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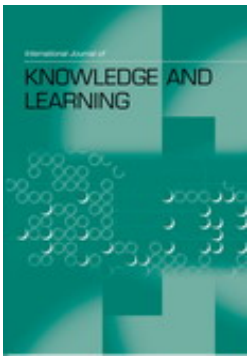

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Imparting entrepreneurial skills among undergraduates in unstable environments: evidence from Iraq, Syria and Yemen

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Imparting entrepreneurial skills among undergraduates in unstable environments: evidence from Iraq, Syria and Yemen

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Abstract: Entrepreneurship skills are the most sought-after skills in the 21st century. This study attempts to explore the extent of imparting entrepreneurial skills among undergraduate students in unstable environments. Three countries are chosen for the study (432 from Iraq, 459 from Syria, and 528 from Yemen), as these economies have witnessed political and economic instability during the last decade. The study followed a case study methodology, using a descriptive approach. The study adopts descriptive statistics, factor analysis and variance analysis for reporting the results. The findings indicate a low to moderate level of entrepreneurial skills being imparted among undergraduates; and demographic characteristics are found to be more influential among Yemeni undergraduates and less influential among Syrian undergraduates. The reliability of the instrument is established in the Iraqi and Yemeni context and not in the Syrian context. However, model fit is established in the Syrian context but not in the case of others. The study recommends efforts being vey essential to change and upgrade entrepreneurship education. The study argues that the role of universities in imparting entrepreneurial skills can redress the gap of the strategies in the educational policies in the three economies.

Keywords: entrepreneurial skills; managerial skills; technical skills; undergraduate; unstable environment; Iraq; Syria; Yemen.

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1 Introduction

Transforming traditional research and teaching universities into entrepreneurial universities is part of the second academic revolution (Etzkowitz, 2004). Normally, educational institutions and universities work towards preparing students to be good employees as their only career choice. However, due to the existence of knowledge as the driving force underlying the performance and growth of economies, the significant economic role of universities started emerging and evolving, not by traditional functioning, rather by functioning entrepreneurially and offering solutions to societal problems and challenges through research and innovation, adopting better methods and programs that go beyond the business context to inculcate students with all such essential skills and knowledge to assist them in coping with the complex, competitive and uncertain business environment (Gibb, 2002; Rideout and Gray, 2013; Audretsch, 2014; Kirby, 2006).

Universities have embraced the third mission in the 21st century which is the contribution to the development in the economies, be it economic, social or cultural development (Colombelli et al., 2021). Entrepreneurship education keeps evolving and developing to become a significant objective in academic research (Duval-Couetil et al., 2021); as entrepreneurship education and preparing future entrepreneurs is one of the key contributions of universities towards economic development.

Due to the importance of entrepreneurship to the future economic growth, governments pay attention to improving the role of entrepreneurship education and envision as to how it could make a difference to entrepreneurship and improve its impact on economic growth and development (Williamson et al., 2013; Elahi, 2012; Bakar et al., 2015). When entrepreneurship education is assured to be about encouraging students to start their own business, it becomes narrowly defined just to encourage starting a new business, on the other hand, when its objective becomes to develop students with more creative, innovative, proactive and opportunity oriented, it adheres to a wide definition of entrepreneurship (Lackéus, 2015).

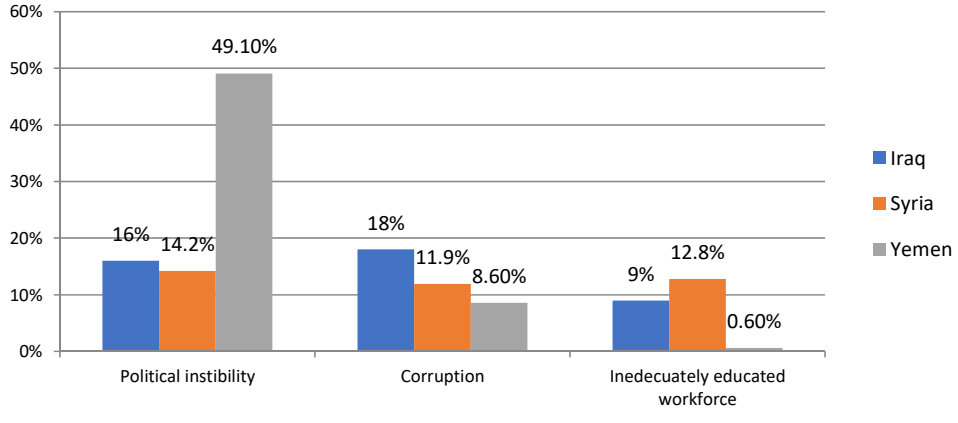
Alpaydın and Kültür (2022) argue that human capital development and qualified education are important to maintain an educational policy, intellectual accumulation being one of its most aspects that aims to harmonise the output of educational institutions

and the needs of the job market. As the qualities of human qualities are the reference point for any type of growth and development. This is translated as the efforts that should be made to ensure the integration of innovation and entrepreneurship education. Wu (2021) argue that integrating innovation and entrepreneurship education include integrating educational concepts, talent training goals, professional knowledge and innovation, entrepreneurial knowledge, teaching teams and the practice platforms.

The question that remains unanswered is how to make students more creative and entrepreneurial. Less literature is dedicated towards investigating the role of entrepreneurial education in unstable environments where tremendous challenges are faced by education systems that impact the outcome of higher educational institutions and, in turn, impacts the harmonisation between the outcome of educational institutions and the needs of the private sector and the corporate world. Hence, the main aim of this study is to assess the role of educational institutions in imparting entrepreneurial skills among the youth in unstable environments taking Iraq, Syria and Yemen as cases for the study.

Even though the entrepreneurial growth had been witnessed in three states prior to the Arab spring events with respect to the number of small businesses in different fields of the business sectors (Harmalani, 2020; Saleh and Manjunath, 2021a), it does not mean that previously the unemployment and corruption were under control. Research indicates that these states were unable to meet the needs of employment and economic development before the Arab Spring events in 2011 (Forouharfar, 2020; Jabbar and Tuama, 2019; Al-Amar, 2010). Further, after a decade of instability, a sweeping change in trajectory is required to avoid another lost decade (Belhaj, 2021) and be able to survive in an unstable- business environment where a lot of obstacles are faced (Figure 1).

Figure 1 Major obstacles facing the SMEs sector (see online version for colours)



Source: Saleh and Manjunath (2021a)

Therefore, focusing on imparting and developing business and entrepreneurial skills among students and add value to direct the career of young generation towards inclusive development and growth in the business sector (Saleh and Manjunath, 2020; Saleh et al., 2021; Hussien, 2020; Alqubi and Koin, 2017; Ibrahim, 2022).

2 Literature review

This section provides an overview of the previous research related to entrepreneurship education and entrepreneurial skills.

2.1 Entrepreneurship education

Studying entrepreneurial content through formal education seems to be effective when it comes to possessing the knowledge and performing basic entrepreneurial activities (Iweh et al., 2021), as it has the potential to impact how students behave in their future careers (Akpoviroro et al., 2021). Entrepreneurship education significantly influences entrepreneurial intention directly and indirectly through the mediating role of perceived behavioural control, subjective norms and attitude towards behaviour (Mahlaole and Malebana, 2021). Research indicates that the abilities of students to solve problems and communication skills are significantly influenced by the exposure to entrepreneurship education (Muñoz et al., 2020). Hence, effective student engagement would create better entrepreneurial intention (Bhatt, 2021). Further, the effective implementation of entrepreneurship education in training institutions leads to development of the abilities and skills among students (Magaji, 2019).

Business students can significantly benefit from being exposed to entrepreneurship education (Ramchander, 2021). However, entrepreneurship education is an effective tool to develop entrepreneurial activities among the youth and direct them towards establishing their start-ups (Moghtadaie and Jamshidian, 2021). Henry (2020) indicated that more focus forwards entrepreneurship education and popularising the same would put more pressure on educators. Therefore, designing and redesigning unique curricula can have a significant impact in development of entrepreneurial skills among students (Chaney et al., 2021).

For better entrepreneurial outputs, educators and policymakers should consider technical knowledge and innovation as a priority in order to enhance nascent entrepreneurs' performance (Odewale et al., 2019). In entrepreneurship education, teachers/educators are expected to be facilitators rather than mere traditional givers, and the content can be delivered in many aspects not just through classroom education, as, non-classroom education can also contribute significantly to the development of entrepreneurial skills (Koe et al., 2018).

2.2 Entrepreneurship skills

Entrepreneurial skills are now the most sought after skills in contemporary the learning process (Kyari, 2020). Smith et al. (2007) categorised entrepreneurial skills into technical, managerial, personal and enterprise organisation skills. Skills related to accountability, management, operational skills, financial skills, creativity, environmental scanning are critical to individuals desiring to pursue entrepreneurial activities (Smith et al., 2007).

According to Haboosh (2017), the most common skills were the personal skills, then the technical skills and then managerial skills. Holienka and Gál (2015) argue that the major in college plays a significant role in developing the tendency towards entrepreneurship. According to Zahra et al. (2014), skills related to enterprise launch, management, decision-making are the most influential while negotiating skills are the

least influential. The acquisition of entrepreneurial skills is crucial for self-employment among students (Enimola et al., 2019). Chang and Rieple (2013) stated that the weakness in entrepreneurial skills among students can be compensated by interacting with real entrepreneurs to rev up such skills.

2.3 The role of entrepreneurial skills

Al Mamun et al. (2019) reported that entrepreneurial skills positively influence entrepreneurial competencies and performance among SMEs. Indriarti et al. (2020) indicates that entrepreneurial skills and innovation have significant impact on business success. Asieba and Nmadu (2018) states that the entrepreneurial skills set has a significant impact on business performance along with money and leadership skills. Hosseini et al. (2020) conclude that improving entrepreneurial skills improves the competitive job performance.

Badawi et al. (2019) present evidence that risk-taking, critical thinking, problem solving and innovation, are crucial skills for the success and employment among students. Similarly, Reyad et al. (2019) indicate that entrepreneurial skills may differ among students in different countries Egyptian students, for instance, incline toward cognition, whereas Bahraini students head toward intentions.

2.4 Entrepreneurial universities

The concept of entrepreneurial universities is identified as the evolution of the university role by adding a third mission which is to contribute to the economic development, in addition to education and research as the main role of universities (Feola et al., 2021). The changing standards of life with the change of technology puts pressure on universities to manage the era of digital trends and remain competitive in providing compatible outcome to the industrial field (Guerrero and Urbano, 2021).

Entrepreneurial universities act as facilitators to entrepreneurship development which leads to the identification of opportunity and creativity in universities (Tajpour, 2021). Cai and Ahmad (2021) argued that universities need to transform from just entrepreneurial universities to being sustainable entrepreneurial universities, and identified three major roles for such universities, being an anchor organisation for knowledge exchange, building trust among collaborators in innovation ecosystems, and shaping a better future society.

Passaro et al. (2021) indicated that there is a crucial role played by entrepreneurial universities in the local development through shaping entrepreneurship-related human capital by applying their university business plan competitions to provide contributary entrepreneurship education. The role of universities has evolved and changed due to the forces that contribute to shaping the performance and economic growth (Audretsch, 2014), as universities act as knowledge-producers as well as disseminating institutions (Guerrero and Urbano, 2012).

2.5 Entrepreneurial societies

An entrepreneurial society is a society where knowledge-based entrepreneurship emerged and became a driving force for economic growth and development, competitiveness exists in the market, and employment creation keeps progressing, especially, where

policy and institutions focus on facilitating entrepreneurial activities (Audretsch, 2009a, 2009b, 2013).

It is evident that entrepreneurship education can significantly contribute towards the creation and development of entrepreneurial society. Kuckertz (2021) recommended that there are two techniques, if integrated, can lead to achieving entrepreneurial success:

a the focus on entrepreneurship as the third mission of higher education institutions

b the continuous focus on the character growth of individuals.

With respect to the students, an entrepreneurial society can develop due to the need for acquiring 21st century skills and being work-ready graduates, as being exposed to experiential learning can lead to embarking on the development of such skills through applying robust innovation and entrepreneurship curricula and entrepreneurial education systems (Ghafar, 2020).

3 Methodology

This study is exploratory in nature. It adopts the case study methodologies, which indicates that the generalisation of its results is limited to the similarity in characteristics of the environments where the study is taking place. The study aims to gain an insight into the level of imparting entrepreneurial skills among the undergraduate students by universities in unstable environments taking Iraq, Syria and Yemen as they have witnessed (and still witness) political instability in the recent past. The study relies on first hand data collected from a sample of 1,419 students in the three countries (432 from Iraq, 459 from Syria, and 528 from Yemen) who were sampled through simple random sampling techniques. Table 1 presents the demographic characteristics of the study sample from three countries:

Table 1 Demographic characteristics of respondents

Variable	*Category*	*Iraq (N = 432)*	*Syria (N = 459)*	*Yemen (N = 528)*	*Total (N = 1,419)*
Gender	Male	251	239	310	800
	Female	181	220	218	619
University	Public university	416	235	448	1,099
	Private university	12	75	72	159
	Community college	0	149	6	155
	National institute	0	0	2	2
	Technical institute	4	0	0	4
Specialisation	Science and medical college	115	139	130	384
	Economic, commerce and management	49	97	54	200
	Education, arts, law and politics	177	19	226	422
	Engineering	91	204	118	413

Source: Primary data

4 Measurement

The available literature has been consulted to establish the set of skills suitable for investigation with respect to undergraduate students from developing countries. More than ten resources have been reviewed with a special focus on the literature relevant to developing countries more particularly in the Arab Region (Smith et al., 2007; Assakarnah, 2008; Haboosh, 2017; Samtan, 2016; He et al., 2008; Balloshi and Alajmeiah, 2015; Alkahtani, 2015; Murad, 2010; Phelan and Sharpley, 2012; Fitriati and Hermiati, 2011; Chang and Rieple, 2013). According to such review, a list was established that consists of three categories of entrepreneurial skills, the first category is technical skills which include communication skills, networking skills, problem solving skills, and using technology skills; the second category is managerial skills which include planning and thinking skills, decision making skills, negotiating skills, marketing skills; and the third category is personal skills which include leadership skills, creativity and innovation skills, initiative and determination skills (see Appendix 1). Respondents are asked to state their opinion on each skills in relevance to imparting such skills during university studies through using a five-point Likert scale.

5 Results and discussion

The descriptive analysis shows that there is no much difference in the mean scores with respect to the communication skills among respondents in the three different samples, however, the highest mean score is observed among Iraqi respondents (mean = 3.90, SD = 0.78), while the least score belongs to the Yemeni respondents (mean = 3.63, SD = 0.84), this indicates that communication skills are observed more among Iraqi undergraduates even though the difference between both scores is not remarkably high. It is observed that the highest skill imparted among Iraqi as well as Yemeni undergraduates is the debating and dialogue skills and having communicating skills among Syrian undergraduates. As for the least imparted skills, it is found that the skill of expressing an opinion with respecting others is the least imparted skill among undergraduates in the three samples.

As for networking skills, Syrian undergraduates showed the higher mean score (mean = 3.51, SD = 0.75) while the lower score belongs to Yemeni undergraduates (mean = 3.24, SD = 0.91), which indicates imparting of networking skills is lower among Yemeni undergraduates compared with the other samples. Building good relationships with peers is the most imparted skill among the three sample, while accessing virtual jobs through training in colleges is the least imparted among Iraqi as well as Yemeni undergraduates and gathering information about relevant organisations is the least skill among Syrian undergraduates.

The results show that the higher mean score of problem solving is observed among Iraqi undergraduates (mean = 3.85, SD = 0.72), however the other samples did not differ from it, as it is almost similar among Syrian respondents (mean = 3.73, SD = 0.54) and Yemeni respondents (mean = 3.66, SD = 0.92), while exploring related topic to the problem is that the least skill among Iraqi as well as Yemeni undergraduates while exploring the positive and negative sides of suggested solutions is slightly more imparted among Syrian undergraduates.

In a similar way, very little variance is observed in the mean scores among the three samples in respect to imparting technical skills, however, the higher mean score in respect to technical skills is observed among Iraqi undergraduates (mean = 3.58, SD = 0.93). while the lower score is observed among Yemeni undergraduates (mean = 3.66, SD = 0.92). The skill of using computer systems in executing tasks is more imported among Iraqi and Yemeni undergraduates, while the ability and flexibility to use technology is more imported among Syrian undergraduates.

Responses from Iraqi undergraduates show higher mean scores with respect to planning and scientific thinking (mean = 3.73, SD = 0.80), while the lower means scores is observed among Yemeni undergraduates (mean = 3.51, SD = 0.89). The determination to achieve is slightly higher among undergraduates in the three samples.

Similarly, Iraqi respondents expressed better acquisition of decision making skills through formal college education compared with other two samples (mean = 3.63, SD = 0.85), while Syrian respondents showed the least score of the same (mean = 3.50, SD = 0.66). The ability to make decisions is slightly more imparted among undergraduates in the three samples compared with the other skills under decision-making skills.

Iraqi undergraduates expressed their moderate acquisition of negotiating skills (mean = 3.79, SD = 0.73), compared with the lower score which is observed among Syrian undergraduates (mean = 3.64, SD = 0.63). The ability to discuss educational cases to encourage expressing opinions is slightly more imparted among undergraduates in Iraq, while respecting the other point of view regardless of disagreeing with it is slightly more imparted among undergraduates in Syria as well as Yemen.

Syrian undergraduates show better scores relating to possessing marketing skills (mean = 3.55, SD = 0.62), while the lower score is observed among Yemeni undergraduates (mean = 3.08, SD = 1.02). The ability to convince others with products or services is slightly more imparted among undergraduates in the three samples.

Iraqi respondents shower the higher mean scores with respect to leadership skills (mean = 3.80, SD = 0.80), while the lower mean score is found among Syrian undergraduates (mean = 3.53, SD = 0.59). The ability to work in a team (team spirit) is slightly more imparted among undergraduates in Iraq as well as Yemen, while developing ethical and moral skills as a learning student is more imparted among the Syrian undergraduates.

Syrian respondents scored the higher mean score in innovation skills (mean = 3.50, SD = 0.67), while the lower mean score belongs to Yemeni undergraduates (mean = 3.22, SD = 0.89). Learning and acquiring the characteristics of an innovative student is well imparted among Iraqi undergraduates, while the ability to use more than one technique to generate ideas is observed among Syrian as well as Yemeni undergraduates.

Syrian respondents scored higher innovation skills (mean = 3.67, SD = 0.59), while Yemeni undergraduates expressed the lower mean scores (mean = 3.27, SD = 0.84). Participating in group creative initiatives is more imparted among Iraqi as well as Syrian undergraduates, while the willingness to participate in students' activities and occasions is more imparted among Yemeni undergraduates.

It is observed that imparting skills is more observed among Iraqi undergraduates, as they show more possession of communication skills, problem solving skills, technical skills, planning and scientific thinking skills, decision making skills, negotiating skills, and leadership skills. While it is found that Syrian undergraduates showed more possession of networking skills, marketing skills, innovation skills, and initiative skills

(Table 2). No set of skills is found more imparted among the Yemeni undergraduates, even though the variance among the three sub-samples is not remarkably different.

By observing the scores of each set of skills in respect to the total sample, it is found that the higher scores are found to be relevant to communication skills (mean = 3.76, SD = 0.75) and problem solving skills (mean = 3.74, SD = 0.76), while the lower scores are found to be related to marketing skills (mean = 3.27, SD = 0.91), innovation skills (mean = 3.37, SD = 0.83) and networking skills (mean = 3.39, SD = 0.87) (Table2). For more details see Appendix 2.

Table 2 Overall descriptive statistics of entrepreneurial skills

Skills	*Iraq (N = 432)*		*Syria (N = 459)*		*Yemen (N = 528)*		*Total (N = 1,419)*	
	Mean	*Std. deviation*	*Mean*	*Std. deviation*	*Mean*	*Std. deviation*	*Mean*	*Std. deviation*
Communication skills	3.90	0.78	3.79	0.56	3.63	0.84	3.76	0.75
Networking skills	3.44	0.91	3.51	0.75	3.24	0.91	3.39	0.87
Problem solving skills	3.85	0.72	3.73	0.54	3.66	0.92	3.74	0.76
Technology use skills	3.58	0.93	3.48	0.63	3.23	1.08	3.42	0.92
Planning skills	3.73	0.80	3.59	0.59	3.51	0.89	3.60	0.78
Decision making skills	3.63	0.85	3.50	0.66	3.54	0.88	3.55	0.81
Negotiating skills	3.79	0.73	3.64	0.63	3.66	0.76	3.69	0.71
Marketing skills	3.20	0.95	3.55	0.62	3.08	1.02	3.27	0.91
Leadership skills	3.80	0.80	3.53	0.59	3.75	0.64	3.69	0.69
Innovation skills	3.39	0.89	3.50	0.67	3.22	0.89	3.37	0.83
Initiativeness skills	3.35	0.82	3.67	0.59	3.27	0.84	3.42	0.78

Source: Primary data analysis

It can be observed from this output that imparting skills among Iraqi, Syrian and Yemeni undergraduates is challenging and not up to the expected level as undergraduates are expected to be equipped with the required skills and knowledge that rev up their chances in achieving optimum goals in the job market whether by working for the corporate world or by pursuing their entrepreneurial activities.

6 Variance analysis

This presents the investigation of the differences in the entrepreneurial skills investigated in the study among undergraduates according to the difference in the three demographic variables, age, institutions and study major. T-test and one-way ANOVA are used to investigate the differences. The results show that entrepreneurial skills differ among the Yemeni undergraduate according to the differences in their gender, institution and study major. Only problem-solving skills are found similar among undergraduates from

different institutions. This indicates that entrepreneurial skills are not imparted among Yemeni undergraduates similarly among boys and girls; undergraduates in public universities and technical educational institutions; and undergraduates in education colleges and economics colleges (Table 3).

When investigating the differences among Iraqi undergraduates, it was found that planning skills, leadership skills and initiative skills differ among male and female students. Technology use skills and leadership skills differ according to the educational institution. Networking skills, decision-making skills and negotiating skills are found similar among different study majors while the rest differ among students from economic and business and students from education as well as science (Table 3).

Table 3 Differences in entrepreneurial skills among undergraduates according to their demographic variables

Variables	*Gender*			*University*			*Specialisation*		
	Iraq	*Syria*	*Yemen*	*Iraq*	*Syria*	*Yemen*	*Iraq*	*Syria*	*Yemen*
Communication skills			✔		✔	✔	✔	✔	✔
Networking skills			✔			✔			✔
Problem solving skills			✔				✔		✔
Technology use skills			✔	✔		✔	✔	✔	✔
Planning skills	✔	✔	✔			✔	✔		✔
Decision making skills			✔			✔			✔
Negotiating skills			✔			✔			✔
Marketing skills		✔	✔			✔	✔		✔
Leadership skills	✔		✔	✔		✔	✔		✔
Innovation skills		✔	✔		✔	✔			✔
Initiativeness skills	✔		✔		✔	✔	✔	✔	✔

Source: Primary data analysis

As for the Syrian sample, the results indicate that planning, marketing and innovation skills differ among male and female undergraduates. Communication skills, innovation and initiative skills differ among students from private universities and public universities. Communication skills, technology usage skills and initiative skills differ among students from economic, business students from education and science (Table 3).

7 Confirmatory factor analysis

Confirmatory factor analysis is applied to investigate the reliability measures of the model proposed to measure entrepreneurial skills among undergraduates. Convergent reliability is assessed through factor loadings, Cronbach's alpha (CA), McDonald's omega (MO), composite reliability (CR) and average variance extracted (AVE). Discriminant validity is assessed using Fornell-Larcker's criteria (for the diagrams, see Appendix 4).

Factor loadings are observed to be lower among the Syrian sampled respondent, the loadings of factors in the Iraqi sample range from 0.626 to 0.931, while they range from 0.445 to 0.785 in the Syrian sample, in the Yemeni sample, factor loadings range from 0.598 to 0.922, however, in the total sample combined, the factor loadings range from 0.596 to 0.881. All the standardised estimates are significant with p-values which are less than 0.001 (see Appendix 3).

The measurement of convergent validity and discriminant validity are assessed among all samples. Where the values of CA ranges from 0.859 to 0.935 in the case of Iraqi sample, from 0.647 to 0.781 in the case of the Syrian sample, from 0.861 to 0.933 in the case of the Yemeni sample, and from 0.838 to 0.894 in the case of the total samples combined. The values of MO as well as CR are found satisfactory in the Iraqi, Yemeni, and the total combined samples where they are above the minimum threshold (0.70), and they are not fully satisfactory in the case of the Syrian sample, as the CR score for three constructs (problem solving skills, decision making skills and marketing skills) are found below the minimum threshold of reliability (i.e., 0.70).

Further, the score of the AVE are found satisfactory in the case of the Iraqi, Yemeni and the total combined samples as the scores are higher than the minimum threshold (0.50), however is not found satisfactory in case of Syrian as all the scores are found lower than the minimum threshold (0.50) (see Appendix 5).

For assessing discriminant validity, in the Iraqi sample, discriminant validity was not fully established as the constructs of leadership skills and negotiating skills were found correlated which hindered their discriminant validity. However, in the Syrian and the total combined samples, discriminant validity was established. In the Yemeni sample, a total number of six constructs are not found independent from the others which are relevant to the skills of communication, networking, problem solving, planning and scientific thinking, negotiation and decision making (see Appendix 6).

8 Model fit indices

Table 4 shows the model fit indices for the four different datasets. As observed in the table, not all the datasets show good model fit, as the model fits the data in the case of Syria (X^2/df = 1.385, CFI = 0.911, SRMR = 0.044 and RMSEA = 0.029), and thresholding in some indices of fit in the case of Iraq sample (X^2/df = 6.266, CFI = 0.731, SRMR = 0.065 and RMSEA = 0.110), but no fit is established in the case of Yemen (X^2/df = 7.567, CFI = 0.735, SRMR = 0.069 and RMSEA = 0.112), however, when combining the samples together, good model fit is realised in the model (X^2/df = 4.902, CFI = 0.899, SRMR = 0.043 and RMSEA = 0.052).

Table 4 Model fit indices of the four models

Model	*CHISQ*	*DF*	*PVALUE*	*X2/DF*	*CFI*	*GFI*
Iraq	7,018.04	1,120	0.000	6.266	0.731	0.624
Syria	1,551.70	1,120	0.000	1.385	0.911	0.885
Yemen	8,475.32	1,120	0.000	7.567	0.735	0.603
Total	5,490.63	1,120	0.000	4.902	0.899	0.857

Source: Primary data analysis

Table 4 Model fit indices of the four models (continued)

Model	*AGFI*	*TLI*	*RMSEA*	*RMR*	*SRMR*
Iraq	0.571	0.706	0.110	0.063	0.065
Syria	0.869	0.902	0.029	0.034	0.044
Yemen	0.548	0.710	0.112	0.071	0.069
Total	0.837	0.889	0.052	0.041	0.043

Source: Primary data analysis

9 Discussion

The results obtained based on the data analysis is presented below. The results reflect the interpretation of the analysis output and reflect the same on the previous literature. It begins with discussing the descriptive analysis results, then the variance analysis results, followed by the role of entrepreneurship education is discussed and highlighted.

The study aimed to investigate the role of universities in imparting entrepreneurial skills among students in unstable economies/environments. The study compared data from three countries that witnessed and still witnessing significant political and economic instability during the last decade. The results show that the weighted average score of each set of skills ranges between 3.08 to 3.90 out of 5, which indicates a low to moderate extent of entrepreneurial skills among undergraduates in unstable environments evidenced from Iraq, Syria and Yemen.

Even though the difference value is not remarkably high, imparting skills is more observed among Iraqi undergraduates, where it is stated that Iraqi undergraduates possess better communication skills, problem solving skills, technical skills, planning and scientific thinking skills, decision making skills, negotiating skills, and leadership skills. While it is found that Syrian undergraduates possess better of networking skills, marketing skills, innovation skills, and initiative skills. No set of skills are found more imparted among the Yemeni undergraduates. By observing the scores of each set of skills with respect to the total sample, it is found that the higher scores are found to be relevant to communication skills (mean = 3.76, SD = 0.75) and problem solving skills (mean = 3.74, SD = 0.76), while the lower scores are found to be related to marketing skills (mean = 3.27, SD = 0.91), innovation skills (mean = 3.37, SD = 0.83) and networking skills (mean = 3.39, SD = 0.87).

It can be observed from this output that imparting skills among undergraduates during their college studies in unstable environments such as the Iraqi, Syrian and Yemeni environments is challenging and not up to the expected level – where undergraduates are expected to be equipped with the all such required skills and knowledge that rev up their chances in achieving optimum goals in the job market either by working for the corporate world or by pursuing entrepreneurial activities.

As for the result of variance analysis, in the Iraqi context, less skills are impacted by gender and university, while more skills are impacted by study major. Research indicates that Iraq's academia has come a long way in bridging the gender inequality gaps (Jaber, 2022) to which, the low level of impact of gender can be attributed in this study. Hence the gaps of gender are bridged in many aspects (Ismael and Mohammadzadeh, 2022; Ameen and Willis, 2019). The impact of university is almost absent, as only two sets of

skills differ according to the difference in educational institutions. Research indicates that there is a difference in the quality of education between private and public educational institutions (Kadhim and Shamkhi, 2019). The variable of 'study major' and the orientation provided during graduation is found to be more influential than all other factors; this is very well explained due to the orientation of business skills among the departments in the college of economics and business more than engineering and education colleges.

Iraq witnessed flourished during the seventies and eighties of the past century, they realised great achievement in the educational context, as it was described as the best in the region prior to the Gulf War; which has however started worsening since then, and the quality of the educational output has declined as well (Mahmud, 2013; Harb, 2008). Even through, recently the World Bank (2022) supports the education system in Iraq to strengthen its relevance to the labour market.

In the Syrian context, very less skills are impacted by the three demographic characteristics, research indicates the gap of gender in higher education in Syria (Almelhem et al., 2022). Regardless of the advances established in the education system prior to the conflicting 2011 (Millican, 2020), the decade of conflict deteriorated the role of any reforms adopted to develop the education sector due to the absence of public funds towards the education system (Dillabough et al., 2018, 2019). The provision of education did not change much to the extent that creates variance in imparting entrepreneurial skills among students.

Even though policies for education exist, they still lack proper strategies to ensure three major concerns in the three countries, these concerns are the right to access education especially for children ages 6–14 years old, ensuring the availability of education for remote and rural areas, and ensuring the availability of education for differently abled individuals (Miyajima and Kazem, 2017; Qaddour and Husain, 2022). The conflict in these three countries has significantly impacted the education systems where millions of children are out of schools specifically in Yemen and Syria (Miyajima and Kazem, 2017; UNICEF, 2022).

Research indicates that there is a negative impact on the development of the Syrian education system due to the absence of genuine investments in education, standardised approach to monitoring progress of education and learning, and the attention towards technical and vocational education (Qaddour and Husain, 2022).

Higher education institution can take the initiative role in setting the base and foundation for imparting the skills considered necessary for their relevance to the labour market. Life skills such as communication, cooperation, teamwork, and resilience; are worth the major focus of education policies in the three economies in this study. It is common that students may pick up their favourite subjects and curricula among institutions especially in developed countries, yet skills cannot be optional for students to leave behind, hence they are expected to thrive in learning and possessing new skills during their college studies. Reflecting the same to the context of the three economies, higher education institutions can play a significant role while imparting entrepreneurial skills among undergraduates, the result of this is better preparation of adequately skilled workforce, based on which, the needs of the corporate world are met through the harmonisation between the output of educational institutions and the need of the private sector and corporate world in general. This can somehow redress the gaps in providing specific strategies to execute educational policies aiming to prepare a better generation equipped with the required skills and knowledge.

Previous research has indicated that gender plays a significant role when it comes to essential enterprising skills among youth in Yemen (Saleh and Manjunath, 2020), entrepreneurial intention in the MENA Region (Setti, 2017), perceiving the impact of social entrepreneurship (Al-Khalqi, 2017). However, gender does not play any significant role in entrepreneurial attitude among Yemeni youth (Saleh et al., 2021), entrepreneurship perception (Saleh and Manjunath, 2021a), and entrepreneurial intention especially during crisis (Al-Qadasi and Gongyi, 2020).

This contradiction in the role of gender, institution and study major in the Yemeni context can be attributed to the education system and its policies as education is presented separately for boys and girls (separated girls for female students), and the challenges faced by educational institutions (Al-Baadani and Abbas, 2020), in addition to the lack of proper strategies to develop the education system in Yemen (Muthanna, 2015; Muthanna and Sang, 2018), and the lack of central universities and their capacity (Muthanna and Karaman, 2014). Further, research indicates that there is a lack of harmonisation among the educational outcomes and the requirement of the private sector with respect to skilled workforce (Almashali, 2022). It can also be attributed to the traditions rooted in the Yemeni society (Kenney, 2021; Caton, 2013) and the less tendency towards education (Aliriani, 2014).

As far as entrepreneurship is concerned, the World Bank reported that the rank of doing business of the three economies has witnessed a huge decline between 2009 and 2019, similarly, the adoption of reform policies to enhance the business performance has deteriorated during the past decade (World Bank, 2008, 2018). Without taking the current violent conflicts and their impact, the contextual difference between the three countries is that Iraq is an oil exporter, Syria is a middle-income country while Yemen is an underdeveloped country or a least developed country as described by the United Nations.

Developing countries rely largely on the effort of developing entrepreneurs to participate in economic welfare. This puts pressure on higher education to play a significant role in equipping graduates with the required knowledge and skills to increase their potential success in their entrepreneurial life. Research indicates that entrepreneurs and SMEs contribute to economic development by creating employment and generating income even when functioning in unstable environments (Saleh and Manjunath, 2020). Hence, preparing future entrepreneurs through formal education is vital for the development of these economies. This creates an earnest need to develop and grow critical thinking and entrepreneurial skills among graduate before they engage in the entrepreneurial activities, especially when required to work in unstable environments as it demands a lot of capabilities to enhance their` chances of survival among enterprises.

Entrepreneurship education is one of the tools that equips entrepreneurs with the required skills and potentials to engage in the core business and aim for growth and expansion. Therefore, higher education institutions can play a key role in equipping the future entrepreneurs with the required skills so as to be able to better face such challenges.

The literature indicates that education can play a significant role in achieving entrepreneurial success by developing entrepreneurial intent and mindset among university students (Malebana, 2014), rural youth (Malebana, 2021) and rural graduates (Malebana and Swanepoel, 2015), regardless of their gender (Arshad et al., 2020), as it develops the intention among individuals to pursue entrepreneurship (Malebana, 2016).

Orienting entrepreneurial education is a must among undergraduates even beyond business schools (Sidek et al., 2018) due to the impact of entrepreneurship education on

the intention of the youth to aim for establishing their own business (Arshad et al., 2018), however, in the context of unstable economies, it largely depends on availability of entrepreneurship educators who possess competencies as well as experience (Ibidunni et al., 2017).

Policy makers can play a key role in adopting programs and business incubation plans to support the youth (Ajagbe et al., 2015), however, such plans and strategies are not supportive in the context of underdeveloped economies and unstable environments (Motilewa et al., 2015). Hence, spreading the awareness about the importance of entrepreneurship learning and acquiring entrepreneurial skills can be better executed through educational institutions via practical and experiential activities (Olokundun et al., 2018; Izedonmi et al., 2007), then only it can be expected that intent for business venturing may grow among the youth after entrepreneurial competencies and managerial competencies are acquired (Sidek and Mohamad, 2014; Mohamad and Sidek, 2013a, 2013b).

10 Conclusions

There is a low extent of imparting entrepreneurial skills among undergraduates in unstable environments. Further, imparting skills among Yemeni undergraduates is influenced by the three demographic variables (gender, institution and study major), while it is less influenced among the Iraqi and Syrian undergraduates. The education system in Iraq, Syria and Yemen is still at developing stage – more particularly when it comes to adopting technology and employ learning by doing to equip graduates for the job market. Therefore, it faces many internal and external challenges, which triggers the need for formulating policies and facilitating a supportive environment for higher education institution to participate in the economic prosperity through their educational outcomes.

Adopting key elements such as courses and curriculum, outreach programs, research initiatives, devoted resources towards building and promoting entrepreneurial ecosystem, is a major contribution of higher education institutions in Iraq, Syria and Yemen and other developing or developed countries towards the economic and social welfare.

As much as developing countries learn from the experience of developed countries in respect of developing the higher education system to prepare fruitful outcomes that meet the needs of the corporate world as well as preparing future entrepreneurs who are equipped with required skills and are willing to take risks and utilise opportunities Iraq, Syria and Yemen also have a lot to learn from such experiences in developing and promoting education in rural areas or instable environments.

The implication of this research can be summarised in first, being the first study to investigate imparting entrepreneurial skills in unstable environments; Second, being a tool for educational institution to orient entrepreneurship and entrepreneurial skills among undergraduates through adopting specific orientation programs; and third, being a tool for policy makers and business incubators to pay much heed towards supporting business venturing among students who are equipped with entrepreneurial skills so as to contribute to the development of entrepreneurial sector.

The limitation of this study is that it was challenging to include participants from all study majors or equal samples from all types of educational institutions, hence, sampling measures, if involved may lead to different results. The other limitation is that the data is

collected from three countries witnessing political and economic instability, hence, generalising the results on similar economies is not reliable. Based on this, future research can consider the comparative approach among colleges in each country. Further, focusing on non-business students to identify the role higher education is suggested, and finally, further investigation of the difference in the knowledge and skills according to the demographic characteristic is recommended.

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Appendix 1

Table A1 Items of the research instruments

#	*Skills*
Communication skills	
Com1	Developing communicating skills and effective dialogue
Com2	expressing opinion with respecting others
Com3	Dialogue and debating method
Com4	Skill of noting down during dialogues
Com5	Reporting skills
Networking skills	
Net1	Building good relationships with peers
Net2	Gathering information about organisations relevant to my field
Net3	Utilising social media for career development
Net4	Communicating with organisations in the field of my study
Net5	Facilitate my training to gain the skills of have virtual jobs
Problem solving skills	
ProS1	Ability of following scientific methods in problem solving
ProS2	Exploring related subjects to the topic
ProS3	exploring the positive and negative sides of suggested solutions
ProS4	Listening to others to find other alternatives

Source: Smith et al. (2007), Assakarnah (2008), Haboosh (2017), Samtan (2016), He et al. (2008), Balloshi and Alajmeiah (2015), Alkahtani (2015), Murad (2010), Phelan and Sharpley (2012), Fitriati and Hermiati (2011) and Chang and Rieple (2013)

Table A1 Items of the research instruments (continued)

#	*Skills*
Utilising technology skills	
Tech1	Using blended education to develop technology use skills
Tech2	Using computer system in executing tasks
Tech3	ability to use modern networks in educational process
Tech4	Presenting report electronically
Tech5	Ability and flexibility in using modern technologies
Planning and critical thinking skills	
Plan1	Ability to think innovatively using sound methodology
Plan2	Ability to prepare plans
Plan3	Determination to achieve goals
Plan4	Critical thinking to utilise new ideas
Plan5	Preparing project plans for study
Decision making skills	
DMS1	Ability to make decisions
DMS2	Freedom to make decisions
DMS3	Presenting sufficient alternative to make a decision
DMS4	Ability to deal with new circumstances
Negotiating skills	
Neg1	Ability to negotiate with others
Neg2	Discussing educational cases to encourage expressing opinions
Neg3	Respecting the other point of view regardless of disagreeing with it
Neg4	Converging points of view when there is a disagreement
Marketing and promotion skills	
MarketS1	Preparing a marketing plan for products/services
MarketS2	Understanding techniques of preparing effective marketing plan
MarketS3	Understanding the need of others to meet them through products/services
MarketS4	Ability to convince others with created products/services
Leadership skills	
LeadS1	Working with team (team spirit)
LeadS2	setting objectives for my future
LeadS3	Ability to establish social relationships
LeadS4	Developing ethical and moral skills as a learning student
LeadS5	Item5
LeadS6	Freedom to express point of view in occasions

Source: Smith et al. (2007), Assakarnah (2008), Haboosh (2017), Samtan (2016), He et al. (2008), Balloshi and Alajmeiah (2015), Alkahtani (2015), Murad (2010), Phelan and Sharpley (2012), Fitriati and Hermiati (2011) and Chang and Rieple (2013)

Table A1 Items of the research instruments (continued)

#	*Skills*
Creativeness and innovation skills	
InnovS1	Ability to present innovative ideas to potential sponsors
InnovS2	Innovating solutions to the encountered problems
InnovS3	Learning the characteristics of the innovative students
InnovS4	Ability to use more than technique to generate ideas
Initiativeness and determination skills	
InitiativeS1	Participating in group creative initiatives
InitiativeS2	Willingness to participate in students' activities and occasions
InitiativeS3	Presenting initiatives to university for support/sponsorship
InitiativeS4	building initiative based on personal efforts

Source: Smith et al. (2007), Assakarnah (2008), Haboosh (2017), Samtan (2016), He et al. (2008), Balloshi and Alajmeiah (2015), Alkahtani (2015), Murad (2010), Phelan and Sharpley (2012), Fitriati and Hermiati (2011) and Chang and Rieple (2013)

Appendix 2

Table A2 Descriptive statistics of the responses of the three countries samples

Item	*Iraq (N = 432)*		*Syria (N = 459)*		*Yemen (N = 528)*		*Total (N = 1,419)*	
	Mean	*S.D*	*Mean*	*S.D*	*Mean*	*S.D*	*Mean*	*S.D*
Com1	3.96	0.918	3.96	0.820	3.54	1.012	3.80	0.946
Com2	3.79	1.025	3.63	0.866	3.47	1.132	3.62	1.028
Com3	4.03	0.885	3.82	0.834	3.82	0.936	3.89	0.893
Com4	3.82	0.974	3.83	0.787	3.67	1.082	3.77	0.964
Com5	3.88	1.060	3.71	0.844	3.66	0.988	3.74	0.971
Overall	3.90	0.78	3.79	0.56	3.63	0.84	3.76	0.75
Net1	3.70	1.065	3.71	1.050	3.69	0.965	3.70	1.023
Net2	3.60	1.087	3.36	1.019	3.45	1.123	3.46	1.083
Net3	3.45	1.124	3.44	1.067	3.09	1.185	3.31	1.142
Net4	3.44	1.198	3.43	1.003	3.06	1.198	3.30	1.152
Net5	3.02	1.204	3.61	1.010	2.90	1.172	3.17	1.174
Overall	3.44	0.91	3.51	0.75	3.24	0.91	3.39	0.87
ProblemS1	3.85	0.827	3.64	0.769	3.58	1.035	3.68	0.900
ProblemS2	3.92	0.870	3.66	0.805	3.78	1.060	3.78	0.931
ProblemS3	3.75	0.845	3.81	0.647	3.57	1.072	3.70	0.889
ProblemS4	3.87	0.839	3.79	0.804	3.70	1.069	3.78	0.923
Overall	3.85	0.72	3.73	0.54	3.66	0.92	3.74	0.76

Source: Primary data analysis

Table A2 Descriptive statistics of the responses of the three countries samples (continued)

Item	*Iraq (N = 432)*		*Syria (N = 459)*		*Yemen (N = 528)*		*Total (N = 1,419)*	
	Mean	*S.D*	*Mean*	*S.D*	*Mean*	*S.D*	*Mean*	*S.D*
Tech1	3.61	1.048	3.59	0.848	3.27	1.140	3.48	1.036
Tech2	3.80	0.997	3.40	0.937	3.38	1.194	3.51	1.073
Tech3	3.26	1.176	3.46	0.884	3.01	1.274	3.23	1.146
Tech4	3.53	1.109	3.36	0.993	3.24	1.268	3.36	1.142
Tech5	3.70	1.048	3.61	0.936	3.27	1.216	3.51	1.096
Overall	3.58	0.93	3.48	0.63	3.23	1.08	3.42	0.92
Plan1	3.76	0.860	3.61	0.800	3.57	0.995	3.64	0.898
Plan2	3.76	0.960	3.54	0.862	3.43	1.068	3.56	0.981
Plan3	3.89	0.966	3.66	0.792	3.58	1.078	3.70	0.967
Plan4	3.61	0.969	3.55	0.830	3.45	1.007	3.53	0.943
Plan5	3.66	0.918	3.58	0.872	3.53	1.023	3.58	0.945
Overall	3.73	0.80	3.59	0.59	3.51	0.89	3.60	0.78
DMS1	3.81	0.943	3.64	0.818	3.69	1.014	3.71	0.934
DMS2	3.54	1.010	3.47	0.899	3.53	1.004	3.51	0.973
DMS3	3.61	0.933	3.41	0.979	3.59	0.970	3.54	0.965
DMS4	3.55	0.952	3.47	0.978	3.35	1.053	3.45	1.002
Overall	3.63	0.85	3.50	0.66	3.54	0.88	3.55	0.81
Neg1	3.77	0.839	3.53	0.894	3.66	0.891	3.65	0.881
Neg2	3.85	0.891	3.67	0.894	3.63	0.950	3.71	0.919
Neg3	3.83	0.862	3.70	0.762	3.69	0.818	3.74	0.816
Neg4	3.73	0.889	3.66	0.819	3.65	0.867	3.68	0.859
Overall	3.79	0.73	3.64	0.63	3.66	0.76	3.69	0.71
MarketS1	3.10	1.016	3.55	0.871	3.02	1.134	3.21	1.045
MarketS2	3.11	1.011	3.50	0.938	2.97	1.120	3.18	1.055
MarketS3	3.28	1.044	3.56	0.873	3.14	1.120	3.32	1.036
MarketS4	3.31	1.081	3.58	0.884	3.18	1.111	3.35	1.046
Overall	3.20	0.95	3.55	0.62	3.08	1.02	3.27	0.91
LeadS1	3.91	0.955	3.53	0.909	3.93	0.800	3.79	0.904
LeadS2	3.78	1.005	3.56	0.878	3.81	0.893	3.72	0.929
LeadS3	3.84	0.928	3.56	0.905	3.75	0.738	3.72	0.862
LeadS4	4.10	0.911	3.58	0.879	3.89	0.748	3.85	0.868
LeadS5	3.79	0.893	3.55	0.864	3.66	0.890	3.67	0.887
LeadS6	3.38	1.033	3.41	0.966	3.44	0.926	3.41	0.972
Overall	3.80	0.80	3.53	0.59	3.75	0.64	3.69	0.69
InnovS1	3.30	1.054	3.44	0.940	3.28	0.940	3.34	0.978
InnovS2	3.28	0.966	3.40	0.965	3.15	0.985	3.27	0.978
InnovS3	3.50	1.020	3.49	0.900	3.16	1.042	3.37	1.003
InnovS4	3.50	1.035	3.69	0.897	3.30	1.054	3.49	1.012
Overall	3.39	0.89	3.50	0.67	3.22	0.89	3.37	0.83

Source: Primary data analysis

Table A2 Descriptive statistics of the responses of the three countries samples (continued)

Item	*Iraq (N = 432)*		*Syria (N = 459)*		*Yemen (N = 528)*		*Total (N = 1,419)*	
	Mean	*S.D*	*Mean*	*S.D*	*Mean*	*S.D*	*Mean*	*S.D*
InitiativeS1	3.43	0.870	3.78	0.708	3.32	1.029	3.50	0.908
InitiativeS2	3.36	0.914	3.66	0.836	3.53	0.858	3.52	0.876
InitiativeS3	3.31	0.940	3.60	0.801	3.13	0.983	3.34	0.934
InitiativeS4	3.28	0.936	3.65	0.785	3.09	1.060	3.33	0.969
Overall	3.35	0.82	3.67	0.59	3.27	0.84	3.42	0.78

Source: Primary data analysis

Appendix 3

Table A3 Factor loadings of the three samples

Item	*Iraq*	*Syria*	*Yemen*	*Total*
Com1	0.750	0.602	0.836	0.761
Com2	0.827	0.667	0.792	0.776
Com3	0.801	0.688	0.646	0.678
Com4	0.758	0.449	0.821	0.733
Com5	0.626	0.445	0.726	0.644
Net1	0.635	0.741	0.638	0.623
Net2	0.749	0.540	0.728	0.675
Net3	0.769	0.785	0.778	0.769
Net4	0.822	0.585	0.893	0.815
Net5	0.723	0.566	0.721	0.685
ProblemS1	0.783	0.607	0.820	0.760
ProblemS2	0.774	0.588	0.774	0.725
ProblemS3	0.859	0.624	0.888	0.842
ProblemS4	0.805	0.566	0.812	0.758
Tech1	0.757	0.608	0.779	0.740
Tech2	0.829	0.608	0.868	0.793
Tech3	0.782	0.589	0.875	0.790
Tech4	0.875	0.509	0.835	0.783
Tech5	0.887	0.619	0.900	0.842
Plan1	0.841	0.597	0.875	0.809
Plan2	0.889	0.640	0.797	0.789
Plan3	0.814	0.578	0.822	0.769
Plan4	0.795	0.652	0.879	0.799
Plan5	0.767	0.635	0.766	0.730

Source: Primary data analysis

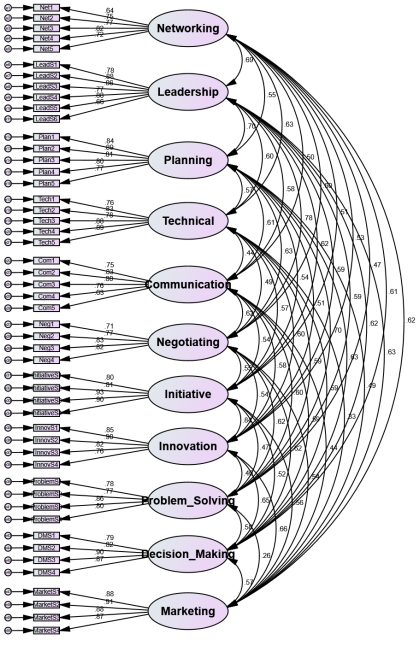
Table A3 Factor loadings of the three samples (continued)

Item	*Iraq*	*Syria*	*Yemen*	*Total*
Neg1	0.707	0.637	0.838	0.730
Neg2	0.765	0.653	0.827	0.757
Neg3	0.825	0.643	0.762	0.762
Neg4	0.820	0.627	0.782	0.759
DMS1	0.794	0.602	0.862	0.773
DMS2	0.816	0.626	0.736	0.736
DMS3	0.898	0.583	0.788	0.755
DMS4	0.869	0.572	0.881	0.808
MarketS1	0.884	0.557	0.869	0.797
MarketS2	0.914	0.489	0.908	0.814
MarketS3	0.878	0.568	0.888	0.838
MarketS4	0.869	0.654	0.864	0.844
LeadS1	0.784	0.582	0.773	0.721
LeadS2	0.884	0.464	0.779	0.748
LeadS3	0.860	0.541	0.739	0.719
LeadS4	0.774	0.601	0.778	0.728
LeadS5	0.877	0.623	0.653	0.729
LeadS6	0.661	0.562	0.598	0.596
InnovS1	0.847	0.570	0.770	0.726
InnovS2	0.901	0.578	0.877	0.802
InnovS3	0.823	0.640	0.846	0.797
InnovS4	0.762	0.642	0.870	0.790
InitiativeS1	0.801	0.608	0.744	0.759
InitiativeS2	0.806	0.655	0.655	0.688
InitiativeS3	0.931	0.741	0.922	0.881
InitiativeS4	0.901	0.583	0.891	0.838

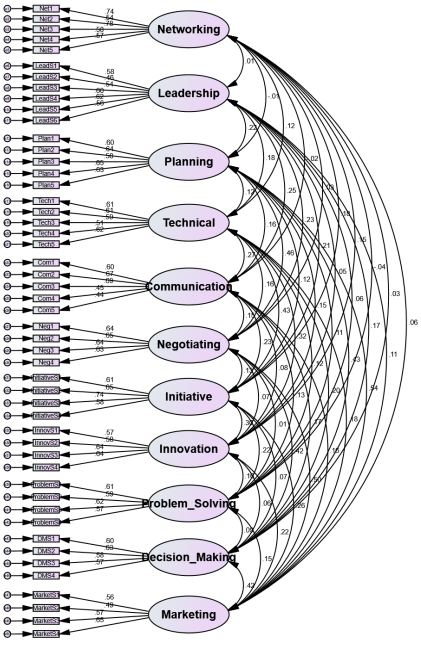
Source: Primary data analysis

Appendix 4

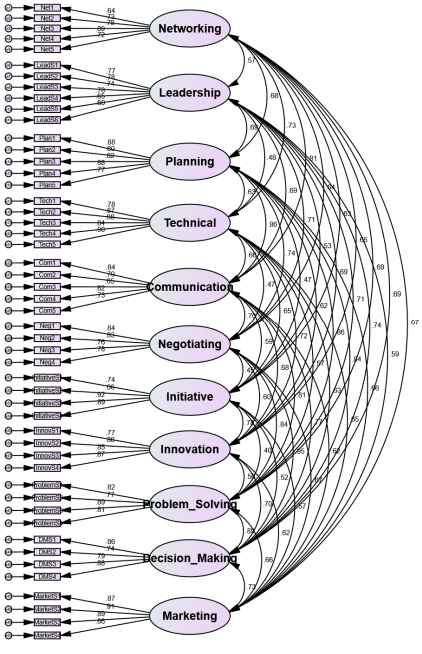
Figure A1 Figures of the confirmatory factor analysis in all samples, (a) Iraqi sample (b) Syrian sample (c) Yemeni sample (d) total sample (see online version for colours)



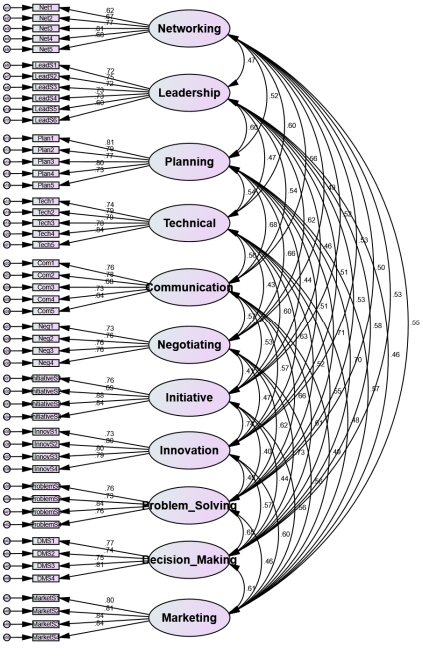
(a)



(b)



(c)



(d)

Appendix 5

Table A4 Reliability measures of the four samples

Sets of skills	*Iraq*				*Syria*			
	CA	*MO*	*CR*	*AVE*	*CA*	*MO*	*CR*	*AVE*
Communication skills	0.864	0.865	0.868	0.571	0.707	0.711	0.71	0.336
Networking skills	0.859	0.861	0.859	0.551	0.781	0.785	0.782	0.424
Problem solving skills	0.88	0.88	0.881	0.65	0.684	0.685	0.688	0.356
Technical skills	0.913	0.914	0.915	0.685	0.722	0.723	0.724	0.346
Planning and scientific thinking	0.911	0.912	0.912	0.676	0.758	0.759	0.758	0.386
Negotiation skills	0.908	0.863	0.862	0.61	0.734	0.735	0.735	0.41
Decision making skills	0.863	0.907	0.909	0.714	0.686	0.687	0.688	0.355
Marketing skills	0.935	0.932	0.936	0.786	0.647	0.652	0.656	0.325
Leadership skills	0.915	0.917	0.919	0.657	0.734	0.735	0.736	0.319
Innovation skills	0.898	0.896	0.902	0.697	0.699	0.698	0.701	0.37
Initiative skills	0.918	0.92	0.92	0.742	0.741	0.746	0.743	0.422
	Yemen				*Total*			
	CA	*MO*	*CR*	*AVE*	*CA*	*MO*	*CR*	*AVE*
Communication skills	0.875	0.879	0.877	0.589	0.842	0.843	0.843	0.519
Networking skills	0.866	0.873	0.868	0.572	0.839	0.842	0.84	0.514
Problem solving skills	0.892	0.893	0.894	0.68	0.853	0.853	0.855	0.597
Technical skills	0.929	0.93	0.93	0.727	0.892	0.893	0.892	0.625
Planning and scientific thinking	0.914	0.915	0.916	0.687	0.885	0.885	0.886	0.608
Negotiation skills	0.88	0.88	0.879	0.645	0.838	0.839	0.839	0.566
Decision making skills	0.894	0.897	0.89	0.67	0.853	0.854	0.852	0.591
Marketing skills	0.933	0.929	0.934	0.779	0.894	0.893	0.894	0.678
Leadership skills	0.861	0.861	0.867	0.523	0.855	0.855	0.858	0.502
Innovation skills	0.906	0.907	0.907	0.709	0.861	0.861	0.861	0.607
Initiative skills	0.878	0.884	0.883	0.657	0.87	0.873	0.872	0.632

Note: CA = Cronbach's alpha, MO = McDonald's omega, CR = convergent reliability, AVE = average variance explained.

Source: Primary data analysis

Appendix 6

Table A5 Discriminant validity measures in the four samples

#	*Constructs/Iraqi undergraduates*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*
1	Communication skills	**0.756**										
2	Networking skills	0.499	**0.742**									
3	Problem solving skills	0.602	0.475	**0.806**								
4	Technical skills	0.445	0.63	0.586	**0.828**							
5	Planning and scientific thinking	0.613	0.552	0.705	0.573	**0.822**						
6	Negotiation skills	0.616	0.6	0.616	0.491	0.635	**0.781**					
7	Decision making skills	0.593	0.612	0.582	0.588	0.625	0.619	**0.845**				
8	Marketing skills	0.439	0.621	0.261	0.329	0.492	0.539	0.574	**0.886**			
9	Leadership skills	0.577	0.687	0.591	0.597	0.699	0.784	0.622	0.629	**0.81**		
10	Innovation skills	0.576	0.53	0.397	0.6	0.513	0.537	0.649	0.655	0.594	**0.835**	
11	Initiative skills	0.543	0.512	0.467	0.569	0.543	0.551	0.525	0.562	0.615	0.837	**0.862**
#	*Constructs/Syrian undergraduates*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*
1	Communication skills	**0.58**										
2	Networking skills	–0.017	**0.651**									
3	Problem solving skills	0.132	–0.044	**0.597**								
4	Technical skills	0.273	0.119	0.117	**0.588**							
5	Planning and scientific thinking	0.16	–0.009	0.107	0.116	**0.621**						
6	Negotiation skills	0.149	0.033	0.008	0.156	0.464	**0.64**					
7	Decision making skills	0.17	0.027	0.085	0.2	0.433	0.421	**0.596**				
8	Marketing skills	0.164	0.056	0.145	0.184	0.54	0.499	0.422	**0.57**			
9	Leadership skills	0.248	0.006	0.057	0.182	0.215	0.231	0.174	0.113	**0.564**		
10	Innovation skills	0.078	0.152	0.158	0.322	0.145	0.065	0.058	0.223	0.053	**0.608**	
11	Initiative skills	0.23	0.179	0.217	0.43	0.122	0.128	0.069	0.262	0.208	0.303	**0.65**

Notes: Numbers in bold on the diagonal are the square root of AVE values. They indicate the establishment of their criteria, which is that should be higher than the relevant correlation.
While number in italic show that they fail to establish this criteria, hence they are not found higher than the relevant correlation.

Source: Authors' data analysis

Table A5 Discriminant validity measures in the four samples (continued)

#	*Constructs/Yemeni undergraduates*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*
1	Communication skills	*0.767*										
2	Networking skills	0.812	*0.756*									
3	Problem solving skills	0.81	0.685	*0.825*								
4	Technical skills	0.661	0.734	0.565	**0.852**							
5	Planning and scientific thinking	0.857	0.682	0.855	0.625	*0.829*						
6	Negotiation skills	0.697	0.636	0.838	0.471	0.745	*0.803*					
7	Decision making skills	0.775	0.686	0.893	0.626	0.84	0.949	*0.819*				
8	Marketing skills	0.616	0.671	0.663	0.645	0.656	0.668	0.733	**0.882**			
9	Leadership skills	0.693	0.567	0.71	0.483	0.693	0.714	0.741	0.589	**0.723**		
10	innovation skills	0.68	0.647	0.565	0.721	0.622	0.603	0.705	0.625	0.686	**0.842**	
11	Initiative skills	0.594	0.626	0.403	0.651	0.468	0.449	0.515	0.571	0.533	0.777	**0.81**
#	*Constructs/the total sample*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*
1	Communication skills	**0.72**										
2	Networking skills	0.557	**0.717**									
3	Problem solving skills	0.658	0.497	**0.772**								
4	Technical skills	0.555	0.603	0.521	**0.79**							
5	Planning and scientific thinking	0.685	0.516	0.708	0.543	**0.78**						
6	Negotiation skills	0.569	0.488	0.618	0.426	0.658	**0.752**					
7	Decision making skills	0.614	0.526	0.652	0.55	0.697	0.725	**0.768**				
8	Marketing skills	0.491	0.555	0.457	0.48	0.571	0.558	0.606	**0.823**			
9	Leadership skills	0.539	0.47	0.528	0.467	0.596	0.624	0.58	0.457	**0.709**		
10	Innovation skills	0.569	0.527	0.453	0.629	0.511	0.473	0.574	0.596	0.509	**0.779**	
11	Initiative skills	0.53	0.515	0.397	0.598	0.445	0.409	0.444	0.555	0.463	0.742	**0.795**

Notes: Numbers in bold on the diagonal are the square root of AVE values. They indicate the establishment of their criteria, which is that should be higher than the relevant correlation.
While number in italic show that they fail to establish this criteria, hence they are not found higher than the relevant correlation.

Source: Authors' data analysis