Comparing university education in open and focused majors: A look to the future

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ABSTRACT

This study aims to redirect the human resources of university graduates towards the actual needs required of society. The huge increase in the number of graduates in the Arab world is not matched by economic growth and therefore organized labor markets that can harness the skills of graduates and invest in developing the new and future required skills to meet the challenges of the labor market. This study presents a broad comparison between the narrow and general concepts adopted in education. The study aims to provide an analysis of what should be the future direction of higher education in countries and how this can be applied to education systems in Arab countries such as Saudi Arabia. Finally, it makes evidence-based recommendations to support such strategic choices, and the study concludes that a broad system that does not integrate with market needs and operates away from serious partnership with stakeholders and employer groups will certainly fail to meet national needs and national aspirations, as the data analysis revealed. University students are gathering in majors to saturate the labor market with graduates with low potential to compete in the job market, and this has led to the recommendation to take serious steps that would stimulate efficiency and responsiveness to the system. New programs and curricula that reflect market demand Shifting resources towards such a system will benefit universities as they can focus on meeting skills needs and employers who can hire skilled employees through active participation in building skill sets.

1. Introduction

The debate about the implementation of narrow or broad higher education programs has been going on for nearly half a century, as countries around the world are rethinking their higher education systems in order to adopt the best applicable model that serves economic development and technological progress, while there are no specific answers that apply to all in higher education systems, both sides of the debate have served countries and actively contributed to their growth and development.

Economic wealth was the main goal of all nations on earth, which led to the achievement of societal extravagance and individual development towards raising awareness of the enormous value of investing in human development and technology, all of which led to economic growth being highly dependent on technological progress and progress; Investing in human capital development has become the only way to face emerging challenges and take advantage of technological developments to serve growth and prosperity.

All this requires achieving economic leadership and sustainable development towards developing knowledge and skills in a systematic and gradual manner that ensures the timely introduction of a skilled workforce capable of understanding technological developments and harnessing them to serve the national goal.

The most efficient and widespread way to develop human capital is through higher education, where institutes of higher education form hubs for youth training, a steady flow of skilled and professional workforce, and solid foundations for research and innovation. The success of higher education systems is strongly reflected in supporting progressive and sustainable economic and technological growth. Building effective human

capital plays a vital role in the success and sustainability of the knowledge economy (Dill and Van Vught, 2010).

In order to achieve this end, and in response to the growing need for a highly-skilled workforce, the past thirty years have witnessed a remarkable expansion of higher education all over the world, as higher education has become in accordance with a national vision and strategy, and thus governments around the world have made efforts to facilitate and make higher education within the reach of all citizens (Brunello and Rocco, 2017), Until the 1980s it was restricted to specific countries as well as students from developing countries classified as developing countries being allowed to go abroad for university education. (Aydın, 2014), for that higher education providers are expected to adapt their provision so that outputs match requirements and skills match market needs.

In developed countries, higher education is planned in order to provide students with the required knowledge. Higher education is a foundation for student education in order to develop students' understanding of demand trends and market requirements. The aspirations and tendencies of students are best described in the 2008 OECD report "Increasingly Learners seek to train courses that enable them to update their knowledge throughout their working life. In addition, while learners strive to acquire specific knowledge or skills to meet the needs of the labor market, more and more prefer picking and choosing courses from the most suitable service providers, rather than studying a clearly defined traditional program in one institution.

Some education systems altered the conception of higher education towards more focused out-come based notions rather than input-based conceptions. Focused higher education became in demand, and employers became more demanding in terms of skills and knowledge. Chung (2011) described this shift in the context of engineering education: "Under the impact of globalization and the coming of the Information Age, there is a paradigm shift occurring in the engineering curriculum and academic structure. Apart from the creation of new programs for the emerging fields in engineering, the approach and orientation have also been shifted from objective-based/input-based education to outcome-based education. The criteria for the new generation of quality engineering graduates have been much broadened."

Where the philosophy of expanding higher education was based on the actual need for all the skills required to develop and expand the labor market. For this, different opinions were put forward about the expected role of higher education, which prompted academics and educational policymakers to maximize the role of higher education as a gateway to developing a culture of lifelong learning. (Woelert and Millar, 2013). This trend pushes the need to adopt a change in priorities in the allocation of human resources so that the arts and theoretical disciplines are not the focus of higher education, but rather that resources should be shifted towards more focused skills in technology and applied sciences.

Although the labor market seeks more focused skills in higher education, most of them realize that technical skills are not the end goal, but employers are seeking output from higher education providers to possess renewed competencies in order to acquire 21st-century skills. The concept of mixed skills which is currently adopted by most higher education service providers is based on the "mixed skills concept" which is unpopular by the employer community.

The U.K. National Student Forum Report in 2009 (CBI, 2009) described best what students are looking for. Students are looking for personalized education, offering "courses that are flexible, yet structured, and develop transferable skills." The Confederation of British Industry report (CBI, 2009), indicates that employers correspondingly appreciate acquiring "soft skills" associated with specialized knowledge and technical skills.

Both politicians and economists in developed countries call on universities to focus on specific skills and thus adopt narrow specializations, particularly in the professions, sciences, and engineering.

Shifting the flow of students from broad to narrow programs by introducing broad variables to narrow programs while maintaining narrow and specialized variables can be very effective. This avoids the loss of productivity and adjustment costs that could ensue if employers could only hire graduates from expanded variants of jobs within the occupational fields of narrow education programs. (Wakefield, 2017).

Experience shows that large firms tend to deploy staff that has a blend of technical and soft skills. This blend allows employees to make administrative decisions regarding resourcing and outsourcing and justifying the decision. This means that the employee is capable of communicating at all levels of the firm, vertically and horizontally, and consequently increased productivity is expected.

Research questions are as follows:

1. Should higher education institutes keep graduating broad skills or shift their programs to become narrow and focused to meet market demand?
2. Are universities graduating skills for no jobs on the market and ignoring jobs that need highly skilled graduates?
3. Are Saudi universities adopting a responsive system that meets market needs and students' aspirations?
4. What would be best for Saudi Higher Education System; Narrow or Broad?

Research objectives and methodology are as follows:

1. The objectives of this study are to look into the various opinions about narrow and broad concepts adopted.
2. To shed some light on a few education systems adopting narrow or broad and assess the benefits and finally to look in the Saudi higher education system in the light of narrow or broad and assess its effectiveness.
3. To look into the Saudi higher education system and assess if the current system serves the needs of the country and offers alternatives.
4. Examine the higher education system in KSA from the point of view of narrow and broad programs and investigate the opinions of stakeholders if there is a need to enforce either trend.
5. Draw recommendations that serve labor market trends and national higher education policy.

The Methodology we use in this research is described as follow:

1. Conduct a desk review of some of the published work regarding the debate Narrow or Broad and evaluate the various opinions.
2. Review the analysis of some successful education systems and look into their characteristics. Conduct a comparison between narrow and broad specializations based on the experience of some countries that are adopting these systems in higher education institutes.
3. Conduct quantitative analysis of the Saudi system and analyze results.
4. Report findings and draw recommendations.

2. Characteristics of sample education systems: Narrow vs broad

Some systems tend to shift higher education toward shared learning that focuses on broad education that allows for renewed competencies that prepare students to adapt to rapidly changing professions and developing economies, while other systems adopt a narrow approach to skills and focused technical skills that are attractive to learners and employers.

When examining higher education systems in some countries with strong economies and extraordinary scientific achievements, we find that they have been adopted on a large and narrow scale at the same time, and the education systems in these countries have grown with the economy and reflect the need for continuous progress and growth. (Snyder, 2013).

The American educational system is one of the largest, most accredited, and most successful in the world, and is characterized by a broad university curriculum, which allows students to specialize at an early or later stage depending on their choice of electives, the American educational system is a system that relies heavily on market information and partnerships to guide students in the selection of fields of study and majors, and it reduces the flow of information associated with the partnership from

the risks of enrolling students in non-employable pooled majors. Accordingly, the U.S. university higher education system has the following advantages: Broad base of majors and courses per major including a high ratio of general requirements and elective courses and between 20 and 30% core requirements.

- The system is highly flexible. Students can select courses from a broad base of courses and can double major.
- Students can choose their specialization at an early stage or delay it to the last year of study.
- Universities have self-governance meaning that they can decide on what courses to offer and how to interact with the labor market and learners' demands.

The flexibility of the education system leads students to choose unproductive courses of study and thus to study inconsistent courses of study, Higher Education in England adopts a narrow curriculum with a focus on the main subject of study leaving little room for general courses, where students enter directly into the subject of study and thus choose to specialize in, therefore, studying in England allows for practical training through universities and employer groups. The system is characterized by the following main features (EED, 2011):

- Narrow-focused programs are designed to skill students with professional attributes and readiness to join the labor force.
- The overall student number, and consequently student number per major of study, are planned and regulated by government bodies and funds. The number of students in each institute is defined on annual basis.
- Some exemptions in exceeding the set number of studs are made to successful institutes such that they can recruit as many students as they want as long as the students obtained distinguished grades at hi secondary level.
- Institutions enjoy complete autonomy in selecting their programs and in cooperation with businesses and employers in designing and delivering these programs. The quality of programs is monitored by the Quality Assurance Agency.
- Employability of graduates is a government priority. To achieve the best results the government drafts policies that regulate the relationship between universities and businesses. Industrial associations, businesses, stakeholders, and higher education institutes are partners in developing policies and implementing them ensuring that employability skills are introduced as an objective of programs.

The education system in Finland is designed to accommodate narrow and broad higher education or students. The system provides two types of higher education; traditional university education that

focuses on theoretically based learning (broad), and Universities of Applied Sciences that offer focused industry-related courses or professions that are of demand on the market.

The higher education system in Netherland is similar to the Finland education system where the university education is based on two tracks (Coenen et al., 2014):

- Research-oriented universities: -WO- offers theoretical and research-based subjects like arts or sciences (Broad).
- Higher professional education –HBO– focuses on applied subjects preparing students for specific professions. (Narrow).

The Canadian system is considered an extreme example of broad, interdisciplinary undergrad education. The system is derived from the American system and follows the same track; for that, it is considered as a broad flexible education system based on market dynamics and responsive to market demand. The Canadian system adopts the philosophy that economics, skills, and technologies are evolving fast; meaning that professional-based education can't catch up with market dynamics, hence skills become absolute before graduates enter the labor force. For that, adopting a broad education system allows students to familiarize and proceed in acquiring knowledge while they are on the market.

3. The higher education system in Saudi Arabia

The Saudi higher education system is mainly derived from the American system and adopts a broad curriculum for undergraduate and postgraduate studies. While American and European universities enjoy a high level of freedom in managing their affairs; the Saudi higher education system is characterized by:

- A centralized governance system operates all public universities that serve about 95% of higher education students.
- A supply-driven education system with dominant broad programs based on the foundations of the American higher education system.
- There is minimal government regulation for student enrollment numbers or guidance towards market needs. More than 80% of university students are enrolled in soft programs such as human science, business management, social sciences, and general-based majors.
- Only 11% of students choose to undertake higher technical and vocational or applied courses.
- Employability of graduates is not a priority. Cooperation with businesses and employers is limited. Participation of stakeholders in program design and program delivery exists at a very small scale.
- Studies guiding to improve the efficiency and effectiveness of the system are far from real.

The term governance has been popular in Saudi Arabia after the announcement of the Saudi 2030 Vision (Asel, 2020). The government sectors started to update their visions, missions, and plan to be aligned to the Saudi main vision. On the other hand, the Ministry of Education is adapting flexible policy aiming at promoting excellence and innovation, and creating the diversity of university missions and programs, leading to extend the autonomy of universities. Currently, the Ministry of Education has direct governance of all universities. Saudi universities are in need of autonomy such that they can control the way they allocate resources, develop operational partnerships with businesses, offer programs of interest to students and employers and decide what portion of students should follow narrow-based programs.

In addition to governance issues, the modernization of Saudi Arabia's higher education system and the up-skilling of the Saudi population are major aspects of this drive and are considered vital for Saudi Arabia's economic transformation. New policies are drafted in the 2030 Vision aiming that Saudi youth are "equipped for the jobs of the future" in a knowledge-based economy. The government is pursuing far-reaching education reforms, including the rollout of modernized market-based curricula that accentuate 21st-century skills, and the decentralization of Saudi Arabia's higher education system.

For the time being; the government launched some initiatives that will contribute to increasing the efficiency of the system and will assist in adopting a benchmark strategy for meeting arising challenges. The growing demand of the labor market and the build-up for achieving the vision of Prince Muhammed bin Salman for the kingdom (Alharbi, 2016). Making a positive impact will require granting universities' leadership the power of decision making, the tools and resources to face these challenges, and establishing operational strategies. Such steps will lead to improve efficiency and meet employers' and businesses' requirements, provide learners with employability skills and enhance cooperation with the productive sector.

Over the last decade, the government has invested heavily in the development of tertiary education creating more opportunities for students to choose between traditional and specialized universities. research and the establishment of new and more specialized universities. The Saudi leadership aims at increasing educational attainment rates where more than half of the population is under the age of 25 and youth unemployment is very high as unemployment rates in 2018 recorded 25%. Tertiary attainment is lower in Saudi Arabia than in most OECD and partner countries. Only 74% of tertiary-educated adults are employed, one of the lowest employment rates for tertiary-educated adults among OECD and partner countries (OECD, 2019).

Government investments and efforts aimed at increasing enrollment in specialties of market

demand are well designed to give Saudi nationals an edge in filling jobs that are occupied by X patriots. The government is working towards shifting students' preference of specialties like social sciences, religious studies, history, or literature towards more technical-oriented disciplines.

The Saudi economy is witnessing a fast growth that has to be met with a highly-skilled population of young market entrants. Saudi universities are pumping more than 205,000 university graduates per year at bachelor's level in multi-disciplines. However, the Saudi job market is still importing international skills to satisfy the needs of its labor market. To that end, it is worthwhile looking into the outputs of the university education system in KSA and examining the effectiveness of the current broad higher education system, and assessing the value of narrow curricula and their impact on the job market.

Mainly the Saudi higher education system is based on supply rather than demand. One disliked characteristic of supply systems is that it floods the labor market with skills that there are no jobs to match it and leaves jobs with no skilled people to fill it.

4. Tertiary education breakdown in KSA

The tertiary education sector in Saudi Arabia encompasses three main verticals, universities, colleges, and technical and vocational institutions. In total and in 2019, Saudi Arabia had 60 universities, with 70% (42 universities) of these being public universities. Higher technical institutes offered different vocational courses and technical training programs in 64 technical colleges, 31 international colleges, and 25 institutes under strategic partnerships with the private sector (Saudi National Education Statistics).

4.1. Breakdown of total University education enrolment

The university education stream offers multi-levels and tracks of education. Public universities offer courses leading to Intermediate Diploma (2 years of study) Bachelor degree (4 years degree) Higher diploma (Bachelor+ 1 year postgraduate studies), Master degree (Bachelor+ 2 years' postgraduate studies), and Ph.D. (Master degree+ 3 years). Private universities offer Bachelor's and Master's degrees only.

In 2019, the total number of students in Saudi universities was about 1.96 million students including all university enrollments and graduates. Table 1 presents the breakdown of students into enrolled and graduated students. 1.65 million students were enrolled and about 310 thousand graduated from all majors and levels of university education. The proportion of students enrolled at public universities as of 2019 stands at 94.4% (1.48 million), compared to 5.6% (85.6 thousand) enrolled at private universities. Graduated students follow similar proportions where graduates from public

formed 95.9% (297,853) compared to 4.1% (12,749) graduated from private universities (National Bureau of Statistics KSA).

4.2. Breakdown of students enrolled in public and private universities in 2019

4.2.1. Public universities

Table 2 presents the breakdown of students and graduates according to majors' families. In public universities, the take up of Business Management as a major accounted for 29.4 % (435831 St.) of all public universities student enrolments accounting for 27.7% of total enrollments. Arts and Human Sciences ranked as the second most subscribed to major were 25.7% (382068 St.) of all public universities students undertook this major, accounting for 24.3% of all enrolled students. The two majors accounted for 55.1% (818899 St.) of all enrolled public university students (54% of total student enrollment). Enrolled students in science-based majors such as Natural Sciences, Mathematics, and Statistics major reached 147,307 students accounting for 9.9% of students enrolled in public universities (9.4% of total enrollment). Engineering, manufacturing and architecture, and Communications and information-based majors accounted for 3.2% (47972) and 4.2% (62151) of the total public universities population respectively.

4.2.2. Private universities

The data presented in Table 2 also shows the enrollment breakdown in public universities. The total enrollment in public universities is 92,326 students forming 5.6% of the total enrollments. Health and Well-being majors accounted for the largest portion of private universities enrollments with 35.5% of students (30,786) choosing this major. This was closely followed by Business, Management, and Law which account for 31.6% of all enrolled students in private universities (27,388). Engineering, Manufacturing and Architecture and Communications and Information Technology accounted for 11.3% (9,801) and 7% (6,071) respectively. A low enrollment rate is recorded in other majors.

4.3. Total enrolment

The total enrollment in both public and private follows the same pattern as in Public universities in terms of major selection. 29.6% (of students are enrolled in Business, Management, and Law majors; 24.7% (464,229) are enrolled in Arts and Human Sciences majors. In total, 54.3%of students (852,150) are enrolled in two major families. Other majors' family's enrollment rates are below 10%. Engineering, Manufacturing and Architecture and Communications and Information Technology

accounted for 3.7% and 4.7% of the total respectively.

Table 1: Breakdown of total universities enrolled and graduated in 2019

	Enrolled	% of total enrolled	Graduates	% of Total graduates
Public Universities	1557785	94.4%	297853	95.9%
Private Universities	92326	5.6%	12749	4.1%
Total	1650111	100%	310602	100%

Table 2: Breakdown of enrolled in public and private universities students per major in 2019

Major	Public		Private		Total Public and Private	% of public from total	% of private from total	% of per major from total
	# of students per major	% of Stud per major from total public	# of students per major	% of Stud per major from total Private				
Business, Management and Law	436831	29.4%	27388	31.6%	464219	94.1%	5.9%	29.6%
Arts and Human Sciences	382068	25.7%	5863	6.8%	387931	98.5%	1.5%	24.7%
Natural Sciences, Math and Statistics	147307	9.9%	483	0.6%	147790	99.7%	0.3%	9.4%
Health Well-being	129462	8.7%	30768	35.5%	160230	80.8%	19.2%	10.2%
Programs and General Qualifications	110374	7.4%	5634	6.5%	116008	95.1%	4.9%	7.4%
Education	91125	6.1%	195	0.2%	91320	99.8%	0.2%	5.8%
Social Sciences, Journalism and Media	62249	4.2%	248	0.3%	62497	99.6%	0.4%	4.0%
Communications and Information Technology	62151	4.2%	6071	7.0%	68222	91.1%	8.9%	4.3%
Engineering, Manufacturing and Architecture	47972	3.2%	9801	11.3%	57773	83.0%	17.0%	3.7%
Services	9005	0.6%	142	0.2%	9147	98.4%	1.6%	0.6%
Agriculture, Forestry, Fisheries and Veterinary	5041	0.3%	0	0.0%	5041	100.0%	0.0%	0.3%
Others	379	0.0%	0	0.0%	379	100.0%	0.0%	0.0%
Total	1483964	100%	86593	100%	1570557	94.4%	5.6%	100%

4.4. Breakdown of graduated students from all universities

4.4.1. Public universities

Table 3 presents the breakdown of graduates from public and private universities and as per major.in 2019. It can be seen that graduates of Business Management major from public universities formed of 39.4% (117,308) from total public universities graduates, 95.5% of the graduates of the major and a portion of 37.8% (287,853) of total university graduates. Arts and Humanities ranked as the second, where 19.1% (56,760) graduated accounting for 98% of the graduates of the major and forming a portion of 18.3% (57,772) of the total universities graduates. Graduates from the cited two majors accounted for 58.9% of public universities' graduates and 56.1% of all graduates. Graduates' ratios from other majors did not exceed individually 9% each.

4.4.2. Private universities

Graduates of Health and Well-being from private universities formed 38.3% (20,289) of the total graduates from this major. This accounts for 1.6% of total university graduates. The second-ranked major is Business, Management, and law where a portion of

33% of public universities graduated. This accounts for 1.4% of the total graduates' population.

4.4.3. Total graduates

The total number of graduates in all majors and all universities; public and private; was 310602 students. 96% of those were from public universities (287,853) and 4% graduated from private universities (12,749). The bulk of graduation simulates enrollment as more than 58% of total graduates come from two majors; Business and Human Sciences.

4.5. Breakdown of enrolled and graduates per level of study

Data from Table 4 is explained as follows:

- Students enrolled in the Bachelor's level exceed 90 % (1,570,557) of the total population of the enrolled student. Graduates from public universities at the bachelor level (212293 formed 91.3% of the total graduate population.
- Higher Diploma degree enrollment portioned 0.4% (6,367) of total enrolled. Graduates portioned 2.6% (2,286) from total graduates.
- Master's degree enrollment portioned 3% (51,144) of the total enrolled. And graduation portion from total was 2.6% (6119) of total graduates.

- Ph.D. enrollment was 0.6% (11091) of total enrollment. Ph.D. graduate's volume was 0.3% (799) of total graduates.
- Intermediate Diploma enrollment portioned 5.2% of total enrollment, graduates accounted for 4.7% of total graduates.

This later should be looked into as the period of study for this diploma is two years and follows a pure theoretical track based on bachelor degree courses.

Table 3: Breakdown of graduates from public and private universities per major

	Public Graduates	% of Major Grads from public Grads	Private Graduates	% of Major Grads from Private grads	Total Grads	% of Major total grads from total grads
Business, Management and Law	117308	39.4%	4204	33.0%	121512	39.1%
Arts and Human Sciences	56760	19.1%	1012	7.9%	57772	18.6%
Natural Sciences, Math and Statistics	20234	6.8%	83	0.7%	20317	6.5%
Health and Well-being	15409	5.2%	4889	38.3%	20298	6.5%
Programs and Qualifications	12158	4.1%	0	0.0%	12158	3.9%
Education	22887	7.7%	198	1.6%	23085	7.4%
Social Sciences, Media and Journalism	15664	5.3%	46	0.4%	15710	5.1%
Communications and Information Technology	25214	8.5%	640	5.0%	25854	8.3%
Engineering, Manufacturing and Architecture	7633	2.6%	1675	13.1%	9308	3.0%
Services	2619	0.9%	2	0.0%	2621	0.8%
Agriculture, Forestry, Fisheries and Veterinary	345	0.1%	0	0.0%	345	0.1%
Others	1622	0.5%	0	0.0%	1622	0.5%
Total	297853	100.0%	12749	100.0%	310602	100.0%
% of Public and private from total		96%		4%		

Table 4: Breakdown of enrolled and graduates per level of study in 2019

Level of Study	Total Enrolled	% of Enrolled of total	Total Graduated	% 0f Total Graduated
Bachelor	1570557	90.9%	212293	91.3%
Master	51144	3.0%	6119	2.6%
Higher diploma	6367	0.4%	2386	1.0%
Intermediate Diploma	89005	5.2%	10952	4.7%
PhD	11091	0.6%	799	0.3%
Total	1728164	100.0%	232549	100.0%

4.5.1. Breakdown of bachelor level enrolled and graduated students

For illustration purposes, only Bachelor enrollment students will be presented and discussed as those from more than 80% of students are enrolled at bachelor level and 91% of graduates are at this level.

4.5.2. Break down of enrolled bachelor students in 2019

Table 5 presents the breakdown of students enrolled at bachelor level in 2019 at both public and private universities. Data presented show the following:

- 80% of all university enrollments at all levels are enrolled at the bachelor level.
- 94.1 % of total students are enrolled in public universities (1,483,964) and 5.9% are in a private university (86,953).
- 54.3% of total students are concentrated in two majors; Business, Management and Law and Arts and Human Sciences.
- 8% of total students are enrolled in Engineering and information and communication-based majors.

- 9.4 % of total students are enrolled in applied sciences courses.

4.6. Breakdown of bachelor level graduated students

Data in Table 6 presents the breakdown of graduated bachelor students during 2019. The following can be seen:

- 91% of total graduates at bachelor level are from public universities.
- 94.5% of total bachelor graduates come from public universities (200,565).
- 5.5% of total bachelor graduates come from private universities (11,728).
- 57.1% of graduates come from two majors; Business, Management and Law, and Arts and Human Sciences.
- 7.7% of total graduates are from Engineering and information and communication-based majors mostly from public universities (1% from private universities).
- 6.8 % of total graduates come from applied sciences majors mainly from public universities (0.036% from private).

4.7. Vocational and technical education stream

The data presented in this section include numeric of Technical colleges, international colleges, and institutes under strategic partnerships. Secondary industrial institutes are excluded as the discussion is concerned with tertiary education. TVTC offered different vocational courses and technical training programs in 64 technical colleges, 31 international colleges, and 25 institutes under strategic partnerships with the private sector.

Table 5: Breakdown of bachelor enrolled students in 2019

Major	Public		Private		Total Public and Private	% of public from total	% of private from total	% of per major from total
	# of students per major	% of Stud per major from total public	# of students per major	% of Stud per major from total Private				
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Services	9005	0.6%	142	0.2%	9147	98.4%	1.6%	0.6%
Agriculture, Forestry, Fisheries and Veterinary	5041	0.3%	0	0.0%	5041	100.0%	0.0%	0.3%
Others	379	0.0%	0	0.0%	379	100.0%	0.0%	0.0%
Total	1483964	100.0%	86593	100.0%	1570557	94.49%	5.5%	100.0%

Table 6: Breakdown of bachelor graduated students in 2019

Major	Public		Private		Total Public and Private	% of public grads from total	% of grads private from total	% of grads per major from total
	# of students per major	% of grads per major from total public	# of grads per major	% of grads per major from total Private				
Business, Management and Law	68851	34.3%	3447	29.4%	72298	32.4%	1.6%	34.1%
Arts and Human Sciences	47844	23.9%	1007	8.6%	48851	22.5%	0.5%	23.0%
Natural Sciences, Math and Statistics	19586	9.8%	77	0.7%	19663	9.2%	0.0%	9.3%
Health and Well-being	14291	7.1%	4859	41.4%	19150	6.7%	2.3%	9.0%
Programs and General Qualifications	5	0.0%	0	0.0%	5	0.0%	0.0%	0.0%
Education	19808	9.9%	115	1.0%	19923	9.3%	0.1%	9.4%
Social Sciences, Media and Journalism	14351	7.2%	36	0.3%	14387	6.8%	0.0%	6.8%
Communications and Information Technology	7881	3.9%	619	5.3%	8500	3.7%	0.3%	4.0%
Engineering, Manufacturing and Architecture	6318	3.1%	1566	13.4%	7884	3.0%	0.7%	3.7%
Services	1312	0.7%	2	0.0%	1314	0.6%	0.0%	0.6%
Agriculture, Forestry, Fisheries and Veterinary	318	0.2%	0	0.0%	318	0.1%	0.0%	0.1%
Others	0	0.0%	0	0.0%	0	0.0%	0.0%	0.0%
Total	200565	100.0%	11728	1.0%	212293	94.5%	5.5%	100.0%

4.7.1. Total post-secondary technical and vocational training (TVT) enrolled and graduated in 2019

Data presented in Table 7 shows that 203,335 students were enrolled in the various higher TVTC managed institutions forming 11.2% of total enrolled students in tertiary education (1,853,446). 32,531 graduated from TVTC institutions accounting for 10.4% of total graduates from all university and TVT graduates (Statistics Dep. TVTC).

4.7.2. Breakdown of enrolled students

Enrolled students included:

• 8128 students were enrolled at Bachelor level (4% of total enrolled) and 161,091 diploma students

(79.2% of total enrolled) in technical colleges managed by TVTC.

- 29483 diploma students were enrolled in International Technical Colleges.

- 12761 students enrolled in Strategic Partnership Organizations.
- Total Enrolled 203335 students forming 11.2% from total enrolled in all tertiary education institutes.

Table 7: Breakdown of VTE enrolled students in 2019

Type of Institute	Bachelor	Diploma	Total	% of Bachelor enrolled	% of diploma enrolled	% enrolled from total enrolled
Technical Colleges	8128	152,963	161091	4.0%	75.2%	79.2%
International Technical Colleges	0	29483	29483	0.0%	14.5%	14.5%
Strategic Partnerships Organizations	0	12761	12761	0.0%	6.3%	6.3%
Total	8128	195,207	203335	4.0%	96.0%	100.0%

4.8. Breakdown of VTE graduates in 2019

Table 8 presents data related to TVT graduates in 2019.

- 2589 obtained bachelor's degrees (8% of total TVT graduates).
- 25,985 graduates obtained a diploma from various technical colleges (71.9% of total TVT graduates).

- 3,785 graduated from the strategic partnership institutes (11.6% of total).
- 3,932 graduated from international colleges (8.5% of total).
- Total number of graduates was 32,531 graduates, forming 10.4% of the total graduates in all tertiary education institutes.

Table 8: Breakdown of VTE graduates

	Bachelor	Diploma	Total	% of Bachelor graduates	% of diploma graduates	% graduates from total graduates
Technical Colleges	2589	23396	25985	8.0%	71.9%	79.9%
International Technical Colleges	0	3785	3785	0.0%	11.6%	11.6%
Strategic Partnerships Organizations	0	2761	2761	0.0%	8.5%	8.5%
Total	2589	29942	32531	8.0%	92.0%	100.0%

5. Discussion of presented data

The presented data shows that the higher education system in Saudi Arabia can be characterized with the following:

Applied (Narrow) higher education forms a small portion of the system. Of the 1,980,000 students enrolled in higher education tracks (University and higher Technical) 12% are enrolled in Narrow education (VTE) compared to 88% enrolled in Broad (university) Education, Similar ratios apply to graduates from both tracks.

More than 55% of university students were enrolled in two, major families; Business, Management, law, Arts, and Human studies. A similar ratio applies to university graduates. A substantial portion of the enrolled and graduated students in these majors are intermediate diploma students (about 5%).

Bachelor Graduates account for about 91% of the enrolled and the same portion of graduates. Although there have been about 11,000 enrolled in Ph.D. programs, more than 50% of those are concentrated in two majors; Business, Management and law, and Arts and Human studies. A similar portion applies to Ph.D. graduates.

It is clear that there is a great in-balance in student enrolment and consequently in graduation rates where students tend to choose majors that have a theoretical base and thus saturating the market with graduates for unemployment. The OECD report (OECD, 2019) estimates that more than 26% of university graduates are unemployed.

Although great effort is spent towards meeting market requirements through supporting Vocational and Technical Education; students continue to shy away from this track and choose university majors percentage of enrollment rates in TVT does not create the right balance of skills that are needed on the market.

6. Conclusion

Narrow or Broad, can the presented discussion point to a clear choice? What is best for higher education and skills in the labor force?

In trying to answer the above question the following can be said:

- The broad American system, and despite the flows associated with its element, succeeded in serving the American economy and stakeholders as the education system was built over the years around market needs, and is strongly attached to the world of business and opportunities. The great bonding between education and stakeholders made the American Higher Education System one of the most successful systems in the world.
- The Narrow British system is again designed to serve market demand and to skill youth to

integrate quickly into the productive force. The open arms of businesses and the association between stakeholders and universities provided both parties with their need as the hand-shake between higher education and the market need keeps a tight grip and produces market needs and exports expertise to the rest of the world.

- The hybrid system in the Netherlands; Narrow and broad works well for the countries' needs and forms a model to be adopted by countries still establishing their higher education systems.

What about Saudi Arabia? Is higher education Narrow or Broad? And is there a need to evolve?

It is clear that the tertiary education system in KSA can be classified as a Broad education system. This can be verified through the following:

- The Saudi higher education system is derived from the American system. It accommodates about 1.8 million students; 1.6 million of them are university-enrolled students. The system supplies the market with more than 340 thousand graduates annually; about 310 thousand of them are university graduates.
- Cooperation between industries and stakeholders is minimal; the centralized system guides universities' choices of offered programs or managing resources. The role of the productive sector in university management and contribution is very limited, hence the responsiveness of the system to market needs is very low and employers suffer in finding the required skills as they are not partners in developing these skills.
- The broad programs that are offered by universities lack vision sometimes. When equipping graduates with a variety of skills those skills must be matched on the market giving graduates choices to draw their career paths. This path must begin in the studentship phase and continue in the employment track phase; meaning that universities must be aware of employers' needs and the diverse skills market and build these needs into the curricula; this is far from fetched at the moment.

As shown above, broad systems can be very successful if built into the needs of the country, scientific development and market need. The Saudi system; and despite the resources made available by the leadership of the country is still of poor efficiency and struggling to find its way to serve best the population and the needs of the country. Some of the problems associated with the system can be summarized as follows:

- A proof of the poor efficiency of the system is the concentration of university students and consequently graduates in broad theoretical majors that do not have open horizons or tracks to guide students to employment.

- University enrollment is a supply-driven system that floods the market with graduates from majors that are not of demand on the market. In other words, unemployable skills.
- Centralized management of universities and decision-making processes make it difficult to achieve education and market objectives. Lack of real partnering between the community and universities makes universities pure academic tracks that lead sometimes to certificates and not needed skills.
- Decentralization and university management involvement in determining the needs and associating with employers and enterprises.

7. Recommendations

The presented data shows that a systematic review of tertiary education is due. Considering the fact that more than 26% of 2018 graduates are unemployed; and adding up unemployed graduates from years before; we can estimate that unemployment of university graduates is way higher than 26%. In contrast, there are hundreds of thousands of jobs that need specific skills that are occupied by foreign labor. The following short term recommendations can be drawn:

1. The current majors provided by public and private universities should be revised in light of employability and market needs.
2. Universities should be given more freedom to offer majors, develop existing programs and introduce new programs. It also should review tracks of education and develop some existing tracks such as intermediate diploma to become more technical responsive.
3. Universes should work in a systematic manner towards reducing the stacking of students in non-productive majors and direct students towards specializations of relevance to market needs over the next five years.
4. Government should work towards establishing national bodies in cooperation with businesses to define skills needs and issue guide universities to offer specializations of relevance and determine the number of students to be enrolled on annual basis.
5. Government's role should start moving towards regulating rather than controlling public universities should be regulated and universities should lead the change and enhance their outputs.

The following long term recommendations can be drawn:

1. A total decentralization of public higher education should be achieved.
2. Governance should be shared between universities and businesses with government regulatory and monitoring roles.
3. Employer groups and businesses are mandated to cooperate with universities and get actively

involved in the program and skills identification and training of students.

4. Universities shall work collaboratively with the productive sector and government policymakers to produce highly qualified graduates meeting the needs of the labor market and utilizing advancing technologies to meet economic challenges.

5. Universities and Businesses should work intensively to satisfy the requirements of achieving the 2030 vision as education and skilled labor force form the powerhouse of achieving this vision.

In answering the question what is best for the higher education in Saudi Arabia; Narrow or Broad? One of the pillars of the 2030 Vision is developing education as an integral part of the development and growth of the country. For that; the build-up to meet the challenges of this vision should start now; the government is taking actions towards achieving the basis to the vision. However; serious steps towards empowering the higher education system and tertiary education, in general, must be taken.

The education system can't shift from broad to narrow as this is a very expensive choice at all levels. Decision-makers can adopt a blended system keeping broad and introducing narrow. Higher education can benefit from the experience of the Netherlands and embrace a blended system that serves the needs of the country and become a part of its development culture.

Finally, and for the short-term development strategy; pending positioning a blended system in place; an important step can be taken towards the efficient allocation of students within the current system. It is recommended that a portion of students is shifted from clustered majors and intermediate diploma programs to narrow streams of education that have specific skills of market demand and stakeholders partnering. This can be achieved through empowering initiatives such as strategic partnerships with enterprises and introducing 3 years' technical bachelor programs through universities. To guarantee effectiveness; it is suggested that about 30% of enrolled university students should be directed to narrow specific studies that respond to market needs and enhance the performance of tertiary education.

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Conflict of interest

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