically in the workplace. This observation aligns with the Knight and Karwa (2024) employability framework according to which knowledge by itself, though a necessity, needs to be supplemented with skills, experience, and attributes to ensure competence in the labor market. This is further exacerbated by the fact that as part of Vision 2030, the region is rapidly diversifying its industries, graduates are likely to be employed in new areas like renewable energy and entrepreneurship. A similar study carried out by Kumar (2022) indicated that applied learning is important in graduate preparation to be integrated into non-traditional sectors.

The research also showed that interdisciplinary learning and curriculum flexibility had a solid backing. Graduates noted the value of having the ability to take elective courses across disciplines,

with employers noting the need to have hybrid skills that spanned across business, technology, and engineering. Results are consistent with the concept of supercomplexity proposed by Meyer (2020), according to which modern graduates have to operate in uncertain, fluid, and multidimensional professional settings. This view is also supported by international experience: research studies carried out in the EU and East Asia (Singh, 2024; Teng, 2019) proved that interdisciplinarity and flexible course design in the curricula ensure that graduates are more prepared to manage changes in the industry.

The other important revelation of the study was the significance of organized collaboration between universities and industry players. Employers emphasized that curriculum review committees tend to lack substantive industry representation and that graduate competencies were not related to the real demands of the workplace. The result aligns with that of Vasilev (2024) who pointed out the usefulness of co-designed curricula in developing employability and innovation. In the Saudi setting, where the economic diversification agenda in the form of Vision 2030 implies universities as a driving force, the enhancement of the academia-industry relationship is even more significant. Past research in KSA (Wang, 2012) also highlighted the need to adopt work placements, internships, and collaborative research projects to incorporate the real world views into academic education.

Graduates and employers alike highlighted how lifelong learning can contribute to retainability in the face of technological upheaval. Respondents recognized that single degree is not sufficient to achieve long-term career success, but curricula need to include upskilling and reskilling opportunities. This is a reflection of trends in the world, where both UNESCO (2019) and the World Economic Forum (2022) have emphasized the importance of lifelong learning as an essential aspect of labor flexibility. Such practices are part of the human capital development objectives of Vision 2030 at KSA. Particularly, this paper concluded that graduates were interested in modular courses, micro-credentials, and short professional certifications, which resonate with the conclusion of Zahay (2022) on the increased popularity of flexible ways of learning in Saudi higher education.

Contextualizing the findings in the context of the wider context of Vision 2030, it is clear that curriculum reform is the main focus in the realization of priorities of national development. Vision 2030 specifically requires an education system that is responsive to the needs of the future labor market and facilitates the development of an innovative-based economy. The present paper supports such a vision by demonstrating evident disalignments between conventional curriculum and new demands of the labor market, as well as identifying feasible measures that could be used to improve graduate preparedness, including interdisciplinarity, industry involvement, and lifelong learning. To this extent, the results align with the national reports (Vasilev, 2024) that highlight education reform as the core of sustainable economic change.

Although the findings are mostly consistent with the previous ones, certain subtleties appeared. Indicatively, despite the fact that employers highly emphasised digital and technical competencies, a subgroup emphasised the need to have soft skills like teamwork, communication and cultural versatility. Graduates, though, were more inclined to downplay those, focusing rather on technical training. This difference suggests that although curricula must focus on the new technical areas, transferable skills that are foundations of success in the workplace need not be overlooked. The same tensions as observed by Stavrou (2024) were observed in European settings, and this represents a consistent international struggle in employability-driven curriculum development.

6. Conclusion

As demonstrated in this paper, flexible and skills-based curricula are crucial to preparing graduates to compete in the highly dynamic labor market in the Kingdom of Saudi Arabia. As the findings of the interview conducted with graduate students, and employers show, there are indeed still significant gaps in terms of integrating practical, digital, and interdisciplinary skills, even though the institutions of higher learning have come a long way in aligning the programs to the demands of the labor market. Such shortcomings are particularly relevant in the rapidly developing fields of artificial intelligence, renewable energy, and entrepreneurship, where the needs of the industry are generally higher than the academic adaptation rates.

In the results, it is emphasized that the flexibility of the curriculum cannot be limited to the change of the content, but must also be applied to structural changes, e.g. inclusion of lifelong learning paths, modular learning and the potential of experiential learning. One of the keys to sustainable curriculum innovation turns out to be academia-industry-policymaker collaboration. Such collaborations are essential in ensuring that the graduates are equipped not only with the theoretical knowledge of the course but also with the practical abilities and adaptability to the constantly evolving professional environments.

Within the context of Vision 2030 in Saudi Arabia, this paper suggests that higher education institutions must be transformed into efficient agents of national development. Entrepreneurial, competitive and innovative thinking using adaptive curricula will be central to the achievement of the long term socio-economic objective of the Kingdom. Lastly, the paper has reached the conclusion that development of flexible curricula is a process and not a single reform, which must be responsive and continually assessed, and all concerned parties must be in the process and in line with new trends in the industry.

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