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Bridging the gap between college and career: Development of a graduate attribute framework for Saudi students

Ahmed Abdi Hassan[1+]
Ismail Al Nabrawi[2]
Philline M. Deraney[3]
Deema Alotaibi[4]
Amani K. Hamdan Alghamdi[5]

[1]*National Commission for Higher Education, Hargeisa, Somalia.*
[1]*Email: aabhassan26@gmail.com*
[2,4]*Deanship of Academic Development, Imam Abdulrahman Bin Faisal University, Al Rakah, Eastern Region, Saudi Arabia.*
[2]*Email: imalnabrawi@iau.edu.sa*
[4]*Email: dsalotaibi@iau.edu.sa*
[3,5]*College of Education, Imam Abdulrahman Bin Faisal University, Al Rakah, Eastern Region, Saudi Arabia.*
[3]*Email: pderaney@iau.edu.sa*
[5]*Email: akhalghamdi@iau.edu.sa*

(+ Corresponding author)

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ABSTRACT

The objective of this quantitative study was to examine the efforts of one large university in the Eastern Province of Saudi Arabia to develop and approve a graduate attributes (GA) framework. The large-scale initiative drew on faculty members and students' perceptions of graduate attributes that can bridge the gap between college and career readiness at Imam Abdulrahman bin Faisal University (IAU). The study's methodology employed a web-based questionnaire administered to the institutional community of faculty members and students. Descriptive and inferential statistics were conducted and analyzed to refine the final attributes. The results indicated the following five core GAs based on 1,826 participant responses: 1) knowledge application and lifelong learning; 2) problem-solving and decision-making abilities; 3) information technology skills; 4) an active personality and 5) a commitment to values, ethics and responsibility. This inaugural study's results can contribute to the growing interest in creating GA frameworks for Saudi universities and their graduates. The absence of GA frameworks in the Saudi context should be considered in future updates. Recommendations further suggest secondary analyses to provide more meaningful insights into the IAU's GA framework and its relevance to Saudi Arabia's higher education sector in general.

Contribution/Originality: Few studies have focused on graduate attribute (GA) frameworks in the international and particularly in the Saudi higher education context. This study presents an overview of core GAs for career readiness, a path to framework development and recommends further analyses of noteworthy attributes to ensure graduates successfully gain employment.

1. INTRODUCTION

Institutional-based graduate attributes drive academic program outcomes in higher education institutions worldwide. In a globalized marketplace advanced through technology and rapidly changing societies, isolated program outcomes focused on being qualified in a certain profession; the mainstay in higher education no longer prepares college graduates for a competitive workforce that demands specific skills and competencies (Mayorga, 2019). Specific graduate attributes (GA) are now required in modern societies. Graduate attributes are generally

defined as "the qualities, skills and understanding a university community agrees its students would develop during their time at the institution and consequently, shape the contribution they can make to their profession and as a citizen" (Bowden, Hart, King, Trigwell, & Watts, 2003).

In Saudi Arabia, ambitious national development goals, diverse societal changes, and recent interest in global advancement have expedited the need to bridge education and the workforce (Kingdom of Saudi Arabia, 2016). Thus, Saudi higher education is increasingly "focused on and tasked with aligning the knowledge, skills and competencies of graduates with the competitive and rapidly changing Saudi labor market needs" (Muammar & Deraney, 2019). Consequently, GA is synonymous with career-readiness attributes (Mayorga, 2019) graduate outcomes and graduate characteristics (Wong, Chiu, Copsey-Blake, & Nikolopoulou, 2022) are now viewed as necessary in the Saudi context of moving towards a knowledge-based society and economy (Ashour, 2020).

1.1. Study Rationale

In a rapidly changing society such as KSA, career readiness through graduate attributes, i.e., what a graduate should be able to know, do and value is an essential research topic (Bridgstock, 2009). Yet, there is little or no research on graduate attribute development and stakeholder perspectives in the Saudi context and limited research even internationally on developing graduate attribute frameworks (Allen & Simpson, 2019; Green, Hammer, & Star, 2009) and mapping graduate attributes (Wong et al., 2022). Hence, the importance and rationale behind this inaugural study is that lessons learnt can serve as a possible guide and inform GA framework development initiatives in the Arabian Gulf region and add to the limited research in this key area.

1.2. Research Question

The research question that guided this study is as follows: What did the Imam Abdulrahman Bin Faisal University community initially and ultimately perceive as relevant and important graduate attributes? What did IAU's final graduate attribute framework include?'

2. LITERATURE REVIEW

2.1. Case for Formalized Graduate Attributes (GA)

According to Treleaven and Voola (2008) it is generally accepted that earning credentials from a higher education institution is considered proof of GAs. Many universities have emphasized the necessary graduate attributes that students need to develop during their university experience. In the context of an evolving information- and knowledge-intensive economy, workers must be both immediately and sustainably employable (Scott, McLean, & Golding, 2019). Students should not only develop and maintain knowledge and skills that are specific to their discipline or occupation but also possess *generic* skills, dispositions and attributes that are transferable to many occupational situations and areas to ensure this job readiness (Bridgstock, 2009).

University graduates' employment opportunities have become global and are no longer limited to a region whether it is industrialized or not. There used to be serious competition for these limited positions and opportunities. Developed countries produce highly skilled graduates while developing countries including the Middle East have become dependent on the skills of graduates from advanced regions with human mobility at unprecedented levels. Meanwhile, their graduates have shown a relatively weak ability to demonstrate the necessary skills (Osmani, Weerakkody, & Hindi, 2017). Graduates have struggled considerably in landing jobs due to their lack of knowledge of what the job market requires (Cavanagh, Burston, Southcombe, & Bartram, 2015).

Higher education institutions in developing countries must guarantee that their graduates have achieved skill sets that help them secure employment. It is often erroneously assumed that universities can guarantee this achievement by cultivating students' professional and individual attributes with particular focus on special skills, specific knowledge, creativity, capability and global appeal (Buzdar, Jalal, & Mohsın, 2018). This assimilation is

presumed to have happened because universities are supposed to be a place where people and best practices are developed. Studying at a university is supposed to not only impart knowledge but also drive the development of competencies and afford learners a clear understanding of their views on the real world (Pleschová et al., 2012).

2.2. GA Benchmarks

For years, higher education institutions worldwide have used graduate attributes as benchmarks when preparing university graduates for survival in the real world. However, the potential and abilities of graduates have been described and categorized differently by various colleges and academic structures (Green et al., 2009). A variety of terms are used to describe and define "graduate attributes" such as skills, qualities and competencies as well as personal characteristics, values or human qualities.

These attributes are described as transferable, generic, core, or key and may be linked with employment or citizenship (Scott et al., 2019). This diversity has bred confusion about such terms as "generic competencies," "core competencies," "key competencies," "personal skills," "transferable skills" and "generic attributes" (Barrie, 2006; Nassef, 2016; Oliver & Jorre de St Jorre, 2018; Shivoro, 2018).

Donleavy (2012) theorized that GAs are not standardized among higher education institutions because of a lack of agreement on what they constitute. Jones (2013) further suggested that GAs differ among institutions because some universities already have them while others are still developing them. Despite a lack of consensus on what graduate attributes should or might be, institutional groups and educators continue to emphasize their advancement. To illustrate, Business/Higher Education Round Table (B-HERT) publications were the primary advocate for Australian institutions of higher education to advance GAs for their students and graduates in conjunction with their specific fields of study (James, Lefoe, & Hadi, 2004).

Furthermore, Hughes and Barrie (2010) observed that GAs had received significant consideration and reflection as institutions of higher education sought to re-establish their primary objectives. Hashim and Kutbi (2017) recently acknowledged that graduate employment is the second most important measure of a successful university topped only by cutting-edge research and publications. Establishing desirable GAs can benefit universities as well as students themselves. University education can quickly become outdated in developing and dynamic labour markets (Chamorro & Frankiewicz, 2019). As a result, universities must continually assess their approach to graduate attributes to ensure their graduates are career-ready (Education and Training Evaluation Commission, 2020; Sarker, Davis, & Tiropanis, 2010).

In addition, Swingler et al. (2016) and Scott et al. (2019) recently reported that GAs include (a) educational and academic capabilities, (b) transferable, accessible skills and competencies, and (c) individual and personal traits. Every learner is required to develop and possess these attributes while studying at a university (see also Wong et al. (2022)). Compiling several studies, these attributes include (a) subject specialist skills and competencies; (b) generalize skills but not limited to communication, critical thinking, reflective thinking, problem solving, collaboration or teamwork, lifelong learning skills, interpersonal and social skills, management and leadership skills, research and investigative skills, citizenship predispositions and entrepreneurial skills and (c) personal attributes include being adaptive, self-aware (of strengths and weaknesses) and self-confident possessing emotional intelligence and work ethics. Other personal attributes include self-management, personal and intellectual autonomy, flexibility and adaptability and learning and working independently (Hounsell, 2011; Nagarajan & Edwards, 2014; Normand & Anderson, 2017; Oliver & Jorre de St Jorre, 2018; Osmani et al., 2017).

2.3. Faculty Members' Implementation of GA

Although universities in general have established GAs based on their needs and agenda, what gets taught often differs by academic discipline and specialty. Treleaven and Voola (2008) asserted that differences among university educators' views on GAs were grounded in their perceived associations between GAs and their specific field of

study. There is a lack of agreement on how GAs should be taught and assessed (Green et al., 2009). It is somewhat at faculty members' discretion; teachers use various approaches to study their instruction and confer GAs in their specific field (Barrie, 2005). Similarly, Jones (2013) argued that the instruction of generic GAs is determined by the nature of the field, aspects of the college, values of the department and instructors' views. Herok, Chuck, and Millar (2013) added that GAs should be transformed into skills in the specific field at the faculty level.

Several researchers urged a specific policy or framework for GA implementation with all of the instructional variation . Herok et al. (2013) felt that a strategy is needed to safeguard the teaching and assessment of GAs. Su (2014) went a step further asserting that discrepancy among instruction of GAs was cause for alarm as there was no standard for implementation. To illustrate the point, Hill, Walkington, and France (2016) maintained that incorporating GAs into syllabi depends on faculty members' (a) interpretation of the university's GAs or their relevance to their discipline; (b) involvement in forming the GAs and, (c) practical training in how to teach and assess the GAs.

2.4. GA Challenges in KSA Higher Education

In several Arabian Gulf countries, the future vision of the nation's economy is knowledge based and characterized by several pillars including "education and training" (Hvidt, 2016). To that end, higher education bears a responsibility to graduate career-ready adults. In countries with fairly new higher education systems (e.g., KSA's first university, King Saud University only opened in 1957), the challenge often involves trying to compensate for and overcome students' poor academic performance at the primary and secondary education levels (Ashour, 2020; Hvidt, 2016) including preparing them for higher education and then employability and future careers.

The imperative for universities to compensate for incoming students' poor academic performance steals time needed to instill attributes that prepare graduates for future employment (Ashour, 2020; Hvidt, 2016). This disadvantage can be mitigated somewhat by developing a GA framework and ensuring its implementation in all faculties and disciplines, attributes that reflect the needs of the KSA labor market and the foresight of the most recent national development plan (Vision 2030).

According to the World Education Services News and Reviews, thousands of Saudi students travel abroad for advanced degrees each year (over 80,000 in 2018) (AllahMorad & Zreik, 2020) and then return home to subsequent careers in KSA. Many embark on this study abroad path because they are motivated by possible future employment prospects and benefits (Brutt-Griffler, Nurunnabi, & Kim, 2020). Although higher education institutions in KSA have no say in how well these institutions address the issue of graduates' career readiness, they can choose to formalize an institutional GA framework to ensure that students studying at home are prepared to successfully enter and thrive in the Saudi labor market.

3. METHODS

3.1. Research Design

This empirical and descriptive research study used a web-based survey instrument to collect quantitative data. The survey instrument constructed by a team from the institution—the Graduate Attributes Committee was distributed electronically to obtain data from a variety of stakeholders in the IAU community including faculty members (with department heads) and students.

3.2. Study Context

Imam Abdulrahman Bin Faisal University (IAU), a public Saudi university that opened in 1975 is a premiere government institution for higher education in the Eastern Province of Saudi Arabia. IAU is one of the top 10 (#5) Saudi universities in world rankings (Quacquarelli Symonds (QS), 2021). The university supports approximately

32,000 students (75% female virtually all (98%) of whom are Saudi nationals and 3,200 faculty members. IAU has 20 colleges in five different locations in the Eastern Province (Quacquarelli Symonds (QS), 2021).

IAU's initial GA project began in the 2019-2020 academic year and was spearheaded by the Graduate Attributes Project Committee. This initiative arose from the university's strategic plan and the increasing need to bridge the gap between academic studies and the job market, an issue that has been highlighted in several international studies (Bowden et al., 2003; Oliver & Jorre de St Jorre, 2018; Wong et al., 2022). The IAU GA initiative was also grounded in Saudi's Vision 2030 (Kingdom of Saudi Arabia, 2016) national accreditation and quality standards, informal national and international benchmarking with other universities and research concerning GA development (see the literature review section of this paper) (Imam Abdulrahman Bin Faisal University, 2021).

For this initiative, Imam Abdulrahman Bin Faisal University (2021) defined graduate attributes as "the group of knowledge, skills, values and abilities that qualify a graduate for the future in which the university community and stakeholders agreed on their importance and suitability. The academic programs at the university should be aimed at strengthening these attributes through programs for application and growth after graduation.

The initial stages of the IAU GA project involved surveying pertinent stakeholders for their perspectives on the necessary graduate attributes. Through knowledge of these attributes, the IAU GA project aimed to (a) increase employment rates by aligning graduates (and related learning outcomes) to labor market needs, (b) develop and revise curricula that integrate the identified graduate attributes, (c) facilitate faculty teaching and learning practices that support the graduate attributes and (d) offer student indicators (benchmarks and metrics) of progress in obtaining the attributes (Imam Abdulrahman Bin Faisal University, 2021).

3.3. Research Population

This paper reports results from respondents purposively recruited from available IAU faculty members (3,200) and students (32,000) from all disciplines and faculties. Faculty including academic teaching staff and students were judged as the stakeholders able to provide the information needed to answer the research question of which graduate attributes were relevant and important (McGregor, 2018). Of the available population, 1,826 participants responded.

3.4. Study Instrument

To achieve the objectives, the Graduate Attribute Project Team at the IAU Deanship of University Education Development which included various research members for the current study conducted an initial analysis in light of the criteria of the National Center for Academic Accreditation and Assessment (especially the third criterion about teaching and learning). Thus, the team was charged with identifying GAs consistent with the university's mission and labor market requirements approved by the university, publicly disclosed and periodically reviewed (Education and Training Evaluation Commission, 2020). The GA project team clarified that the initiative was not only in line with IAU's strategic plan and 21st century labor market needs and skills but also with vision 2030 (Kingdom of Saudi Arabia, 2016) and international best practices in higher education (Imam Abdulrahman Bin Faisal University, 2021).

Based on the literature, 23 basic GAs were identified and used to create a web-based questionnaire distributed through the university's e-questionnaire system to collect data from IAU's university community (with results from faculty members and students, the foci of this paper). Participants were sent the link to complete once they had agreed to participate. The instrument comprised of two parts: (a) general demographic data (adjusted for each sample of the community) and (b) 23 items measuring the degree of relevance (directly related to the topic of GAs) and importance (greatly significant to career readiness and success) for each individual attribute. Two five point Likert scales were used to determine perceived relevance and importance. Perceived relevance of an attribute was

measured using the following scale: 5: very high, 4: high, 3: medium, 2: poor and 1: very poor. The perceived importance of an attribute used the following scale: 5: very important, 4: important, 3: medium importance, 2: low importance, and 1: very low importance.

3.5. Validity and Reliability

Regarding validity, several IAU faculty members and members of the GA committee who all have doctorates in education and experience in the educational field vetted the original draft of the instrument providing face and content validity. The team was tasked with identifying the extent of clarity, comprehensiveness and suitability of the items per the purpose of the study. Survey items and the scale used were discussed through e-mail and meetings between committee members and the final scale was agreed upon by consensus and approved by administrative leadership.

Instrument reliability was determined by calculating Cronbach's alpha which indicated that the instrument had high internal reliability (α=.972). In addition, the Pearson correlation coefficient was calculated to verify the stability of the instrument through the application and re-application methods. As per the result (r=0.668), there was a significant positive correlation between the scores of the first two applications. Thus, the study instrument had sufficient validity and reliability and was suitable for use in the study.

3.6. Data Collection and Analysis

The Graduate Attribute Project Team collected data after obtaining university leadership approval to carry out the study. The university email system was used to approach faculty members and students inviting them to complete the web-based questionnaire (active for one month). Distribution of the instrument was facilitated through cooperation with IAU's colleges, deanships and centers. Voluntary survey completion, constituted informed consent and anonymity was assured as no identifying characteristics were required. Both descriptive (means, percentages, frequencies, standard deviation [SD], weighted ratios) and inferential (*t*-test) statistics were calculated using the Statistical Package for Social Sciences version 25 (SPSS).

4. RESULTS

4.1. Scholastic Profile

This study was conducted during the COVID-19 lockdown, mandatory online learning and the distracting stress and time pressures on faculty and students. The final sample frame consisted of 679 faculty members (22.2% response rate) and 1,129 students (3.5% response rate). Response rates were lower than preferred for student respondents, normally ranging from 20–40% for web-based surveys (Van Bennekom, 2002) but they were deemed sufficient given the pandemic context and considering the pressing need to establish inaugural graduate attributes per the university's strategic plan (Imam Abdulrahman Bin Faisal University, 2019-2020) and NCAAA accreditation criteria (Education and Training Evaluation Commission, 2020).

According to Table 1, 68% of study respondents were female, a statistic that corresponds with IAU's 75% female population. Most faculty member respondents (61%) were also female. Faculty members were based mainly in science (39%) or the arts and humanities (36%). Nearly three-quarters (72%) were either assistant professors (43%) or lecturers (29%). Very few (21%) faculty members held senior academic ranks. About half (53%, n = 366) of the faculty members also carried out administrative work. The rest (47%, n = 331) were faculty instructors. The student sample frame was also comprised of mainly females (73%). Students tended to be undergraduates enrolled in bachelor's degree programs (88%). Like faculty members, students were based mainly in the sciences (49%) or the arts and humanities (27%).

Table 1. Sample frame profile.

Variables	Categories	Number/Repetition	Percent
Faculty members			
Gender Total 697	Male	275	39%
	Female	422	61%
Academic rank Total 697	Professor	47	7%
	Associate professor	99	14%
	Assistant professor	296	42%
	Lecturer	202	29%
	Demonstrator or others	53	8%
Faculty type Total 697	Medical	101	15%
	Engineering	68	10%
	Scientific	275	39%
	Humanitarian	253	36%
Leadership position The total of those charged with administrative work is only 366 and the rest are teachers and their number is 331.	Vice-chancellor	1	0%
	Dean	10	3%
	College head	22	6%
	Department head	31	8%
	Unit manager	76	21%
	Other administrative work	226	62%
Students			
Gender Total 1129	Male	307	27%
	Female	822	73%
Type of degree Total 1129	PHD	2	.2%
	Masters	25	2.2%
	Bachelor	982	87%
	Diploma after bachelor's degree	1	.1%
	Diploma	90	8%
	Other or undefined	29	2.5%
Faculty type Total 1129	Medical	229	20%
	Engineering	49	4%
	Scientific	547	49%
	Humanities	300	27%
	Other or undefined	4	
Total faculty and students		1826	100%

4.2. GA Framework Development Process

The first stage of the GA framework development process was administering the web-based survey created after the project team consulted the literature and the aforementioned related initiatives and analyzed the information gathered.

According to Figure 1, the university community involved in this initiative comprised the GA developers (40%, people at the deanship of education development responsible for this initiative), students (35%) and faculty members (25%). The study herein reported data relevant to IAU faculty members and students who completed the survey.

For this stage of reporting results, the 23 original characteristics are called sub-attributes of the overall graduate attribute construct. Figure 1 profiles these sub-attributes with agreement on their suitability ranging from 79.3% to 93.2% for individual items. Results indicate that the majority (87%) of those consulted (i.e., the university community) agreed with the 23 attributes initially proposed for university graduates. Two sub-attributes were clearly ranked highest (a commitment to a work ethic and a commitment to Islamic identity and values) and two were clearly ranked lowest although still quite high (entrepreneurship and emotional intelligence). Other highly ranked sub-attributes included the attainment of communication skills, knowledge and teamwork skills. Lower-ranked sub-attributes (albeit >79.3% agreement) included numeracy, research skills and initiative.

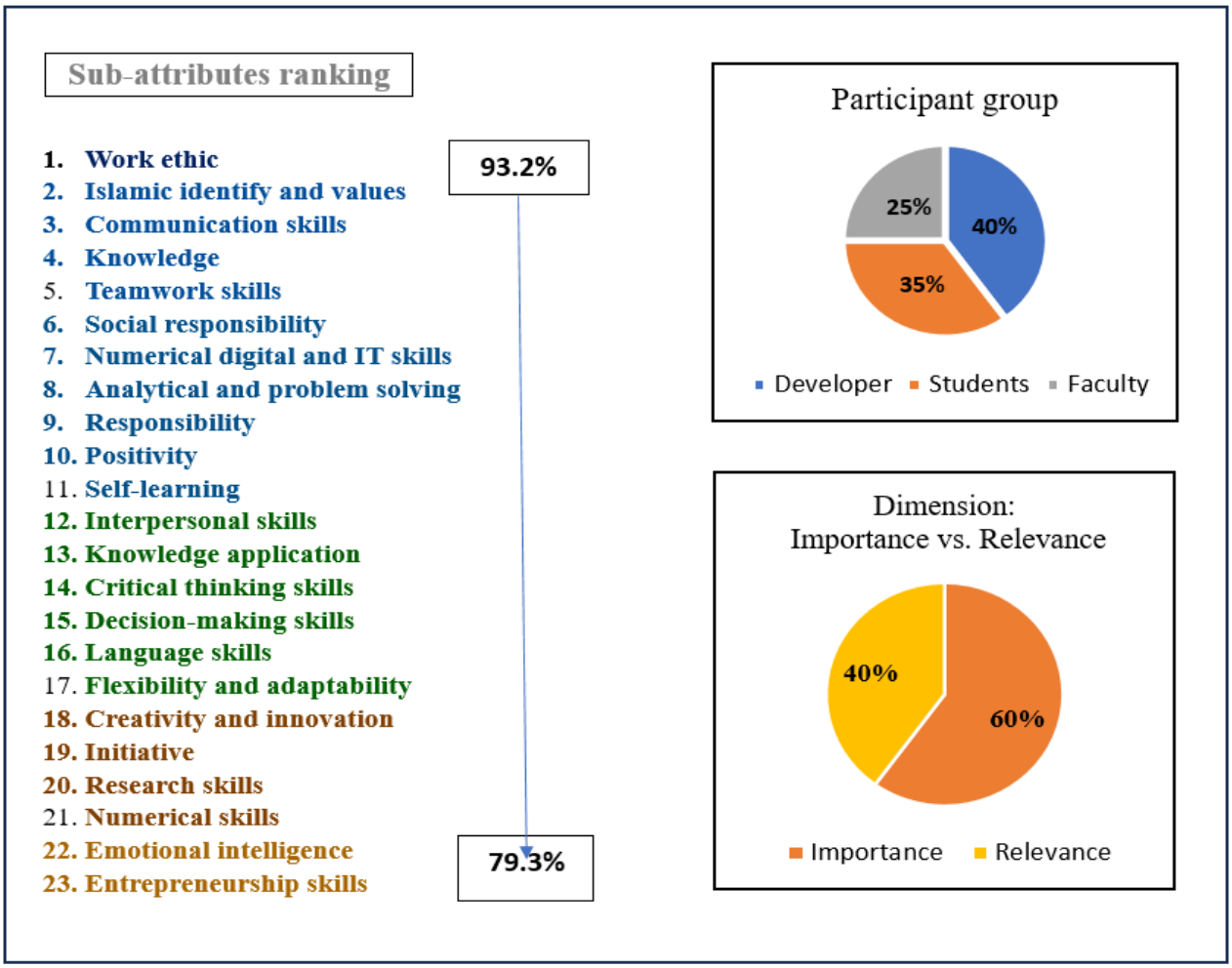

Figure 1. Original 23 graduate sub-attributes.
Source: Imam Abdulrahman Bin Faisal University (2019-2020) and Imam Abdulrahman Bin Faisal University (2021).

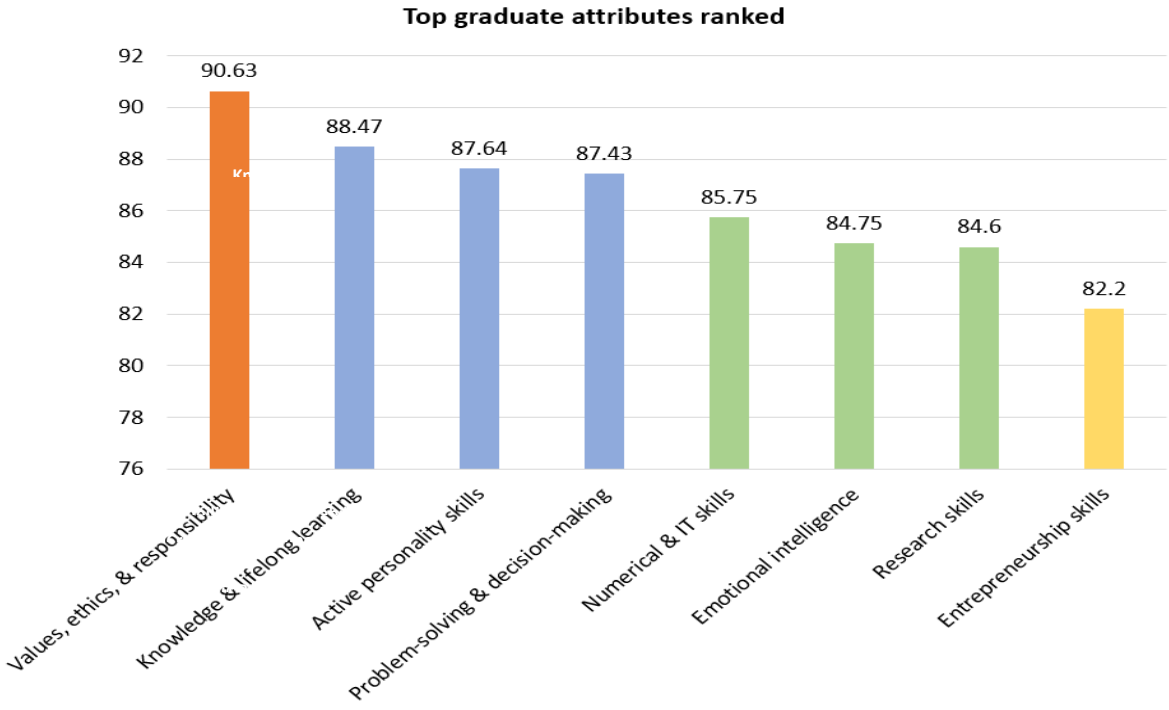

Figure 2. Top eight graduate attributes
Source: Imam Abdulrahman Bin Faisal University (2019-2020) and Imam Abdulrahman Bin Faisal University (2021).

The university community agreed that 40% of the GAs were relevant and 60% were important. For clarification, relevant means directly related to the topic of GAs and important means the specific GA will likely have a profound effect (Anderson, 2014) on graduates' gaining and keeping employment. Given this distinction, it is conceivable that some traits were deemed relevant but ultimately not important enough to include. Indeed, the second step involved several experts in the deanship of educational development addressing stakeholders' opinions on the sub-attributes leading to a roster of eight attributes (see Figure 2) from the original 23 sub-attributes (see Figure 1) listed in descending order of importance and relevance.

The third step involved the GA project team further refining the eight attributes to a more manageable five attributes. Instead of averaging the means for the graduate sub-attributes, a weighted ratio (aggregate) statistic was calculated (see Figure 2) to determine the final set of graduate attributes set out in Figure 3. This approach was used because there were different weights for respondent types (e.g., faculty members and students).

In the final stage, IAU's University Council ultimately approved five GA (comprising 16 secondary attributes) for graduates (see Figure 3) and their implementation in academic programs (Imam Abdulrahman Bin Faisal University, 2019-2020):

1. Commitment to values, ethics and responsibility: Commitment to work ethics, commitment to Islamic identity and values, social responsibility (citizenship and community service), responsibility and accountability.
2. Knowledge application and lifelong learning: Knowledge and extensive knowledge in the field of specialization, self-learning and continuous learning and the practice of knowledge and field skills.
3. Active personality skills: Effective communication skills (verbal, written and using technology), teamwork and leadership skills, advanced interpersonal skills and initiative.
4. The ability to solve problems and make decisions: Analysis and problem-solving skills, critical-thinking skills and decision-making.
5. The ability to use information technology: Digital and information technology skills and numerical skills (Imam Abdulrahman Bin Faisal University, 2021).
6.

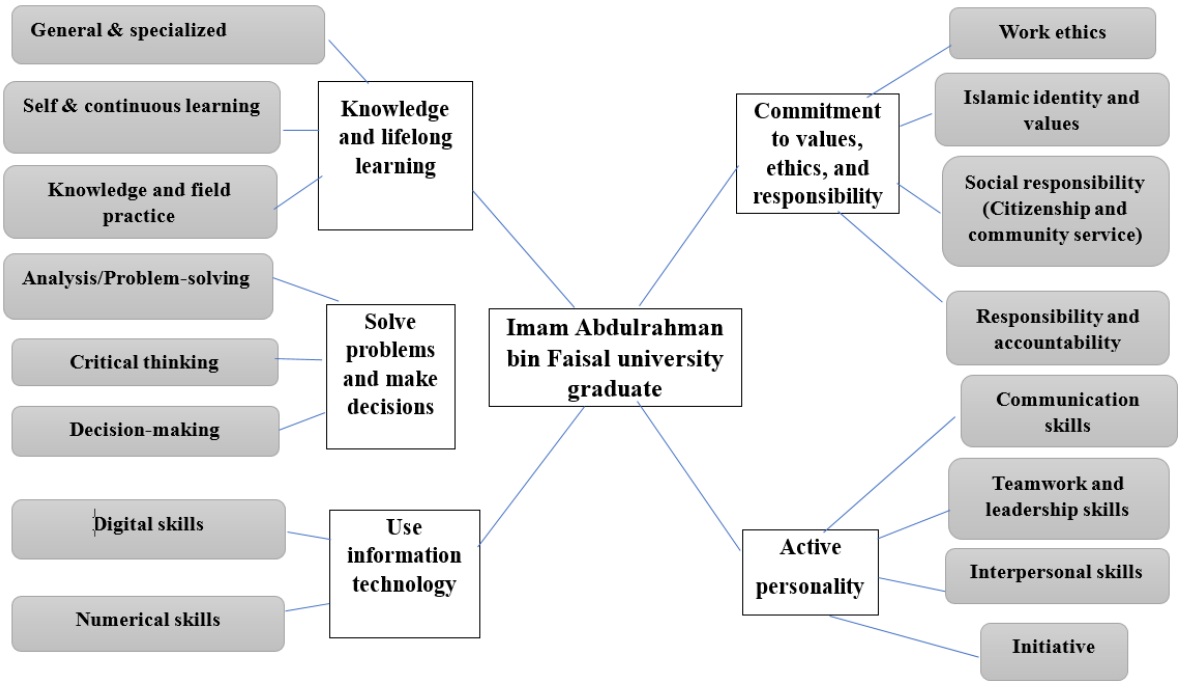

Figure 3. Final five graduates attribute comprising16 secondary attributes.
Source: Imam Abdulrahman Bin Faisal University (2019-2020) and Imam Abdulrahman Bin Faisal University (2021).

5. DISCUSSION AND IMPLICATIONS

This study eventually culminated in both the development of a GA framework for IAU and the university's commitment to integrate these attributes into the curricula of academic programs (Imam Abdulrahman Bin Faisal University, 2019-2020). The process involved in bringing this initiative to fruition (reported herein with empirical support) merited a critical analysis for lessons learnt and revealed several implications. After all, universities are encouraged to continually assess their approach to GAs (Chamorro & Frankiewicz, 2019; Education and Training Evaluation Commission, 2020; Sarker et al., 2010).

As a caveat, the implementation of GAs after they have been established by a university is often difficult because faculty members and staff tend to struggle with translating these into their own context or specific discipline (Hughes & Barrie, 2010; Nassef, 2016). Wong et al. (2022) recommended that universities should facilitate institutional and discipline-specific conversations where differences of opinion about what constitutes a GA and how to teach one can be discussed and contextualized. Hill et al. (2016) recognized the important role faculty members play in making GAs a reality in their courses and degree programs (see also (Barrie, 2005; Green et al., 2009; Nassef, 2016)). The high level of consultation within this IAU initiative may well mitigate many implementation challenges (Osmani et al., 2017).

5.1. Missing from the Original 23 GAs

The survey instrument developed by the GA project team contained 23 proposed graduate sub-attributes as shown in Figure 1. The final set of GAs approved by and for IAU (see Figures 2 and 3) differs significantly from the original 23. Sixteen sub-attributes were retained and their inclusion in the roster of GAs is supported by the literature (Scott et al., 2019; Swingler et al., 2016; Wong et al., 2022). There was a high level of agreement on graduates' commitment to an Islamic identity and values which is relevant to the global literature (Nagarajan & Edwards, 2014) as well as different to the region. This is an imperative in vision 2030 (Kingdom of Saudi Arabia, 2016) which underpinned the GA initiative (Imam Abdulrahman Bin Faisal University, 2019-2020).

Seven sub-attributes from the original 23 GAs were left behind: emotional intelligence, positivity, flexibility and adaptability, creativity and innovation, language skills, scientific research skills and entrepreneurship. These represent a combination of personal attributes (soft skills, n=3) and hard skills (n=4) with several warranting further discussions given their potential to impact the achievement of vision 2030 a goal that strongly influenced this initiative (Imam Abdulrahman Bin Faisal University, 2019-2020). Vision 2030's attainment will greatly shape KSA's future labor market and IAU graduates' employment experiences.

5.2. Absence of Creativity and Innovation

KSA is transitioning from an oil-based to a knowledge-based economy (Kingdom of Saudi Arabia, 2016). The intellectual acumen required for the latter includes creativity and innovation. Creativity involves using one's imagination to form original ideas especially in the production of work. Innovation is crucial to the continuing success of any economy and entails the practical application of new ideas, processes or methods that result in new goods and services or the improvement of the offering of existing goods and services (Merriam-Webster Dictionary, 2022). Creativity and innovation are core benchmarks of a knowledge-based economy (Gorji & Alipourian, 2011). Perhaps IAU could amend the list of secondary attributes for the knowledge core attribute (see Figure 3) by adding creativity and innovation. After all, in a knowledge-based economy "often knowledge is taken together with innovation" (Gorji & Alipourian, 2011).

5.3. Absence of Language Skills

Imam Abdulrahman Bin Faisal University (2021) said the graduate attribute project was grounded in vision 2030 which entails "upholding the Arabic language" (Kingdom of Saudi Arabia, 2016). Yet there is also a strong

movement within KSA to ensure citizens are fluent in English as a Foreign Language (EFL) so that vision *2030* can be achieved (Alharbi, 2019; Alzhrani & Alkubaidi, 2020) . One may wonder why this GA was not included in the five basic qualities or made a secondary feature given that language skills include both Arabic and English. It was part of the original 23 (see Figure 1) but was not deemed important enough for IAU graduates. Perhaps the university community presumed its EFL programs were sufficiently designed to ensure students would graduate with sufficient language skills. This assumption could be the foundation of future research.

5.4. Absence of Scientific Research Skills

It is often suggested that university graduates should enter the labor market with research, scholarship and inquiry skills (Hounsell, 2011; Scott et al., 2019; Swingler et al., 2016). Vision 2030 appreciated that research and development were crucial for its achievement (Kingdom of Saudi Arabia, 2016). Imam Abdulrahman Bin Faisal University (2021) said the GA project was grounded in vision 2030. Yet, this important attribute is not included in the final set of five core GAs approved by IAU's University Council (see Figure 3). Like language skills, research skills were in the original 23 (see Figure 1) but did not make the final cut. As an implication of importance, IAU is encouraged to monitor whether research skills should be added to the five core attributes, perhaps under knowledge application and lifelong learning. After all, research is about creating new knowledge through systematic investigation to establish new facts and conclusions (Anderson, 2014).

5.5. Absence of Entrepreneurship

Imam Abdulrahman Bin Faisal University (2019-2020) affirmed that the GA initiative was in line with vision 2030. A key aspect of the national development plan is entrepreneurship. Vision 2030 envisioned a thriving economy that "created economic opportunities for the entrepreneur, the small enterprise" (Kingdom of Saudi Arabia, 2016). The architects of vision 2030 acknowledged that, although "small and medium-sized enterprises (SMEs) are among the most important agents of economic growth, they are not yet major contributors to our GDP" (Kingdom of Saudi Arabia, 2016). The government established the Small and Medium Enterprises General Authority (SME) (2024) to bolster SMEs and entrepreneurship.

Achieving entrepreneurial skills was the lowest-rated graduate sub-attribute (see Figure 1), and it was not part of the final five (see Figure 3) despite an 82% agreement of its relevance. Scott et al. (2019) and Swingler et al. (2016) both recognized employment and entrepreneurial skills as relevant graduate attributes. Middle Eastern graduates tend to exhibit relatively weak abilities to demonstrate the skills required to land a job in today's labor market (Osmani et al., 2017). Higher education institutions in rapidly developing nations (such as KSA) must guarantee that their graduates have achieved skill sets that help them secure employment (Buzdar et al., 2018). IAU is strongly encouraged to monitor whether the omission of entrepreneurship skills is detrimental to IAU graduates and Saudi's labor market. Alghamdi, McGregor, and El-Hassan (2021) recently reported that IAU's male students (49%) placed a high value on learning entrepreneurship skills to make a living.

5.6. Present in Literature but Not in Final Framework

Present in the literature but absent from the IAU final set of GAs were reflective thinking and management and leadership skills. The former is recognized as relevant but seldom recommended as important (Oliver & Jorre de St Jorre, 2018). But the latter's absence is telling because the success of vision 2030 depends on strong managers (day-to-day decisions to stay on mission) and leaders (visionaries and forward thinkers) referred to as "best management practices" (Kingdom of Saudi Arabia, 2016). Thus, future initiatives to update IAU's GA framework (Education and Training Evaluation Commission, 2020) should re-examine the importance of explicitly teaching students' management and leadership skills.

Present in the literature but thin in the IAU's final set of GAs were personal attributes. Of the possible personal attributes identified in the literature review (N=9), the original 23 GAs included only four such attributes: work ethic, emotional intelligence, flexibility and adaptability and positivity (Hounsell, 2011; Nagarajan & Edwards, 2014; Normand & Anderson, 2017). However, the final framework did not include an overarching GA called personal attributes and only one aspect of personal attributes was in IAU's GA framework, work ethics was included in the core GA commitment to values, ethics and responsibility (see Figure 3).

Many valuable traits related to personal self-awareness, self-confidence, self-management, autonomy, flexibility, and adaptability were absent from the IAU GA framework (as recommended by Hounsell (2011), Nagarajan and Edwards (2014), Normand and Anderson (2017), Oliver and Jorre de St Jorre (2018) and Osmani et al. (2017). Autonomy enables graduates to survive and thrive in an ever-changing labor market. The absence of this attribute is noteworthy but perhaps the GA project team assumed students would gain these attributes simultaneously with their commitment to a strong Islamic identity and values. Future efforts to review and revise IAU's GA framework (Education and Training Evaluation Commission, 2020) should again remain cognizant of this assumption and determine if personal attributes should be a more explicit GA.

6. RECOMMENDATIONS FOR SECONDARY ANALYSIS

Analysis of the results revealed several research strands recommended for secondary analysis. Secondary analysis involves the use of existing data, collected for the purposes of a prior study to pursue a research interest that is distinct from that of the original work. The approach may either be employed by researchers to re-use their data or by independent analysts using previously established data sets (Heaton, 2008). The following suggestions are lines of inquiry that could be pursued to inform future efforts to update and evergreen IAU's graduate attribute framework.

6.1. Distinguish Relevant from Important Graduate Attributes

In the future, efforts should be undertaken to clarify how the architects of a GA framework are operationalizing the variables of relevant and important (Williams, Onsman, & Brown, 2012). To reiterate, *relevant* means directly related to the topic of GAs and *important* means a specific GA will likely have a profound effect on graduates' gaining and keeping employment. Given what the terms truly mean, it would make sense for said architects to solicit the literature and related sources for a roster of attributes that are *relevant* to the topic of graduate attributes (see Figure 1) and leave the final judgment of importance to the university community. This does not seem to be the case in this initiative with Figures 1 and 2 both reporting statistics for relevance and importance from the initial survey.

In more detail, the university community agreed that 40% of the GAs were relevant and 60% were important (see Figure 1). A meaningful secondary analysis would involve discerning what attributes were both relevant and important or which were initially judged to be relevant but were later deemed not important enough to be included in the inaugural GA framework. For example, according to Figure 1, entrepreneurship was rated the lowest GA but it still had a relatively high level of agreement (79.3%). It was eliminated from the final roster (see Figure 3) because it was deemed relevant to GAs in general but not important to IAU's students' gaining employment. This presumption makes sense as entrepreneurship is about being self-employed instead of gaining a job with an employer. Secondary analysis would provide deeper insights into the reasoning behind the final roster of graduate attributes.

6.2. Influence of Education Level and Academic Rank

Overall, the sample frame comprised mainly young, female undergraduate students and junior-level, female university educators (also in administrative roles) (see Table 1). This composition is not an issue because it

represents the IAU population of 75% women (Quacquarelli Symonds (QS), 2021). But what might be an issue is whether their opinions differed from those of graduate level and senior academic rank respondents (associate and full professor). The final GA framework is heavily based on the opinions of undergrads and junior professors. Would the final set of five GAs (see Figure 3) be different if based more on graduate-level students and senior faculty? The undergraduate students had not entered the job market while graduate students were likely previously or currently employed. The latter would have real-world perspectives to inform their opinions about what attributes are needed when entering the labor market. How might level of career and academic experience shape opinions on this issue? A secondary analysis could tease out if education level and academic rank impact perceptions of relevant and important graduate attributes.

6.3. Gendered Perceptions of Graduate Attributes

Another secondary consideration is whether men's thoughts on GAs were different than women's perceptions. Regarding gender and graduate attributes, "despite the depth of research on graduate employability, evidence on disciplinary and gender differences is limited" (O'Leary, 2021). This possibility suggests that secondary analysis about IAU's GA framework should factor in gendered differences to better ensure that any roster of GAs approved for implementation reflects a balance of male and female students and faculty members' opinions about what is required to successfully enter the labor market and advance one's career.

6.4. Disciplines' Perceptions of Graduate Attributes

According to O'Leary (2021) it is well known that significant gender imbalances exist within most disciplines (i.e., some fields are male-dominated and others are female-dominated, both the students and faculty). He suggested that what appears as a gendered issue may be disciplinary instead. To support this assertion, he reported that whether responses were from males or females, male-dominated disciplines had different perceptions of GA than female-dominated disciplines.

O'Leary (2021) further intimated that STEM-related career paths (Science, Technology, Engineering and Mathematics) were more visible making it easier to determine relevant and important graduate attributes to enter the labor market. Social sciences, arts and humanity career paths were less visible (O'Leary, 2021) , a fact that might complicate the development of graduate attributes across the board. The dominant voice in this data set was from the science disciplines, less so the humanities and hardly at all from engineering and medicine (see Table 1). Does Figure 3 reflect mainly the science disciplines or is it relevant across the board? Secondary analysis of the IAU data as well as future research in KSA and elsewhere in the Middle East should explore the role that disciplines and different fields play in determining what constitute relevant and important graduate attributes and factor in whether the campus is female or male dominant. The respondents in our study were mainly female (67%) (regardless of discipline) and not male according to O'Leary's (2021) research.

7. LIMITATIONS

Although an inaugural study, the main limitation is that the research was conducted at one university in Saudi Arabia. In future research studies, it is recommended to include several universities across the kingdom or region to facilitate more generalizable results that form a consensus of graduate attributes. A second limitation is the response rate and diversity of possible participants. Although the large number of responses provided clear results, a higher survey response rate based on the overall population (including a more balanced gender and discipline distribution) would offer further confirmation of the research conclusions. Finally, a possible limitation is the lack of qualitative data which could enrich the quantitative results. Adding qualitative methodologies such as open-ended questions and semi-structured focus groups could provide supplementary data that would explain and offer a narrative for stakeholders' perceptions of GA importance and relevance.

8. CONCLUSION

An increasingly important aspect of university preparation for the workforce is the attention to graduate attributes (Nagarajan & Edwards, 2014). Higher education should take immediate steps to enhance student employability (Sarker et al., 2010). Respecting this Saudi imperative (Muammar & Deraney, 2019), this study reported the successful efforts of Imam Abdulrahman bin Faisal University's (IAU) recent initiative to generate and approve for implementation a set of graduate attributes. Their efforts resulted in five cores and 16 secondary GA. Extensive university community (stakeholder) consultations should minimize future implementation challenges.

Several GA were absent from the final roster and their absence is noteworthy, creativity and innovation, language skills, research skills, entrepreneurship, management and leadership and personal attributes. Any future efforts to review IAU's GA framework should remain cognizant of this situation and be open to future amendments that better ensure IAU graduates can successfully gain employment and thrive in their careers. Suggestions for secondary analyses should be undertaken to provide more meaningful insights into the IAU's GA framework and its relevance to Saudi Arabia's higher education sector in general. Results herein can contribute to the growing interest in creating graduate attribute frameworks for Saudi universities whose graduates are tomorrow's workforce.

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Transparency: The authors state that the manuscript is honest, truthful, and transparent, that no key aspects of the investigation have been omitted, and that any differences from the study as planned have been clarified. This study followed all writing ethics.
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