



Investing and Optimizing Resources in Higher Education: Bridging and Benefitting Students, Academia, and the industry

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ARTICLE INFO

ABSTRACT

Article History:

Received: 09 September 2023

Received in Revised Form: 06 October 2023

Accepted: 05 November 2023

DOI: 10.14689/ejer.2023.108.003

Keywords

Society, Higher Education, Curriculum Development, Skills, Career Development, Academic Return on Investment.

Purpose: Upon enrolling in universities, students anticipate a return on their investment, encompassing resources, effort, and prospects for a successful career. This study was undertaken to explore the interplay among student investment, their knowledge and skills, the resources provided by higher education institutions, program alignment with industry demands, and adaptability to labour market trends. **Method:** Data was collected from university students in the Kingdom of Saudi Arabia, employing a random sampling method to gather responses from 384 participants through a Likert scale questionnaire. Statistical analyses were conducted using SPSS version 21.

Findings: The study revealed significant associations between student investment, knowledge and skills, university resources, program relevance to industry, and adaptability to labour market dynamics. **Implications for Research and Practice:** These findings contribute novel insights from both practical and theoretical standpoints, suggesting potential avenues for future scholarly inquiry.

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Introduction

Attaining higher or vocational education has perennially represented a significant milestone in the personal and professional advancement of individuals (O Jawabreh et al., 2023). Success in higher education confers social status, benefits, merit, and recognition, purportedly facilitating future professional careers. Consequently, students and parents invest in higher education institutions. However, the high expectations placed on universities by students and parents pose numerous challenges to fulfilling their roles (Yang & Ali, 2023). The challenges encompass curriculum design, faculty engagement, institutional investment expenses, regulatory compliance, reputation management, and intense global competition within the higher education sector (Rukmana et al., 2023).

While universities do not guarantee post-graduation employment, they significantly contribute to furnishing students with pertinent knowledge, skills, and support services to facilitate their entry into the workforce or entrepreneurship endeavours (Al-Hosaini et al., 2023). Nevertheless, accomplishing this necessitates capital investment, human resources (comprising faculty and administrative staff), and infrastructure development (Li et al., 2022; Qudah et al., 2014). Furthermore, universities must remain abreast of industry trends to ensure that their students' education aligns with the evolving demands of the labour market within their respective domains. Conversely, industries and corporations maintain high expectations of universities and students regarding outcomes and contributions (Omar Jawabreh et al., 2023; Jawabreh et al., 2022). Achieving congruence in the objectives and anticipations of higher education necessitates alignment among students, universities, and the industry labour market in fulfilling their respective roles.

Scholarly literature suggests that providing support through higher education is imperative for students to realize their aspirations. Julianti et al. (2021) indicated that students exhibiting high levels of motivation tend to perform more effectively in their educational pursuits. Furthermore, Kipli et al. (2023) emphasized the necessity for higher education institutions to provide students with both a productive approach and financial support. Ochieng and Gyasi (2021) indicated that students who benefit from scholarships exhibit enhanced performance when relieved of financial constraints. Aithal and Aithal (2023) stated that educational institutions must effectively execute organizational objectives to enhance their productive performance. Meanwhile, Maiya and Aithal (2023) emphasized that the study determined the necessity for higher education institutions to assist students in enhancing their skills to meet industry demands. Despite the significant findings of prior research, there remain gaps in the existing body of knowledge.

Upon enrolment in universities, students anticipate a tangible return on their investment in resources, effort, and the prospect of a promising career (Murad et al., 2022). This study aimed to assess the correlation between student investment, knowledge and skills, higher education resources, program relevance to the industry, and adaptability to labour market trends. Data was collected from 384 university students in Saudi Arabia using random sampling and analysed with SPSS. Significant relationships were found among the variables, offering novel insights for both practical and theoretical considerations, with potential future research directions.

Review of Literature

Universities primarily provide educational services, with the curriculum and associated degrees constituting the fundamental components of these services (Al-Hosaini et al., 2023). Designing a curriculum proves challenging due to various dynamic factors that may influence the relevance of a comprehensive three- or four-year degree program upon its implementation by the institution. The curriculum itself undergoes a "life cycle," whereby,

by the conclusion of a student's four-year academic journey, certain courses, content, or case studies may no longer align with contemporary relevance or currency (Zeidan & Bishnoi, 2020). Without regular updates, textbooks integrated into syllabi and classroom instruction risk becoming outdated, considering the time required for writing and publishing new editions. The review and approval of the curriculum, subject to the regulations and licensing authorities such as ministries of higher education or relevant bodies, may entail a protracted bureaucratic process for completion. Conversely, business schools in certain countries may be exempt from adhering to such regulatory procedures (Theobald et al., 2021). Given the absence of industry experts' involvement in curriculum design, development, and delivery, a significant portion of learning content tends to be theoretical and deficient in practical, hands-on experience.

Additionally, the faculty assumes a pivotal role in both student success and the overall achievement of the learning institution (Yang & Ali, 2023). Through direct engagement and regular interaction, faculty members provide guidance to students across the curriculum and deliver designated course content. However, the majority of faculty members are typically recent postgraduates or recruited based on their demonstrated research achievements, publications, and teaching experience over the years (Aithal & Aithal, 2023a). They may generally lack practical industry experience or field expertise relevant to their course subjects. Traditional assessment methods for courses, including exams, essays, and quizzes, may no longer be optimal for evaluating student progress and success (Pacher et al., 2021). This is attributable to the expectation of companies for students to possess the necessary skills and knowledge for entry-level positions and roles upon graduation (Jjuuko et al., 2021). In essence, companies desire recent graduates to demonstrate immediate competence upon employment. However, emerging technologies, software, and applications are disrupting conventional educational paradigms.

Numerous considerations and implications arise for students as they contemplate their choice to pursue higher education studies (Kipli et al., 2023). The initial consideration involves deciding whether to pursue university education, which typically entails a commitment of three to four years. Additionally, students may underestimate the determination, time, and effort required to obtain a degree (Aithal & Aithal, 2023b). Higher education is commonly viewed as an individual-level investment, wherein a student's commitment of time, effort, and financial resources is anticipated to yield returns in the form of enhanced knowledge, skills, and increased earnings post-graduation. Martha et al. (2021) emphasized that while higher education yields benefits for many individuals, the precise returns for each student remain highly uncertain and subject to change. These returns encompass various interrelated components, including the net cost of higher education post-grants or loans, duration of university attendance, degree completion rates, earnings potential associated with specific degrees or institutions, student demographic characteristics, and local economic circumstances (Maiya & Aithal, 2023).

Given the variability of tuition fees across universities, programs, and countries, students and parents also anticipate a swifter return on investment (Zhuang & Liu, 2022). They advocate for concise studies and curricula to facilitate early career commencement, especially among aspiring entrepreneurs who seek specific skill sets and knowledge (Sheikh et al., 2022). Students and parents often presume the presence of a seamless connection between academia and industry, thereby facilitating post-graduation employment prospects for students. Personal inclinations, familial considerations, and external circumstances and opportunities may sway a student's choice to pursue higher education (Ashour et al., 2020).

Numerous inquiries emerge upon a student's initiation into university. Among them is the inquiry into whether their initial interest and motivation endure sufficiently to sustain their academic pursuit until completion (Mourtzis et al., 2019). Initial perceptions

regarding the support, quality, standards, and overall atmosphere within the university exert an intangible yet influential effect on students. In fostering confidence and self-assurance, students require tangible indications of support and advancement toward their employment aspirations and goals (Bergquist et al., 2019). A student might opt for an alternate job or feel compelled to accept any available opportunity. In the long run, various facets of the higher education sector and business landscape must be deliberated upon when making investments and allocating resources (Alrabei et al., 2022; Salameh et al., 2020). This encompasses aspects such as branding and identity establishment, compliance with legal and operational standards, formulation of business plans and budgets, implementation of marketing and recruitment strategies, development of facilities and infrastructure, creation of staffing and development plans, acquisition of funding and financial resources, design of programs and curricula, establishment of policies and procedures, and cultivation of industry relationships.

It is essential to acknowledge that no business enterprise, including those within the higher education industry, is devoid of risk. In the context of investment by higher education institutions, these risks may manifest in financial, operational, environmental, political, or reputational dimensions (Julianti et al., 2021). Higher education institutions can explore various initiatives and methodologies to harmonize their curriculum with industry standards and fulfil student expectations. One potential approach involves establishing advisory committees comprised of professionals, subject matter experts, and other relevant stakeholders for individual college departments (Rasiah et al., 2020). The input and assistance provided by committee members would facilitate the curriculum review process, offer perspectives on present and forthcoming industry trends and labour market dynamics, and aid students in networking and securing internships and employment opportunities (Rukmana et al., 2023). Given that practical application is intrinsic to authentic work experiences, course content and evaluations should integrate theoretical knowledge, practical training, and technical proficiency (Kanan, 2020; Kanan et al., 2022). For instance, the culminating assessments for university degree courses could include a blend of individual traditional exams, collaborative team projects, and individual assignments. The incorporation of these varied assessments aims to cultivate students' ability to work independently and enhance their problem-solving aptitude (Ochieng & Gyasi, 2021). Concurrently, team assessments serve to cultivate collaborative skills and promote adaptability to diverse communication styles among students.

Enhancing faculty input may entail encouraging them to pursue professional certifications alongside their academic qualifications (Bhatnagar et al., 2021). By obtaining professional certifications, faculty members can remain current with industry trends and best practices, thereby integrating updated knowledge into their teaching and aligning it with relevant industry standards. Similarly, students can enhance their skills and competencies by pursuing professional certifications under the tutelage of industry expert trainers (Scalabrin Bianchi et al., 2021). Additionally, students can receive training to enhance their interpersonal skills, thereby better preparing them for their future careers. Moreover, considering the transferability of skill sets, the resilience of these skills offers a framework that enables higher education institutions to refine and more effectively align their programs and curricula with the changing demands and trends of the labour market, industry, and business landscape. The following hypotheses are developed.

Hypothesis 1: *Investment in students has a relationship with knowledge and skills attained by students.*

Hypothesis 2: *Investment in students relates to knowledge and resources allocated by higher education.*

Hypothesis 3: *Investment in students relates to the program's relevance to the industry.*

Hypothesis 4: *Investment in students relates to knowledge and ability to adapt to students' trends.*

Hypothesis 5: *Investment in students is related to knowledge and labour market needs.*

Maximum	5.000	5.000	5.000	5.000	5.000	5.000
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Secondly, the study evaluated the results of Pearson's correlations. The Pearson correlation coefficient (r) is widely utilized as a measure of linear correlation. According to Benesty et al. (2009), It is a numerical value ranging from -1 to 1, which indicates the strength and direction of the relationship between two variables. Moreover, when one variable changes, the other variable changes in the same direction. The findings presented in Table 2 confirmed the significant achievement of Pearson's correlation, demonstrating significant correlations among the variables.

Table 2*Pearson's Correlations*

Variable		IS	KSAS	KRAHE	RPI	KAATS	KNLM
1. IS	Pearson's r	–					
	p-value	–					
2. KSAS	Pearson's r	0.556	–				
	p-value	< .001	–				
3. KRAHE	Pearson's r	0.445	0.441	–			
	p-value	< .001	< .001	–			
4. RPI	Pearson's r	0.292	0.229	0.335	–		
	p-value	< .001	< .001	< .001	–		
5. KAATS	Pearson's r	0.373	0.185	0.280	0.585	–	
	p-value	< .001	< .001	< .001	< .001	–	
6. KNLM	Pearson's r	0.372	0.323	0.350	0.419	0.497	–
	p-value	< .001	< .001	< .001	< .001	< .001	–

Thirdly, the study examined the results of the model summary to assess the model's characteristics. The R-value of this test reflects the correlation between the dependent and independent variables, with values exceeding 0.4 warranting further analysis. Similarly, the R-square of the model summary indicates the proportion of total variation in the dependent variable explained by the independent variables. A value exceeding 0.5 suggests the model's effectiveness in elucidating the relationship.

Moreover, the adjusted R-square within the model summary indicates the extent to which the results can be generalized, specifically the variation of sample outcomes from the population in multiple regression analysis. A minimum difference between the R-square and adjusted R-square is essential. The observed R and R-square values surpassed the recommended threshold, resulting in minimal disparity between the R-square and adjusted R-square outcomes. Consequently, the model summary is deemed significant, and the findings are delineated in Table 3.

Table 3*Model Summary*

Model	R	R ²	Adjusted R ²	RMSE
H ₀	0.000	0.000	0.000	1.044
H ₁	0.579	0.735	0.726	0.857

Fourthly, the study conducted ANOVA to determine the significance of the model for further analysis. In ANOVA, a 95% confidence interval or a 5% significance level is typically selected. Therefore, the p-value should be less than 0.05 to be considered significant. In this study, the p-value was < .001, indicating significance. Similarly, the F-

values were examined, signifying the improvement in variable prediction achieved by fitting the model while considering the model's inherent inaccuracies. An F-ratio exceeding 1 indicates an efficient model. In ANOVA, the obtained F-value was 38.097. Consequently, the data reported in Table 4 confirmed the significance of the ANOVA findings.

Table 4

ANOVA

Model		Sum of Squares	df	Mean Square	F	p
H ₁	Regression	139.862	5	27.972	38.097	< .001
	Residual	277.544	378	0.734		
	Total	417.406	383			

Note. The intercept model is omitted, as no meaningful information can be shown.

Lastly, the research hypotheses were evaluated using regression coefficients. Relationships with $p < 0.05$ were deemed significant. The results of hypothesis 1 confirmed a positive association between investment in students and the knowledge and skills acquired by students. Similarly, hypothesis 2 revealed a significant correlation between investment in students and the resources allocated by higher education. Additionally, hypothesis 3 findings indicated a relationship between student investment and the program's alignment with industry requirements.

Furthermore, the findings of hypothesis 4 validated a connection between investment in students and their capacity to adapt to evolving trends. Finally, the results of hypothesis 5 indicated a correlation between student investment, knowledge, and labour market demands. The regression coefficients' outcomes are detailed in Table 5.

Table 5

Coefficients

Model		Unstandardized	Standard Error	Standardized	T	p
H ₀	(Intercept)	3.891	0.053		73.031	< .001
H ₁	(Intercept)	0.314	0.265		1.186	0.237
	IS > KSAS	0.191	0.019	0.184	9.684	< .001
	IS > KRAHE	0.133	0.052	0.134	2.551	0.011
	IS > RPI	0.107	0.045	0.117	2.354	0.019
	IS > KAATS	0.143	0.059	0.130	2.437	0.015
	IS > KNLM	0.419	0.068	0.333	6.180	< .001

Discussion

The empirical results of this study contribute significant insights to the existing literature. Hypothesis 1 findings affirm a positive correlation between investment in students and the acquisition of knowledge and skills. Nonetheless, these findings were juxtaposed with those of prior research. According to Kipli et al. (2023), foremost consideration is whether to seek admission to a university, a decision often influenced by the perceived benefits of pursuing higher education studies, typically spanning three to four years. Additionally, students may underestimate the determination, time commitment, and rigorous effort required throughout the duration to attain a degree. According to Scalabrin Bianchi et al. (2021), higher education is widely acknowledged as an investment undertaken by individuals, who are anticipated to allocate their effort, time, and financial resources in return for the acquisition of knowledge, skills, and enhanced

earnings post-graduation. Previous studies underscore the financial advantages associated with pursuing higher education for numerous individuals. According to [Rasiah et al. \(2020\)](#), the particular returns for each student remain subject to significant uncertainty and evolution over time. These components encompass the factors contributing to an individual's return on investment in higher education. The interrelated components frequently include the post-subsidy or loan cost of higher education, the duration of university enrolment, the likelihood of degree completion, the financial returns associated with a particular degree or institution, the demographic attributes of the student, and the regional economic factors and circumstances. According to [Ochieng and Gyasi \(2021\)](#), variability in tuition fees across universities, programs, and countries, students and parents alike seek and expect a swifter return on their investment. Particularly, they aim to reduce the duration of their studies and curriculum to hasten the initiation of students' professional careers. This desire is particularly pronounced among students aspiring to pursue entrepreneurship, as they require specialized skills and knowledge. They and their parents often perceive an inherent link between academia and the industry, facilitating their prospects of securing employment post-graduation.

The results of hypothesis 2 confirmed a significant association between investment in students and the knowledge and resources provided by higher education. Nevertheless, this correlation was evaluated in comparison to the findings of previous research. According to [Mourtzis et al. \(2019\)](#), higher education institutions have the opportunity to explore various initiatives and methodologies to align their curriculum with market demands and meet student expectations. One such initiative entails establishing advisory committees comprising professionals, experts, and stakeholders to assist college departments. The insights and support provided by committee members would enrich curriculum evaluation, provide valuable insights into current and future industry trends and labour market conditions, and facilitate student networking and access to internships and job opportunities. According to [Pacher et al. \(2021\)](#), practical application, course content and assessments should integrate theoretical concepts, practical training, and technical proficiency. Additionally, the final evaluations for university degree courses may be diversified to include individual traditional exams, collaborative projects, and individual assignments. According to [Zhuang and Liu \(2022\)](#), integrating diverse assessments would foster students' autonomy and bolster their problem-solving skills. Concurrently, team-based evaluations would cultivate collaborative competencies and encourage appreciation for diversity and varied communication styles among students. Augmenting faculty contribution could entail incentivizing them to pursue professional certifications alongside their academic credentials. According to [Bergquist et al. \(2019\)](#), individuals will remain abreast of contemporary trends and best practices, enabling the application of novel insights in their teaching methodologies while aligning with their respective sectors and domains. Furthermore, students can enhance their competencies and skills by engaging in professional certifications offered by expert trainers in the field. According to [Maiya and Aithal \(2023\)](#), students can undergo training to augment their interpersonal competencies, thereby enhancing their preparedness for professional pursuits. Furthermore, when assessing the transferability of particular skill sets, the enduring nature of these skills provides a framework that aids higher education institutions in refreshing and harmonizing their programs and curricula with the evolving needs and trends of the labour market, industry, and commerce.

Moreover, the outcomes of hypothesis 3 indicated a correlation between student investment and the program's alignment with industry standards. Nonetheless, this correlation was juxtaposed with the results of prior research. According to [Theobald et al. \(2021\)](#), universities primarily offer education as a service, with curricula and associated degrees constituting the core of this provision. Curriculum design presents a multifaceted challenge, as various components and dynamic factors can impact the efficacy of a

comprehensive three- or four-year degree program once it is implemented by the educational institution. According to [Aithal and Aithal \(2023\)](#), at the end of a student's four-year academic trajectory, specific courses, content, or case studies might have become antiquated. Textbooks that remain undated may lapse into obsolescence, given the lengthy process involved in writing and publishing them, which typically spans a few years. According to [Aithal and Aithal \(2023\)](#), assessing and sanctioning the curriculum can entail a protracted bureaucratic procedure contingent upon the regulations and licensing bodies involved, including ministries of higher education or pertinent authorities. Nevertheless, it is pertinent to acknowledge that business schools in specific nations might be exempt from such regulatory oversight. According to [Ashour et al. \(2020\)](#), the curriculum's design, development, and delivery lack the involvement of industry specialists, resulting in a substantial portion of the learning material and content remaining theoretical and devoid of practical application.

Furthermore, the findings of hypothesis 4 affirmed a correlation between investment in students, knowledge, and their capacity to adapt to evolving trends. However, this association was juxtaposed with the findings of prior studies. According to [Sheikh et al. \(2022\)](#), decision of a student to pursue higher education may be swayed by personal preferences, familial factors, and external opportunities. Upon enrolment, numerous other considerations arise. One such concern pertains to the endurance of their interest and motivation, which must be robust enough to sustain them until the completion of their degree. The initial perceptions regarding the support, quality, standards, and overall experience at the university exert an intangible yet immediate impact on the student. According to [Julianti et al. \(2021\)](#), to foster confidence and self-assurance, students seek tangible support and demonstrable progress toward their professional objectives, including participation in career and recruitment events. A student might explore alternative career paths or feel compelled to accept available opportunities. When undertaking long-term investments and resource allocation, it is imperative to consider various aspects of the higher education industry and its business dynamics. According to [Bhatnagar et al. \(2021\)](#), the elements involved in this framework include brand establishment and identity, legal and operational prerequisites, development of a comprehensive business plan and budget, strategic marketing and recruitment strategies, infrastructure establishment, staffing and professional development plans, financial resource acquisition and management, curriculum design, policy formulation, and cultivation of industry partnerships. According to [Martha et al. \(2021\)](#), It is imperative to recognize that no entity, including those in the higher education sector, is immune to risk. Higher education institutions encounter various financial, operational, environmental, political, and reputational risks in their investment pursuits.

Ultimately, the results of hypothesis 5 indicated a correlation between student investment, knowledge acquisition, and alignment with labour market requirements. However, this association was juxtaposed with findings from previous studies. According to [Zeidan and Bishnoi \(2020\)](#), the faculty assumes a pivotal role in both the academic accomplishments of students and the overall effectiveness of the educational institution. Through consistent and intimate interaction, they mentor students and deliver the assigned course content throughout the program. However, a majority of faculty members are either recent graduates or recruited on the basis of their proven proficiency in research, publication, and teaching experience. According to [Rukmana et al. \(2023\)](#), they possess limited practical experience within the sector or disciplines they teach. Traditional evaluation methods, including exams, essays, and quizzes, may no longer suffice in assessing a student's progress and performance in a course. Employers expect students to possess requisite skills and knowledge for entry-level roles upon graduation. According to [Jjuuko et al. \(2021\)](#), they anticipate recent graduates to demonstrate immediate proficiency upon employment. However, emerging technologies, software, and applications are

instigating substantial disruptions in traditional education methodologies. According to Murad et al. (2022), students must meticulously evaluate the ramifications of their choice to engage in higher education programs.

Conclusion

By delving into the intricate nexus between students and academia, this study underscored the pivotal role of student expectations and institutional investments in higher education, crucial for facilitating students' entry into the job market or venturing into entrepreneurship. The efficacy of this symbiotic investment is gauged by the acquisition of knowledge and skills by students, the allocation of resources by higher education institutions, the alignment of programs with industry needs, and the capacity to adapt to evolving trends and demands of the labour market. Ultimately, students anticipate a timely and meaningful return on their investments of effort, time, and financial resources. Conversely, industry and society at large expect students and higher education institutions to actively and purposefully contribute to their advancement.

Implications and Future Directions

This research significantly contributes to the literature by unveiling novel relationships. Firstly, it establishes that investment in students correlates with the acquisition of knowledge and skills, a fresh insight. Secondly, it reveals a link between student investment and the allocation of resources by higher education institutions, resolving inconsistencies in prior studies. Thirdly, it identifies a connection between student investment and program relevance to the industry, a previously unexplored area. Additionally, it unveils a relationship between student investment and their ability to adapt to trends, previously overlooked. Lastly, it highlights the correlation between student investment and meeting labour market needs, a noteworthy addition to the literature. In sum, these findings notably enrich the existing body of literature.

The study suggests that investing in students is crucial for their knowledge enhancement and goal achievement. Universities in Saudi Arabia should focus on facilitating student advancement to enhance learning outcomes. Financial support is recommended to aid students in their success. Tailoring student training to meet industry requirements is essential for their performance and motivation. Government support for student development is crucial for their productivity. Providing extensive support enables students to adapt to new techniques and knowledge, fostering entrepreneurial endeavours.

The study revealed a significant correlation between investment in students, their knowledge and skills, resources provided by higher education, program relevance to the industry, and adaptability to labour market trends. These findings offer novel insights from both practical and theoretical standpoints. However, avenues for further research are evident. Firstly, scholars should gather longitudinal data from students to assess the impact of educational investment on strategic learning outcomes, thereby advancing organizational objectives. Secondly, data should be collected from diverse geographical regions to compare findings and identify potential variations. Additionally, future studies should explore the moderating role of students' psychological health on their learning outcomes, contributing further to the existing body of literature.

Abbreviations: *IS = Investment on Students, KSAS = Knowledge and Skills Attained by Students, KRAHE = Knowledge and Resources Allocated by Higher Education, RPI = Relevance of Program to the Industry, KAATS = Knowledge and Ability to Adapt the Trends by Students, and KNLM = Knowledge and Needs of Labor Market*

References

- Aithal, P., & Aithal, S. (2023). Incubationship–A Systematic Analysis of Recently Announced Super Innovation in Higher Education using SWOC, ABCD, and PESTL Frameworks. *International Journal of Case Studies in Business, IT, and Education (IJCSBE)*, 7(4), 48-90. <https://ssrn.com/abstract=4673875>
- Aithal, P., & Aithal, S. (2023). Super Innovation in Higher Education by Nurturing Business Leaders through Incubationship. *International Journal of Applied Engineering and Management Letters (IJAEML)*, 7(3), 142-167. <https://dx.doi.org/10.2139/ssrn.4673874>
- Al-Hosaini, F. F., Ali, B., Baadhem, A. M., Jawabreh, O., Atta, A. A. B., & Ali, A. (2023). The Impact of the Balanced Scorecard (BSC) Non-Financial Perspectives on the Financial Performance of Private Universities. *Information Sciences Letters*, 12(9), 2903-2913. <http://dx.doi.org/10.18576/isl/120901>
- Alrabei, A. M., Al-Othman, L. N., Al-Dalabih, F. A., Taber, T. A., & Ali, B. J. (2022). The impact of mobile payment on the financial inclusion rates. *Information Sciences Letters*, 11(4), 1033-1044. <https://dx.doi.org/10.18576/isl/110404>
- Ashour, S., Rennie, C. G., & Santamaria, S. (2020). Rebsamen investment fund integration in finance education. *Managerial Finance*, 46(4), 565-575. <https://doi.org/10.1108/MF-01-2019-0053>
- Benesty, J., Chen, J., Huang, Y., & Cohen, I. (2009). Pearson Correlation Coefficient. In I. Cohen, Y. Huang, J. Chen, & J. Benesty (Eds.), *Noise Reduction in Speech Processing* (pp. 1-4). Springer Berlin Heidelberg. https://doi.org/10.1007/978-3-642-00296-0_5
- Bergquist, D., Hempel, C. A., & Lööf Green, J. (2019). Bridging the gap between theory and design: a proposal for regenerative campus development at the Swedish university of agricultural sciences. *International Journal of Sustainability in Higher Education*, 20(3), 548-567. <https://doi.org/10.1108/IJSHE-04-2019-0143>
- Bhatnagar, A. K., Khanna, U., & Rana, A. (2021). Industry Connect Framework (ICF) For Institutions of Higher Education. *Academy of Strategic Management Journal*, 20, 1-9. <https://pesquisa.bvsalud.org/global-literature-on-novel-coronavirus-2019-ncov/resource/pt/covidwho-1525068>
- Jawabreh, O., Baadhem, A. M., Ali, B. J., Atta, A. A. B., Ali, A., Al-Hosaini, F. F., & Allahham, M. (2023). The Influence of Supply Chain Management Strategies on Organizational Performance in Hospitality Industry. *Appl. Math*, 17(5), 851-858.
- Jawabreh, O., Qaddhat, R., Jahmani, A., Al Najdawi, B., Ali, B., & Ali, A. (2023). Electronic Learning Platforms and Their Impact on Education Quality at Faculties of Tourism and Hospitality during Corona Pandemic. *Applied Mathematics & Information Sciences (AMIS)*, 17(1), 153-160. <https://doi.org/10.18576/amis/170116>
- Jawabreh, O., Shniekat, N., Saleh, M. M. A., & Ali, B. (2022). The strategic deployment of information systems attributes and financial performance in the hospitality industry. *Information Sciences Letters*, 11(5), 110504. <https://doi.org/10.18576/isl/110510>
- Jebb, A. T., Ng, V., & Tay, L. (2021). A review of key Likert scale development advances: 1995-2019. *Frontiers in psychology*, 12, 637547. <https://doi.org/10.3389/fpsyg.2021.637547>
- Jjuuko, R., Tukundane, C., & Zeelen, J. (2021). Reclaiming the educative power of vocational placements: Experiences from agriculture education practice in Uganda. *International Journal of Training and Development*, 25(2), 144-159. <https://doi.org/10.1111/ijtd.12212>
- Julianti, M. R., Gaol, F. L., Ranti, B., & Supangkat, S. H. (2021). IT governance framework for academic information system at higher education institutions: A systematic literature review. 2021 International Conference on ICT for Smart Society (ICISS),
- Kanan, M. (2020). Assessment of the COPQ due to poor maintenance practices in Saudi industry. *SSRG International Journal of Engineering Trends and Technology*, 68(11), 163-172. <https://doi.org/10.14445/22315381/IJETT-V68I11P222>

- Kanan, M., Wannassi, B., Barham, A. S., Ben Hassen, M., & Assaf, R. (2022). The quality of blended cotton and denim waste fibres: the effect of blend ratio and waste category. *Fibers*, 10(9), 76. <https://doi.org/10.3390/fib10090076>
- Kipli, M., Khairani, A. Z., & Amzah, F. (2023). Harmonizing Hospitality Industry and Higher Education: Can Community College Compensate the Void? *Journal of Hospitality & Tourism Education*, 35(4), 277-288. <https://doi.org/10.1080/10963758.2022.2056043>
- Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and psychological measurement*, 30(3), 607-610. <https://doi.org/10.1177/001316447003000308>
- Li, Y., Zhao, S., Bai, L., & Ali, B. J. (2022). Institutional investor company social responsibility report and company performance. *Applied Mathematics and Nonlinear Sciences*, 7(2), 641-654. <https://doi.org/10.2478/amns.2021.2.00107>
- Maiya, A. K., & Aithal, P. (2023). A Review-based Research Topic Identification on How to Improve the Quality Services of Higher Education Institutions in Academic, Administrative, and Research Areas. *Maiya, AK, & Aithal, PS, (2023). A Review based Research Topic Identification on How to Improve the Quality Services of Higher Education Institutions in Academic, Administrative, and Research Areas. International Journal of Management, Technology, and Social Sciences (IJMTS), 8(3), 103-153. https://ssrn.com/abstract=4575687*
- Martha, A. S. D., Junus, K., Santoso, H. B., & Suhartanto, H. (2021). Assessing undergraduate students' e-learning competencies: A case study of higher education context in Indonesia. *Education Sciences*, 11(4), 189. <https://doi.org/10.3390/educsci11040189>
- Mourtzis, D., Tsakalos, D., Xanthi, F., & Zogopoulos, V. (2019). Optimization of highly automated production line: An advanced engineering educational approach. *Procedia Manufacturing*, 31, 45-51. <https://doi.org/10.1016/j.promfg.2019.03.008>
- Murad, M., Malik, A. A., & Ullah, M. I. (2022). Regulating Students Behavioral Emotions: The Mediating Role of Intention and Perceived Belief Control. *Review of Applied Management and Social Sciences*, 5(3), 423-435. <https://doi.org/10.47067/ramss.v5i3.258>
- Ochieng, V. O., & Gyasi, R. M. (2021). Open educational resources and social justice: Potentials and implications for research productivity in higher educational institutions. *E-Learning and Digital Media*, 18(2), 105-124. <https://doi.org/10.1177/2042753021989467>
- Pacher, C., Murphy, M., Rauch, E., Adam, K., Valakas, G., Modis, K., & Pierer, R. (2021). Virtual E-Learning Community Hub-For Higher Education in the Raw Materials Sector. Proceedings of the International Conference on Industrial Engineering and Operations Management (IEOM) Singapore,
- Qudah, M. K. M. A. L., Osman, A., & Ali, B. J. A. R. (2014). Effect of human resource polarization, training and development, and human resource stimulation on the strategic planning of human resources: evidence from the Government Ministry in Jordan. *Advances in Environmental Biology*. <https://link.gale.com/apps/doc/A392176426/AONE?u=anon~9e1b4103>
- Rasiah, R., Kaur, H., & Guptan, V. (2020). Business continuity plan in the higher education industry: University students' perceptions of the effectiveness of academic continuity plans during COVID-19 pandemic. *Applied System Innovation*, 3(4), 51. <https://doi.org/10.3390/asi3040051>
- Rukmana, A. Y., Meltareza, R., Harto, B., Komalasari, O., & Harnani, N. (2023). Optimizing the Role of Business Incubators in Higher Education: A Review of Supporting Factors and Barriers. *West Science Business and Management*, 1(03), 169-175. <https://doi.org/10.58812/wsbm.v1i03.96>
- Salameh, A. A., Abu AlSondos, I. A., Ali, B. J. A., & Alshali, A. F. (2020). From Citizens Overview: Which Antecedents' Can Assist to Increase their Satisfaction Towards the Ubiquity of Mobile Commerce Applications? *International Journal of Interactive Mobile Technologies (IJIM)*, 14(17), pp-45-55. <https://doi.org/10.3991/ijim.v14i17.16589>

- Scalabrin Bianchi, I., Dinis Sousa, R., & Pereira, R. (2021). Information technology governance for higher education institutions: A multi-country study. *Informatics*,
- Sheikh, R. A., Bhatia, S., Metre, S. G., & Faqih, A. Y. A. (2022). Strategic value realization framework from learning analytics: a practical approach. *Journal of Applied Research in Higher Education*, 14(2), 693-713. <https://doi.org/10.1108/JARHE-10-2020-0379>
- Theobald, K. A., Coyer, F. M., Henderson, A. J., Fox, R., Thomson, B. F., & McCarthy, A. L. (2021). Developing a postgraduate professional education framework for emergency nursing: a co-design approach. *BMC nursing*, 20, 1-10. <https://doi.org/10.1186/s12912-021-00560-z>
- Yang, L., & Ali, B. (2023). Mathematical Statistics Technology in the Educational Grading System of Preschool Students. *Applied Mathematics and Nonlinear Sciences*, 8(1), 593-602. <https://doi.org/10.2478/amns.2022.2.0044>
- Zeidan, S., & Bishnoi, M. (2020). An effective framework for bridging the gap between industry and academia. *International Journal on Emerging Technologies*, 11(3), 454-461. <https://www.researchgate.net/profile/Susan-Zeidan/publication/341830407>
- Zhuang, T., & Liu, B. (2022). Sustaining higher education quality by building an educational innovation ecosystem in China—policies, implementations and effects. *Sustainability*, 14(13), 7568. <https://doi.org/10.3390/su14137568>