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Pursuing Global Through Academic Entrepreneurship Orientation: Evidence from the University of Mosul

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Abstract

Objectives: The objective of the present study was to explore the impact of academic entrepreneurship in its various dimensions (research mobilization, unconventionality, industrial cooperation, and university policies) on the acquisition of world-class university characteristics. These characteristics are represented by a combination of talent concentration, abundant resources, and favorable governance.

Methodology: A quantitative research methodology was adopted through a comprehensive survey of the opinions of strategic leaders at the University of Mosul. A questionnaire was distributed to the entire study community, consisting of 221 strategic leaders holding positions (university president and their assistants, college deans and their assistants, heads of scientific departments and research centers). A total of 212 valid questionnaires were collected for analysis to form the study sample. The analysis was conducted using the Statistical Package for the Social Sciences (SPSS) and the AMOS-V24 program.

Results: The dimensions of academic entrepreneurship orientation, represented by (unconventionality, industrial cooperation, and university policies), have a significant and positive impact on the University of Mosul's pursuit of world-class university characteristics, while the dimension of (research mobilization) had no significant impact.

Conclusions: The University of Mosul's research activity is characterized by a lack of organization and integration, largely attributable to the absence of a cohesive framework guiding academic researchers in translating their research findings into practical applications. Conversely, Industry Collaboration is paramount in expediting the University of Mosul's attainment of world-class university characteristics. This is due to the reciprocal benefits accrued by both the university and industry.

Keywords: *Academic Entrepreneurship; World-Class Universities; ENTRE-U; University of Mosul*

Introduction

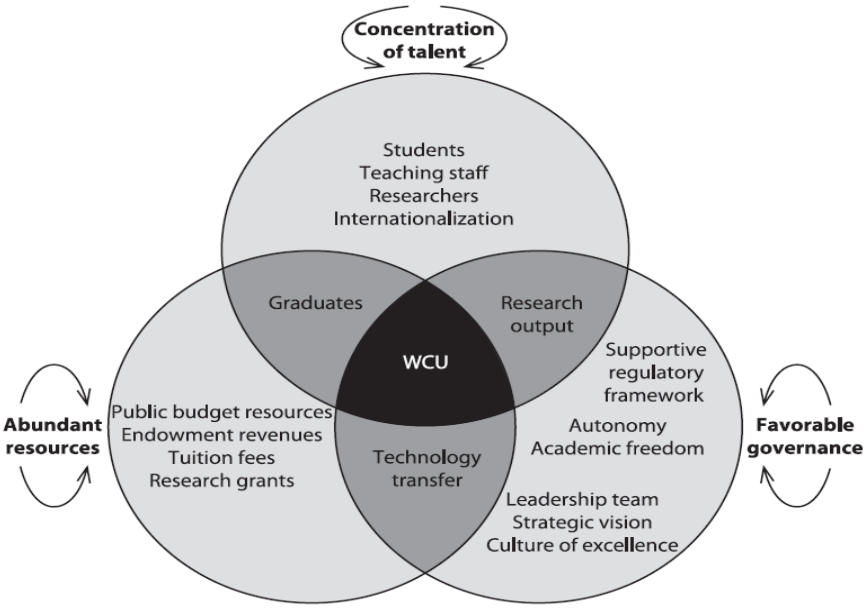
There is a general consensus that economic growth and global competitiveness are increasingly driven by knowledge, and universities play a pivotal role in this context (Rachman *et al*., 2024). Higher education is pivotal to the transition of countries to a knowledge-based economy, as it is integral to all four pillars: an appropriate economic and institutional system, a strong human capital base, a dynamic information infrastructure, and an effective national innovation system. However, its role is particularly crucial in supporting the building of a strong human capital base and contributing to an effective national innovation system. Higher education plays a pivotal role in the development of globally competitive economies. It does so by cultivating a skilled, productive, and adaptable workforce, as well as by facilitating the creation, application, and dissemination of new ideas and technologies. In this context, ensuring that their leading universities operate at the forefront of intellectual and scientific development has become a pressing priority for many governments (Salmi, 2009).

Since the mid-1990s, the development of world-class universities has emerged as a global policy trend, encompassing both developed and developing countries. This phenomenon is intricately intertwined with the rise of a knowledge-based economy. Higher education institutions, particularly those regarded as elite, play a pivotal role in their respective countries' economic growth and productivity (Byun *et al*., 2013). Regardless of an economy's fiscal state, it is imperative for every system to aspire towards the establishment of at least one world-class university (Shattock, 2017). The concept of "world-class" has emerged as a pivotal objective in the policies of academic institutions worldwide (Benner, 2020). World university rankings, an extension of national rankings, have drawn increasing attention to world-class universities (WCUs) as a systematic means of identifying and ranking the best global universities (Tabish, 2024).

Tayeb (2016) provided a definition of world-class universities as "World-class universities are academic institutions dedicated to creating and spreading knowledge in a range of disciplines and fields, delivering quality higher education at all levels, serving national needs, and furthering international public interest." (p. 3), Salmi & Altbach (2020) directed their attention to the level of intellectual and scientific development, delineating them as "Top universities operating at the cutting edge of intellectual and scientific development at the global level." (p. 2761).

In his quest to ascertain the significance of world-class universities, Lee (2013) identified two primary factors propelling the trend toward this academic caliber. Firstly, on a national scale, world-class universities contribute to the economy and society by fostering the development of innovative networks and systems within the local economy. This dynamic, in turn, serves as a catalyst for attracting foreign investment. For instance, Clemson University in the United States established a partnership with the German car manufacturer BMW, thereby becoming a leader in automotive and motorsports research and education. Secondly, at the organizational level, world-class universities serve as mechanisms that enhance a nation's capacity to compete in the global higher education market by acquiring, adapting, and producing advanced knowledge. Therefore, maintaining a prestigious global standing is imperative to attracting highly qualified academic researchers, including students (Lee, 2013).

This prompts the question of how to achieve a level of academic excellence comparable to that of world-class universities. As Altbach (2004) observed, "everyone wants one, no one knows what it is, and no one knows how to get one" (p. 21). It is noteworthy that the world's leading universities are often among the oldest and most established institutions of higher education. These universities possess what has been termed "vintage": the strength of reputation that enables them to continue attracting the best scholars and students. Consequently, they are able to establish standards of excellence and outstanding results (Salmi, 2016). However, even universities with a relatively recent establishment can attain a world-class status by meeting these criteria (Tabish, 2024). In light of these findings, Salmi (2009) embarked on an exploration of the factors contributing to universities' ascension to the pinnacle of global rankings. Guiding nations and university leaders in their pursuit of world-class status, he identified a set of pivotal factors that play a role in the establishment of universities that are globally competitive. These institutions, often referred to as "world-class," "elite," or "flagship" universities, are expected to compete effectively with the most prestigious academic institutions. He concluded that the superior results of world-class universities (i.e., highly sought-after graduates, pioneering research, and technology transfer) can be attributed primarily to three integrated sets of factors that influence major universities and represent their success factors (Salmi, 2009), illustrated in Figure 1:



Source: Salmi, J. (2009).

Figure 1. Characteristics of a World-Class University (WCU): Alignment of Key Factors

"(a) a high concentration of talent (faculty and students), (b) abundant resources to provide a rich learning environment and conduct advanced research, (c) favorable governance features that encourage strategic vision, innovation, and flexibility, enabling universities to make decisions and manage resources without being hampered by bureaucracy". (p. 7)

It is imperative to underscore the synergy among these groups of factors (Salmi, 2011), as it is the amalgamation of these three groups of factors that engenders distinction, and the dynamic interaction among these factors is the hallmark of world-class universities. The absence of abundant resources or the capacity to attract the most qualified individuals will invariably compromise the efficacy of a favorable governance framework. Conversely, the mere allocation of financial resources to a university or the imposition of stringent student admissions criteria does not guarantee the establishment of a world-class institution (Salmi, 2009). The most successful universities are those that have effectively utilized excellence initiatives, which represent significant investments of additional funding by governments to enhance the performance of their university education sector. These universities have achieved this success by aligning three key factors: a high concentration of talent, abundant resources, and favorable governance. Consequently, it can be deduced that any initiative designed to attain academic excellence and enhance the standing of universities in global rankings is likely to yield positive outcomes, provided it contributes to the enhancement of these three critical success factors (Salmi, 2016).

As world-class universities operate at the forefront of global intellectual and scientific development, and as the university has evolved from the simple Humboldt model to the demands placed on it as a source of knowledge that fuels economic growth, then as an incubator for technology transfer and startups, and finally as a leader of prosperity in the entrepreneurial community, the complexity and ambiguity of the university's mission have also increased. The university's capacity to maintain its traditional strengths while demonstrating adaptability to societal needs and interests has been identified as a key factor contributing to its status as one of the most flexible organizations in society (Audretsch, 2014). Since the 1970s, institutions of higher education have confronted substantial challenges, necessitating a reevaluation of their fundamental purpose, role, organizational processes, and scope. This approach is predicated on the notion that it can more effectively address societal needs and exert a more substantial impact on the social landscape (Etzkowitz, 2004). Consequently, the university's function has evolved beyond the mere generation of knowledge, assuming a pivotal role in its dissemination to broader society. This dissemination is undertaken with the overarching objective of generating value. This phenomenon is often referred to as the "third mission" of the university (Vesperi *et al*., 2015). In recent years, universities have emerged as significant economic actors within their respective regions (Feola *et al*., 2021). These institutions have been identified as pivotal entities in the shaping and influencing of entrepreneurial ecosystems (Miller *et al*., 2018).

The third mission of universities includes an entrepreneurial aspect known as academic entrepreneurship, which refers to the efforts of universities to promote commercialization on campus and in the surrounding areas (Siegel & Wright, 2015). The mechanisms encompass formal systems, including academic start-ups, university patents, university-industry collaborations, and licensing, along with informal mechanisms such as consulting and networking activities involving academic staff and industrial partners (Baldini *et al*., 2015).

The impetus for the transition towards academic entrepreneurship is rooted in the notion that universities possess the potential and the obligation to assume a more substantial role in their countries' technological and economic development, complementing their traditional functions of research and teaching (Baldini *et al*., 2015). This augmentation in their contribution is facilitated by the valorization of the research conducted by university teams, which is expected to yield tangible benefits for the economic and social milieu (Vaquero-García et al., 2017). Academic entrepreneurship has been shown to have a significant impact on increasing the competitiveness of national economies. It does so by providing an effective channel for technology transfer and the rapid application of innovative discoveries in society (Gurău *et al*., 2012). Universities also have more selfish motives in their policies to support academic entrepreneurial activities. These activities can generate additional revenue for the university and its faculty (Etzkowitz & Leydesdorff, 2000), as well as increase opportunities to attract smart individuals interested in commercializing their research results (Simha, 2005) (Florida, 1999). This phenomenon extends to the realm of research, where highly skilled researchers possess the potential to augment their financial returns beyond conventional metrics such as publications and conference participation. This augmentation in revenue is attributable to the monetization of their scarce and valuable intellectual property (Acs *et al*., 2013). Academic entrepreneurship also includes enhancing opportunities for interaction with the industrial

world (Friedman & Silberman, 2003), which contributes to enhancing job opportunities (Vaquero-García *et al*., 2017), which positively impacts employment services (D'este & Perkmann, 2011), and increasing opportunities to obtain additional funding (D'este & Perkmann, 2011).

The initial scale to assess entrepreneurial orientation was developed over four decades ago by Miller (1983), who identified three dimensions of entrepreneurship: risk, innovation, and proactivity. The scale was subsequently developed by Lumpkin & Dess (1996) by incorporating two additional dimensions of entrepreneurial orientation that are just as significant as the initial three dimensions: independence and competitiveness. However, these dimensions proved inadequate in measuring the entrepreneurial orientation of universities as non-profit organizations (Tatarski *et al*., 2020). Consequently, Todorovic *et al*. (2011) developed a new scale, termed the ENTRE-U, to measure the entrepreneurial orientation of academic organizations (universities, colleges, and departments). The model is composed of four dimensions. The first dimension is *Research Mobilization*, which represents an emerging model of the research process. In this model, researchers engage with external stakeholders at all stages of the research process. This engagement is particularly important in ensuring that research results are communicated to multiple audiences in ways that are easy to understand. The result of this engagement is that the results can be more easily transferred and applied by stakeholders. The second dimension is *Unconventionality*. The primary focus is on the identification of novel opportunities and the assurance that research endeavors are both useful and beneficial to stakeholders. This entails undertaking activities that diverge from conventional and/or pioneering practices. *Industry Collaboration*: This component involves the active engagement of the university, faculty, and students in pertinent industry sectors. *University Policies*: This component pertains to the perception of university departments regarding university policies. Specifically, it concerns the degree to which these policies are perceived as "responsive to new ideas and innovative approaches," whether they are developed through a "bottom-up" approach, and the extent to which university policies are aligned with departmental objectives (Todorovic *et al*. 2011).

Study Problem and Hypotheses

In light of the growing recognition of international university rankings as a tool that determines the global standing of universities, the University of Mosul suffers from not being included in some rankings, such as ARWU and THE, and its weak ranking in others (QS: 1201-1400), according to the latest editions. As Salmi (2009) has defined, world-class universities that occupy the top positions in international rankings possess a set of characteristics that constitute a combination of three factors: a high concentration of talent, abundant resources, and favorable governance. An examination of these factors within the context of the University of Mosul reveals that the institution is characterized by a deficient concentration of talent, particularly in the domain of international talent. According to the QS ranking statistics for the year 2025, the institution has no international faculty members and the percentage of international students is less than 1%. The institution of higher learning in question lacks the autonomy that would typically enable it to implement a highly selective admissions policy. With regard to financial resources, the university places significant reliance on public government funding to support its expenditures and academic and research endeavors. With respect to the concept of favorable governance, the university exhibits deficiencies in several key areas. Firstly, there is a noticeable absence of organizational, academic, and financial autonomy. Secondly, the institution has been observed to operate with excessive centralization. Thirdly, the university administration does not align with the most recent advancements and practices in contemporary governance. This underscores the necessity for Iraqi universities, notably the University of Mosul, to adopt a comprehensive set of strategies to address the deficiencies that hinder their attainment of world-class university status. In light of the substantial advantages of academic entrepreneurship, as previously underscored by researchers and referenced in the study's introduction, the central issue of this study is as follows: The present study seeks to ascertain whether the dimensions of academic entrepreneurship contribute to the acquisition of characteristics associated with world-class universities in the context of the University of Mosul. The following hypotheses can be formulated:

H1: Research mobilization significantly affects the acquisition of world-class university characteristics.

H2: Unconventionality significantly affects the acquisition of world-class university characteristics.

H3: Industry collaboration significantly affects the acquisition of world-class university characteristics.

H4: University policies significantly affect the acquisition of world-class university characteristics.

Study objectives

The objective of this study is to identify the role of academic entrepreneurship orientation dimensions (i.e., research mobilization, Unconventionality, Industry collaboration, and university policies) in acquiring the characteristics of world-class universities.

The importance of the study

The importance of the study stems from its academic specificity which focuses on universities and their substantial contribution to economic and social development. Additionally, it delves into the implications of the third mission of universities, namely academic entrepreneurship, a subject that has recently garnered significant interest in developing countries. It also underscores the factors that contribute to the success of world-class universities and provides guidance on how to achieve these factors. These elements represent the characteristics of the ideal model for universities worldwide. The factors contributing to this enhancement include a high concentration of talent, abundant resources, and favorable governance. These elements work in concert to augment the impact of universities in achieving the Sustainable Development Goals. The preponderance of a high concentration of talent with the objective of quality education, as esteemed academic institutions prioritize the attraction, cultivation, and advancement of talent across diverse nationalities, encompassing students, faculty, and researchers. The abundant resources factor aligns with the objective of sustainable economic growth by increasing funding, diversifying its sources, and enhancing investment in higher education and scientific research infrastructure. The governance factor in question is one that is favorable, insofar as it aligns with the overarching goals of peace, justice, and strong institutions. This alignment is achieved by establishing effective governance in higher education.

Methodology

Measurements

The dimensions of academic entrepreneurship orientation (research mobilization, unconventionality, Industry Collaboration, and university policies) were measured using the ENTRE-U scale developed by Todorovic et al. (2011). In order to identify the characteristics that contribute to the success of world-class universities, a scale was developed. This scale was constructed based on theoretical literature and previous relevant studies, such as those by Salmi (2009), Zaini *et al*. (2015), and Xu (2024). The scale is composed of 23 questions that address the observed factors of academic entrepreneurship and 12 questions that address the observed factors of the characteristics of world-class universities.

Sample and Data

Following the acquisition of the necessary official endorsements, the questionnaire instrument was disseminated through a thorough survey of the study community, comprising 221 individuals, including the university president and his assistants, deans of colleges and their assistants, and heads of scientific departments and research centers. A total of 212 valid questionnaires were retrieved for analysis. The characteristics of the study sample are presented in Table 1.

Table 1. Demographic Summary of Sample

Characteristics	Categories	Frequency	Percentage
Six	Male	165	77.8
	Female	47	22.2
Age	(45 -36)	73	34.4
	(55 -46)	81	38.2
	(older -55)	58	27.4
Position	University President & Assistants	3	1.4
	Dean	22	10.4
	Assistant Dean	47	22.2
	Head of Department	140	66
Experience	1-10	35	16.5

	11-20	63	29.7
	More-21	114	53.8

Evaluation of the Measures

The study model was evaluated using confirmatory factor analysis (CFA) to ensure its adequate fit with the model represented by the data obtained from the study sample. As illustrated in Figure 2, the initial phase of analysis yielded specific outcomes.

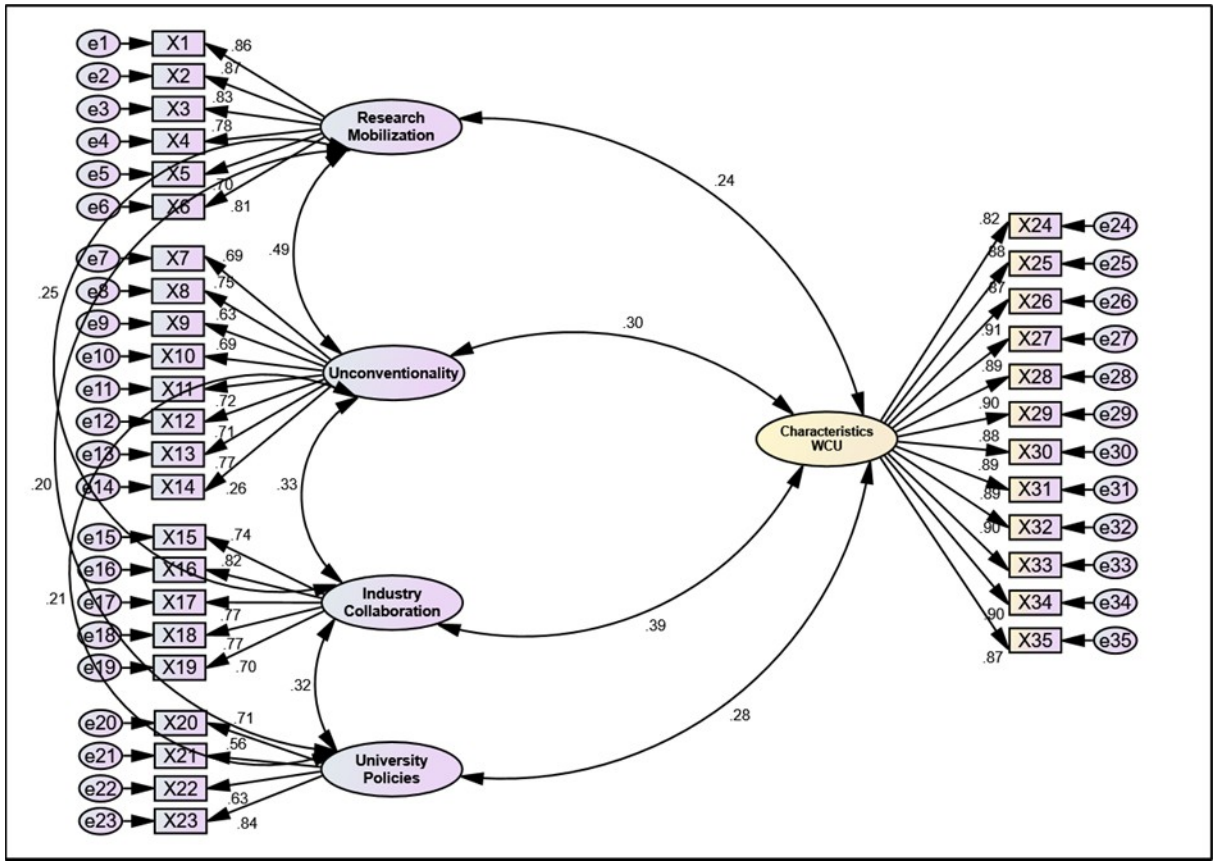


Figure 2. First Stage of Confirmatory Factor Analysis

Concurrently, Table 2 provides a comprehensive overview of the fit indices and acceptance thresholds for each indicator.

Table 2. Results of Fit Indices for the First Stage

Fit Indices	GFI	RMR	RMSEA	AGFI	TLI	CFI	IFI	CMIN/DF
Acceptance Threshold	0.90 ≤	0.05 ≥	0.08 ≥	0.85 ≤	0.90 ≤	0.90 ≤	0.90 ≤	3 ≥
Result	812.	058.	051.	784.	941.	946.	946.	1.557

The results presented herein clearly indicate that the indices (GFI, RMR, RMSEA) did not reach the acceptance threshold. Following a thorough review of the Modification Indices (M.I.) furnished by the program, a series of correlations were established between the variables that fall within the same latent variable. The variable (X14) was also deleted due to its weak loading coefficient of (.26), as it represents reverse coded. The variables (X1, X5, X7, X9, X17, X26) were also deleted due to the high correlations of measurement errors with the measurement errors of other latent and observed variables. Figure 3 and Table 3 present the results subsequent to the implementation of the requisite modifications.

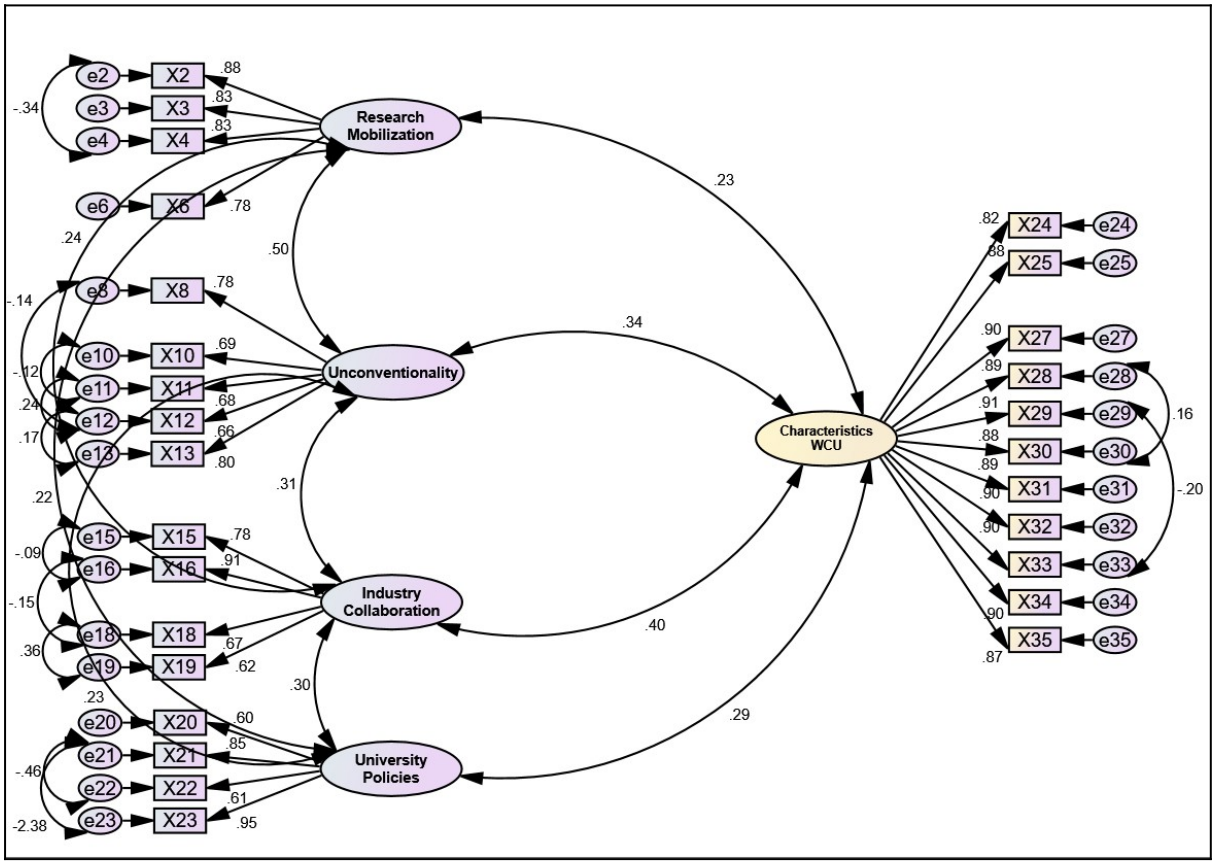


Figure 3. Second Stage of Confirmatory Factor Analysis

Table 3. Results of Fit Indices for the Second Stage

Fit Indices	GFI	RMR	RMSEA	AGFI	TLI	CFI	IFI	CMIN/DF
Acceptance Threshold	0.90 ≤	0.05 ≥	0.08 ≥	0.85 ≤	0.90 ≤	0.90 ≤	0.90 ≤	3 ≥
Result	900.	045.	026.	863.	988.	989.	989.	1.146

The results show that all indices exceeded the acceptance thresholds, with a clear improvement in the accepted indicators in the first stage. Thus, the academic entrepreneurship measurement model and the characteristics of world-class universities can be accepted.

Construct validity and reliability

Following the attainment of the fit indices, it is imperative to conduct a series of validity and reliability tests. These evaluations are essential for ensuring the precision of the scale and its applicability in evaluating the study model across a range of assessments. Table 4 presents the outcomes of the validity and reliability assessments. It was evident that all loading rates exhibited values that surpassed the established acceptance threshold of 0.50, while the average variance extracted (AVE) demonstrated a range from 0.566 to 0.784, both of which exceeded the aforementioned threshold. This finding indicates that the structure accounts for a minimum of half of the observed variability in its variables, thereby substantiating the convergent validity of the measurement model (Hair *et al*., 2021). Discriminant validity was confirmed using the Fornell & Larcker (1981) criterion, which states that the square root of the extracted variance should be greater than the correlations between the latent variables. The highest correlation value for each latent variable was then compared with the other variables and with the square root of the extracted variance. The findings indicated that all correlation values were found to be smaller than the average of the square root of the AVE, thereby confirming the discriminant validity of the study model. The composite reliability (CR) values ranged from 0.836 to 0.975, which exceeds the accepted threshold of 0.70. Cronbach's alpha values exceeded the accepted threshold of 0.60, indicating acceptable internal

consistency (Hair *et al*., 2021).

Table 4. Validity and Reliability Test Results

Factors	Factor loading	CR	AVE	√AVE > Corr	Cronbach's alpha
	AT: (CR ≥ 0.5)	AT: (CR ≥ 0.7)	AT: (CR ≥ 0.5)		AT: (CA ≥ 0.6)
Research mobilization		0.898	0.688	0.501 < 0.829	0.89
X2	0.881				
X3	0.829				
X4	0.826				
X6	0.780				
Unconventionality		0.845	0.721	0.501 < 0.849	0.84
X8	0.778				
X10	0.694				
X11	0.678				
X12	0.660				
X13	0.797				
Industry collaboration		0.836	0.566	0.404 < 0.752	0.84
X15	0.777				
X16	0.908				
X18	0.674				
X19	0.622				
University policies		0.846	0.589	0.302 < 0.767	0.77
X20	0.604				
X21	0.853				
X22	0.607				
X23	0.948				
Characteristics WCU		0.975	0.784	0.404 < 0.885	0.97
X24	0.820				
X25	0.878				
X27	0.904				
X28	0.886				
X29	0.907				
X30	0.881				
X31	0.890				
X32	0.897				
X33	0.904				
X34	0.899				
X35	0.873				

Hypothesis Testing

Figure 4 and Table 5 present the results of the study's hypotheses testing. The initial hypothesis (H1) posited that research mobilization would exert a substantial influence on the acquisition of characteristics associated with world-class universities. However, the study's findings did not support this hypothesis, as the value obtained was not statistically significant (β = .029; Critical Ratio C.R = .399; P = .690). The second hypothesis (H2) was confirmed by the study, which demonstrated a substantial positive impact of unconventionality on the acquisition of characteristics associated with world-class universities. This was evidenced by a significant value of (β = .253, C.R = 2.321), and a corresponding P-value of (.020), indicating statistical significance. The third hypothesis (H3) was confirmed by the study, which indicated a significant positive effect of industry collaboration on acquiring the characteristics of world-class universities. This was determined by a value of (β = .343; C.R = 3.712), which was significant with a value of (P = ***). The findings further substantiated the fourth hypothesis (H4), which postulates the pivotal role of university policies in fostering the attributes of world-class universities. The value obtained for this hypothesis was (β = .126; C.R = 2.336), denoting a statistically significant result with a p-value of (.019).

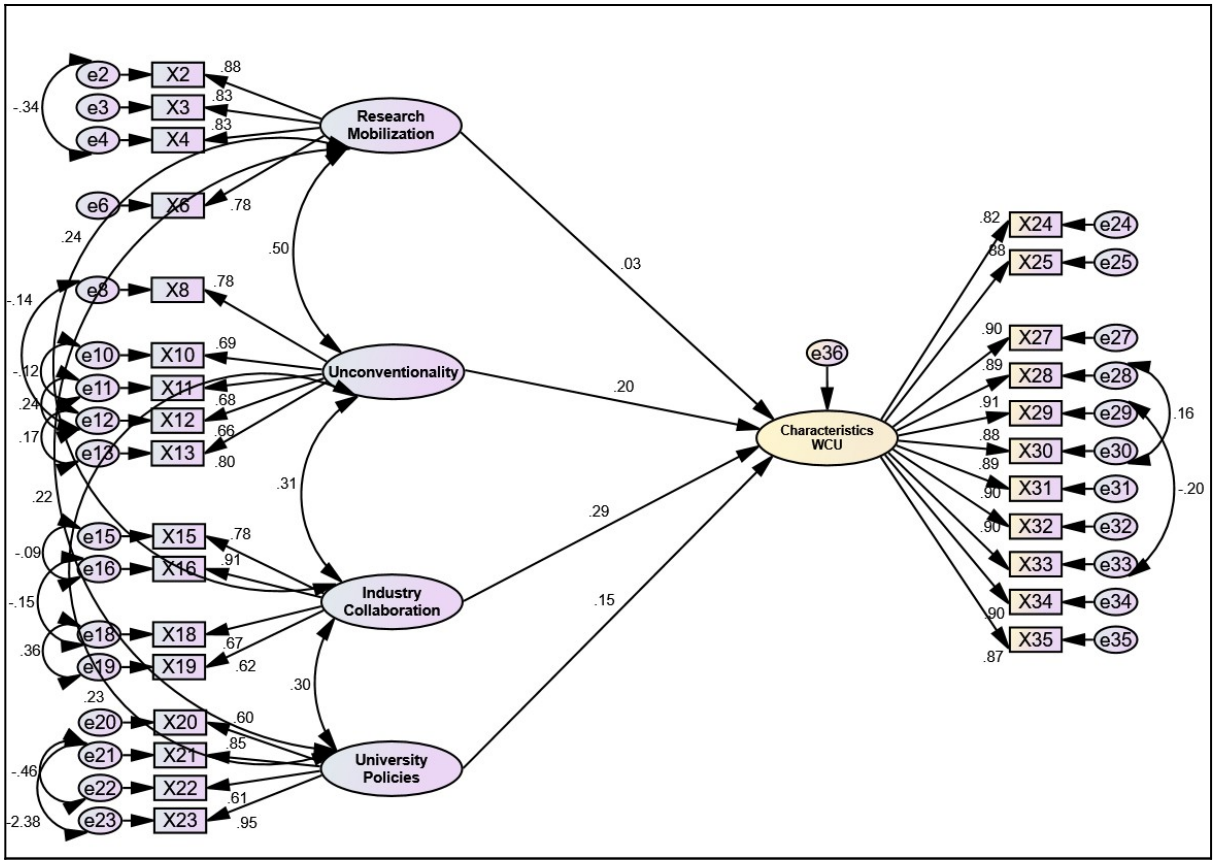


Figure 4: Structural Equation Modeling of Influence Relationships

Figure 5: Results of regression analysis

Exogenous Variable	The path	Endogenous Variable	Estimate (β)	.S.E	.C.R	P	SRW
Research mobilization	<-----	Characteristics WCU	029.	074.	399.	690.	031.
Unconventionality	----->	Characteristics WCU	253.	109.	2.321	020.	198.
Industry collaboration	----->	Characteristics WCU	343.	092.	3.712	***	291.
University policies	----->	Characteristics WCU	126.	054.	2.336	019.	147.

Discussion

The present study investigated the impact of academic entrepreneurship on the pursuit of internationalization. This investigation focused on the dimensions of academic entrepreneurship, including research mobilization, unconventionality, industry collaboration, and university policies. The study examined how these dimensions influence the acquisition of characteristics associated with world-class universities. According to Salmi (2009), a

world-class university is defined by a combination of concentrated talent, abundant resources, and favorable governance. The findings provide a context-based understanding of how universities in developing countries progress toward internationalization.

The research mobilization dimension concerns the translation of knowledge by transforming it into action. It addresses the problem of researchers focusing on knowledge creation and neglecting the task of facilitating the absorption of knowledge by others. Therefore, it encompasses both knowledge creation and application (Graham *et al*., 2006). In the context of the University of Mosul, the research mobilization dimension did not influence the pursuit of world-class university characteristics, indicating a weakness in translating research efforts into tangible benefits that contribute to the concentration of talent, diversification of funding sources, and improvement of governance. This may be due to the weak training in the field of research, the lack of a sufficient technical network to meet the needs required in the Iraqi labor market, and the complexity of the promotion system and weak funding (Dakhil *et al*, 2024), which makes how to publish research in journals indexed in global containers the main concern of researchers without paying attention to the extent of its applicability, which weakens the participation of stakeholders in all stages of research. This also indicates the weak direction and reliance on researchers in the problems and challenges facing the government, in addition to the weak investment of the private sector in research activities, which is reflected in the weak interaction and transfer of knowledge between the business sector and higher education (King, 2004).

Conversely, the study demonstrates a significant positive impact of the unconventionality dimension on the pursuit of global status. In light of the prevailing challenges confronting Iraqi universities, it is imperative to adopt unconventional approaches as a means of addressing these issues. This finding aligns with the conclusions of Todorovic *et al*. (2011), who posited that the unconventionality dimension signifies the capacity to discern novel opportunities beyond the confines of the conventional academic milieu. This notion emphasizes an emphasis on unconventional methodologies in the domains of research funding and problem-solving. Furthermore, it has been demonstrated to motivate researchers to adopt a more innovative approach, resulting in transformative outcomes that contribute to the cultivation of a dynamic environment where creativity, utility, and stakeholder influence intersect (Gaspar Pacheco et al., 2024). This finding aligns with the propositions of Etzkowitz & Leydesdorff (2000), who identified the potential for universities to play an enhanced role in innovation. Consequently, the university environment can function as a fertile ground for nurturing talent among researchers and students, fostering an organizational culture that fosters innovation and excellence. Moreover, this cultural shift can open up additional, non-traditional avenues for funding, thereby reducing the university's reliance on public funding.

The most significant positive impact on the university's pursuit of world-class university status has been demonstrated by industry collaboration. This initiative is rooted in the university's commitment to implementing the National Education Strategy for Iraq 2022-2031, which encompasses the strategic objectives of establishing sustainable strategic partnerships with the business and industrial sectors. This objective is realized through the establishment of scientific and applied connections between higher education institutions and a range of stakeholders, the development of university organizational structures that facilitate interaction with the business sector (i.e., the labor market), and the alignment of needs with economic and social development plans, thereby fostering mutually beneficial partnerships. An illustration of industry collaboration within the context of the University of Mosul is the solar energy project known as SolAware, a collaborative initiative between the University of Mosul and Teesside University, funded by the British Council. The initiative involves the engagement of local government entities, non-governmental organizations (NGOs), and other relevant stakeholders, ensuring a comprehensive and effective implementation of solar energy technology. This finding aligns with the Triple Helix III model proposed by Etzkowitz and Leydesdorff (2000), which posits that collaboration between government, industry, and academia is instrumental in enhancing the likelihood of success for academic initiatives and startup ventures. This objective is realized through the establishment of an innovation ecosystem, comprising university spin-offs, tripartite knowledge-based economic development initiatives, and strategic alliances between companies (large and small, operating in diverse fields and at varying levels of technology), government laboratories, and academic research groups. Moreover, industry collaboration has been demonstrated to enhance the entrepreneurial regulatory environment of academic institutions. This assertion is supported by the findings of Liyanage & Mitchell (1994), who observed that departments with close ties to industry exhibit a reduced degree of entrepreneurial cultural distance in comparison to those lacking such connections. According to D'este & Perkmann (2011), there are several benefits that universities and academics gain from industry collaboration. These benefits include the commercial marketing of scientific research

products and the accompanying personal income and intellectual property, the improvement of the level of education by benefiting from information about industrial problems and the possibility of applying scientific research, access to in-kind resources of materials and equipment, and access to research funding from either the government or industry. These benefits serve as incentives to achieve the desired collaboration.

The study demonstrated the significant positive impact of university policies on the university's pursuit of global standing. The cornerstones of maximizing the benefits of academic entrepreneurship are as follows: first, there must be belief in policies that stimulate innovation; second, there must be belief in the necessity of organizational development aimed at developing a positive organizational culture that encourages entrepreneurship. When these cornerstones are in place, the benefits of academic entrepreneurship can be maximized. The requirements of favorable governance, ample funding, and discovering and fostering talent can then be met. This finding aligns with the observations made by Abreu & Grinevich (2013), who noted that academic entrepreneurship can encompass activities that result in enhanced social welfare, positive organizational or societal transformations, and financial rewards for the entrepreneur. Despite the ongoing recovery process following the conflict, the University of Mosul is undertaking a series of entrepreneurship and innovation initiatives through its Technology Incubator and Ecosystem Division. Concurrently, the university's Rehabilitation, Employment, and Follow-up Division is implementing training and professional development programs. The objective of this initiative is to enhance the positive perceptions of the university's policies that encourage entrepreneurial activity. Prodan & Drnovsek (2010) posit that the enhancement of entrepreneurial cultures within academic institutions can be achieved through the implementation of courses and seminars that are specifically designed to cultivate an entrepreneurial mindset. These educational initiatives should be tailored to align with the distinct needs of various university constituents, including faculty members, departments, students, and researchers.

Conclusions

The present study examined the impact of academic entrepreneurship orientation dimensions on universities' pursuit of global stature. Salmi's (2009) synthesis of the characteristics of world-class universities, which represent the intersection of three factors (talent concentration, abundant resources, and favorable governance), was the basis of the study. The study concluded that three dimensions of academic entrepreneurship orientation (unconventionality, industry collaboration, and university policies) significantly and positively influence the University of Mosul's pursuit of world-class university characteristics. The study's findings contradict the extant theoretical literature on academic entrepreneurship. Specifically, the research mobilization dimension was found to have no significant impact on the acquisition of world-class university characteristics. This finding suggests that research activity at the University of Mosul is characterized by a lack of organization or insufficient influence to attract additional funding, concentrate talent, and ensure favorable governance. This phenomenon may be attributed to an overemphasis among researchers on the publication of a substantial volume of research, often without sufficient consideration for the applicability and practical utility of this research to relevant stakeholders. In contrast, industry collaboration emerged as the most influential dimension, underscoring the significance of Industry Collaboration and the labor market in the Iraqi context. This collaboration occurs both internally with private sector companies and government projects that necessitate direct leadership contributions from the university, as well as externally through the strengthening of external partnerships and planned collaborations with educational institutions, global companies, and international funding funds. This contributes to diversifying funding sources, attracting global talent, and encouraging the university to propose developing university governance procedures to facilitate this type of collaboration, given its significant role in promoting economic and social development in the university's environment. Conversely, the university's policies that promote innovation and unconventional academic pursuits align with the hallmarks of a world-class universities.

The study corroborated Salmi's (2009) model, asserting that any initiative or approach to achieving a global status for universities must contribute to the strengthening of the three determining factors, ensuring access to world-class universities and achieving tangible results. The study also emphasized the importance and feasibility of the entrepreneurial orientation in resource-limited environments. It is a reliable means that provides a powerful lever for overcoming the challenges and constraints facing universities in such environments. Furthermore, it opens up new horizons and aspirations towards achieving advanced positions in global competitiveness. This initiative also initiated a discourse on the distinctiveness of the academic environment in developing countries, particularly Iraq, with respect to leveraging the dimensions of the academic entrepreneurial orientation in the context of globalization. The study's findings contributed to the development of a scale of characteristics of world-class universities. This scale successfully passed validity and reliability tests, making it

available for use in future research.

Recommendations

The study recommends several measures to enhance the university's engagement with industry and the public sector. These include the establishment of formal collaborative arrangements, such as joint research centers, with the aim of facilitating knowledge transfer and generating additional revenue streams. It also recommends focusing on international collaboration with academic institutions and global funding agencies to expedite post-conflict recovery. Moreover, the university's policies could be refined to prioritize fostering innovation within the university culture. This could be achieved by encouraging interdisciplinary projects and by improving positive expectations. Additionally, the institution could host entrepreneurial idea competitions and increase the inclusion of entrepreneurship in academic curricula. These measures would contribute to the creation of an attractive and developing academic environment for talented students. The study further recommends the development of research mobilization aspects through the amendment of laws and regulations governing academic promotion. These regulations should be based on the extent to which research conducted by academic researchers at the university can be utilized. The study further emphasizes the need to shift from a focus on quantity to a priority on quality. It further calls for the establishment of essential research infrastructure and facilities, including comprehensive libraries that facilitate access to cutting-edge international research, state-of-the-art laboratories, and funding bodies and agencies that assume a significant portion of research expenses. The study further calls for the adoption of initiatives aimed at enhancing research capacity, encompassing training programs and the incubation of research projects. In addition to the marketing of scientific products, this approach aims to familiarize the community with the university's research capabilities and encourage all stakeholders to share their problems and find appropriate solutions, leveraging the university's research efforts.

Limits and future research

- The study employed cross-sectional data, which is limited in its ability to capture changes and relationships over time.
- The study was conducted at the University of Mosul, a leading and largest university in Iraq. However, the external validity of the results is limited due to the university's unique characteristics.
- The study's reliance on a self-reported questionnaire for data collection introduces the potential for personal interpretation bias, which can compromise the accuracy and reliability of the results.
- Further research on the proposed relationships could be conducted using longitudinal data. Additionally, the model could be applied to other Iraqi universities or universities in other countries. This would enhance the validity and reliability of the study model. In addition, further inquiry into the factors that explain the negligible impact of research mobilization on the acquisition of world-class university characteristics could be conducted. The study model may be expanded to incorporate mediating or moderating variables, such as support for national policies and organizational readiness for change.

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