ENHANCING INTERNATIONALIZATION MANAGEMENT OF HIGHER EDUCATION THROUGH ARTIFICIAL INTELLIGENCE

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Abstract

The current paper proposes a conceptual framework and discusses the role that artificial intelligence can play in internationalizing higher education with an emphasis on the necessity of further empirical research. Internationalization of higher education incorporates the global, comparative, and cross-cultural dimensions of teaching, research, and service. In this, there lies the potential for technological change driven by radical Artificial intelligence (AI) to change the process through facilitation of international collaborations, promotion of student mobility, and support for cross-cultural learning. The study offers conceptual insight into ways AI can contribute to Internationalization through online learning and virtual exchange and lays ground for policymakers, educators, and administrators. It highlights once again the necessity for balanced and inclusive approaches. The paper concludes with the mention of gaps in the available literature, calling for empirical studies that could strengthen its conceptual framework.

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1. INTRODUCTION

Internationalisation occupies the position of a strategic priority among universities across the globe, resulting from the emerging recognition that higher education institutions must develop and maintain their competitiveness in an environment of global interdependence. Internationalisation is thus a process of integration of international, comparative, and cross-cultural elements into the roles of teaching, research, and service. Internationalisation does not here refer merely to academic success but also to such things as the development of intercultural awareness and global citizenship and to an understanding of and engagement with a globalized economy.

Among other activities, internationalisation in higher education involves attracting foreign students to regular degree programs, establishing and developing students' exchanges, and supporting participants of such programs in overcoming language barriers. While such activities are essential for internationalisation, they are time and resource consuming for higher education institutions and costly for the students

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participating in them. Additionally, for the students who require a visa for an international travel joining degree or exchange programs abroad might be more challenging. Rapidly developing technology and artificial intelligence could be a good help in overcoming these obstacles.

It is hardly possible to overestimate the role of technological developments in delivering necessary tools and facilitating platforms for strengthening international collaboration and knowledge exchange. The phenomenally rapid progress made in developing Artificial Intelligence (AI) technology brings with it a lifetime opportunity to fundamentally transform the way teaching takes place and to drive the globalisation agenda forward.

Al technologies can analyse data, process languages, and engage in personalized learning, all of which promise to change the way Internationalisation is practiced. This paper investigates the connection between the areas of AI and the Internationalisation of higher education. At a conceptual level, it sheds light on the possible contributions AI can make to this area. The focus is not just on the way AI could be used to facilitate international collaboration, enhance student mobility, or, in general, support cross-cultural learning. The paper very specifically aims at deriving insights valuable to the policymakers, educators, and administrators in higher education with respect to ways AI can be used in establishing and enhancing international degree and exchange programs, as well as in providing language support for participants and minimising operational costs for higher education institutions.

2. METHODS

The present study began with a general critical review of available literature. It placed importance on the context involving technology and the internationalisation of higher education. The selection criteria of literature were relevance to the topic of AI's role in education and prospects for its internationalisation; credibility of the sources, for example, peer-reviewed journals, reputable reports; and geographical diversity, to obtain a global perspective. The literature review focused on most recent publications available in order to represent new developments and tendencies in the area.

The literature was identified through a combination of academic databases and search engines, including Google Scholar, JSTOR, and Scopus. Specific search words used included "AI in education", "internationalisation of higher education", "virtual exchange", and "online learning".

It included those studies that particularly focused on AI regarding the internationalisation of higher education, with a focus on online learning and virtual exchange. Papers exclusively dealing with domestic education contexts, those not discussing the role of AI, were therefore excluded in this review. This ensured that the chosen literature would be relevant to the research focus.

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From this literature review, themes and patterns have been identified, such as how AI technologies were utilized in education and the impact on internationalisation efforts, but also challenges and opportunities that emerge. A thematic analysis was done to group these themes, focusing on the potential role of AI in online learning and virtual exchange. The analysis was structured in a manner tailored to extract comprehensive insights into the role that AI plays toward the internationalisation of higher education. The review recognized that potential bias may arise, for example, through a large number of studies coming from regions or key authors. Therefore, the literature review was targeted to avert these biases by selecting studies from different geographical regions and emanating from different traditions within academia.

This literature review was conducted by one researcher who read through all the materials sourced and made some interpretation of the findings.

3. LITERATURE REVIEW

Current literature review provides insights of the academic journal articles, reports, and books on AI in education and AI in the Internationalisation of higher education. This is an attempt to fish out the common themes, trends, and gaps that currently exist in research and, thereby, builds the basis for the comprehension of the contemporary state of knowledge.

3.1 Al in education: a general overview of current trends

Al technologies increasingly explore educational settings with promises of large changes in how personalized learning delivery is to be made, administrative efficiency, and general outcomes in education. Machine learning algorithms can, for example, be designed to review large data sets in order to individualize educational content according to students' needs. Such algorithms can also predict student performance, identify gaps in learning, and suggest remedial interventions at the individual level, thus enhancing student engagement and performance.

For over 30 years, Artificial Intelligence in Education has been a developing field of research into learning in a variety of contexts: traditional classrooms and workplaces. AIEd is designed to support formal education and lifelong learning by integrating artificial intelligence with learning sciences such as education, psychology, neuroscience, linguistics, sociology, and anthropology. This interdisciplinary approach aims to create flexible, inclusive, personalized, engaging, and effective adaptive learning environments and tools, according to Luckin et al. (2016). AIEd attempts to express educational, psychological, and social knowledge in a computationally rigorous and explicit form, therefore uncovering

the complexities of learning processes. This understanding shapes AIEd software design and informs nontechnological learning methods by which teachers can trace and correct micro-steps and common misconceptions in their subjects, such as physics.

The educational scene is changing today, as is the field of AIEd, both of which require a diversified approach to learning goals and methodologies. As argued above, Roll and Wylie (2016) suggest that the AIEd community develop from its strengths and continue to branch out into other contexts and domains. The authors make a case for ILEs to develop integration with multiple learning settings, teachers' practices, cultural norms, existing resources, and learners' everyday life. In doing so, one could utilize not only the distinctive affordances of ILEs but also sustain collaborative, omnipresent, and portable learning experiences. It is with the diversified approach that this will be possible for future educational systems to improve across tasks, contexts, and goals, developing tutors to become mentors in support of domain knowledge and lifelong skills in problem-solving in real life.

Al-driven tools also bring gains in efficiency within the education administrative process, such as grading and assessment. Automation of tasks through such tools frees teachers to focus on personalized interaction and pedagogy. For example, automated grading of assignments and tests provides quick feedback to the students, hence leaving the educators with more time for direct student engagement (Luckin et al., 2016).

According to Huang, Saleh, and Liu (2021), with the ever-developing AI technology, there will rush in rapidly applying it in the education sector. By exploring the current applications of AI in education and solving challenges involved, educators and students can have full knowledge of "AI + education." One gets knowledge that enriches teaching quality while offering diversified and personalized support for learning approaches. Ultimately, AI can make learning more effective by teaching and personalising the learning process.

More than that, AI has leapfrogged across geographical boundaries to the extent that it facilitates international collaboration among researchers and institutions. In this regard, AI-based platforms will further help in making a research alliance virtually possible, thereby making it easier for collaborations among academics working on common projects irrespective of their locations. In this way, it will give a more cooperative and connected academic community where sharing of knowledge and expertise becomes easier.

Briefly, AI integrated into education can turn out to be a very powerful tool in changing the face of teaching and learning. Fundamentally, it involves the educators capitalising on AI in improving instructional quality and facilitating students at each level toward personalized and effective learning experiences.

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3.2 Internationalisation of higher education

Internationalisation of higher education is a comprehensive strategy through which international, intercultural, and global dimensions are integrated into the core mission and operations of post-secondary institutions. According to Knight (2004), this includes the mobility of students and staff, the establishment of international partnerships, and the development of globally informed curricula. This, therefore, forms strategies that are of essence in preparing students for careers globally.

However, the traditional modes of Internationalisation face serious challenges. Altbach and Knight (2007) have drawn attention to the fact that problems, including lack of funds, restrictions in visa policies, as well as other cultural factors, may act against the effectiveness of such steps and cause them to be out of reach. For example, high fees and strict visa rules may deter prospective students from joining an institution.

A possible way to pass such issues is through innovation carried out with the help of digital technologies and virtual platforms. These could be new ways to help overcome the need for physical mobility identified by De Wit et al. (2015) with a vision that virtual exchanges and cross-cultural learning episodes can be an alternative to international experiences -- flexible and accessible in nature.

More specifically, successful Internationalisation strategies should be contextual and goal specific. Alpenidze (2015) goes further to itemize the need for specific integrated strategies that coordinate with the mission and vision of an institution. This will ensure that the Internationalisation efforts are relevant and of a sustainability nature.

As was evidenced by the study by Chokheli and Alpenidze (2015), Internationalisation strategies must be contextualized in the baseline of local culture, economy, and politics in order to be more successful.

New possibilities related to re-envisioning Internationalisation are evident through digital transformation. Its potential has been identified in the creation of more inclusive and globally connected environments in education. In this way, the technologies democratize access to international opportunities for all students, opening up these opportunities to students from every walk of life (Marinoni and van't Land, 2020).

Finally, scholarly views on Internationalisation weigh in. These are representative of Alpenidze, Fenech, and Baguant (2022), which have noted the policies and supportive practices needed by academics and provide for more effective and inclusive approaches to Internationalisation.

In other words, Internationalisation in higher education should take new forms to negotiate traditional barriers, lever digital innovations, and align with institutional contexts and goals in accomplishing global collaboration, inclusivity of experience, and a strengthened quality of education for the ideal preparation of students toward success in today's intercultural globalized world.

3.3 Technology and internationalization

While the literature on the use of technology in the Internationalisation of higher education remains sparse, there are limited studies on this junction. The available literature, however, supports the strong role technology can play in such Internationalisation, most especially through online learning platforms and virtual exchange that would facilitate establishing and enhancing international degree programs and exchanges.

Technology has been deeply affecting Internationalisation and mobility. To some extent, like the term "Internationalisation", that of "digitalisation" reflects a generic term which covers a very wide range of activities, models, and strategies. An important example is online distance education; it is a development and a digital extension of traditional open university models. This can greatly enhance Internationalisation by providing global access to academic programs, without necessarily being thwarted by financial and logistic challenges that characterise physical mobility (De Wit & Altbach, 2021).

O'Dowd (2022) writes about the development that virtual exchange environments that will enable in offering students the ability to learn in a cross-cultural way without traveling in the real world. Through such platforms, students could feel as though they had physically visited other countries by discussing topics online with counterparts from other cultures and undertaking a group project together to enhance their global mindset. Thus, it democratises global education and brings it to students who otherwise would not be able to go abroad. Helm (2020) shared the potential of virtual exchange more fruitful in realising cross-cultural learning and integration. Virtual exchange platforms can help a student engage in in-depth discussion with peers from different cultures without geographical boundaries and allow understanding across borders.

As language is considered one of the main barriers for international online learning and virtual exchanges in cross-cultural context, the technology integration is important to overcome language challenges.

Recent literature depicts technology as supportive in the Internationalisation of higher education by breaking into the most critical challenges and creating and creating new opportunities for cooperation and learning. As an example, Helm (2020), in an article, shows the contribution of technology in providing language translation tools between students and educators with diverse mother tongues. Such tools can aid in the provision of real-time translation of lectures, discussions, and other academic materials, making the participation process easier for the non-native speaker within the framework of the international program. Hence, all this would cut down language barriers, which very often become the most serious constraint for proper international collaboration.

In summary, the integration of technology in higher education not only increases access to global opportunities but also creates new pathways for cross-cultural engagement and collaboration. It has redefined the playing field of global education in becoming more inclusive, accessible, and connected.

4. CONCEPTUAL FRAMEWORK

After extensive research into the literature regarding the Internationalisation of higher education, technology in higher education, and the integration of AI into education practices, the aspiration is to contribute to the growing discussion on how AI can be used to Internationalise higher education. Special attention is given to online learning and virtual spaces, which are dramatically shaping the global ecosphere of learning processes. Based on that intention, the following concepts, insights, and proposals are deduced:

Artificial intelligence is increasingly taking a landscape in education, thereby adding a new dimension to the role of technology in the Internationalisation space of higher education. Given the interaction of technologies that continue to impact Internationalisation and mobility, AI can play a very key role in increasing global access and deepening cross-cultural engagement. Hence the proposed framework below will enhance virtual exchanges and online learning. Such platforms will finally contribute to establishing and enhancing degree and exchange programs, minimize the cost of administration and participating in such programs for institutions and students.

Artificial Intelligence in Online Distance Education: AI can ensure that, in the online distance-learning component of higher education, learning experiences are tailored to the needs of the student, therefore creating more access and effectiveness for global academic programs. In this respect, AI-powered adaptive learning platforms have the potential to tailor educational content at the individual level to the needs of students from diverse backgrounds, so learners engage with material at their own pace and place, and according to their own learning style. In such cases, customisation is particularly required in international settings where students may have different educational bases and cultural contexts. Moreover, AI-driven analytics can provide educators with insight into student progress, highlighting areas where additional help might be needed. By this, institutions can further aid international students in overcoming potential barriers due to differences in the educational systems or weak language skills. Such arrangements will make sure that degree programs offered to the foreign students can be cost-effective, more affordable for the students, and eliminated the travel barriers, especially for those who need to apply for a visa to physically participate in such programs.

Al and Virtual Exchange Platforms: According to O'Dowd (2022), there are considerable gains for virtual exchange environments. Al can facilitate the creation and management of virtual exchange groups by searching through students' profiles and matching those with complementary skills, interests, and cultural backgrounds, thus maximising the possibility of effective teamwork and proficient learning from intercultural exchanges. Such platforms will enhance students virtual mobility as well as increasing ni=number of participant students.

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Al in Overcoming Language Barriers: Probably, the most important role that Al can play in the process of Internationalisation is in surmounting the linguistic barrier. According to Helm, one of the most substantial hurdles in integrating students in these very programs is in the language barrier. Real-time captioning and multilingual chatbots with Al integrate full participation in the international education this student, regardless of their native language. These technologies will ensure that non-native speakers engage in lectures, discussions, and academic materials without any linguistic constraint that would detract from more inclusive international collaborations.

Figure 1 represents a visual representation of the above proposed conceptual framework.



FIGURE 1. CONCEPTUAL FRAMEWORK Source: Author's compilation

Furthermore, AI will support better intercultural interaction through real-time translation, sentiment analysis, and cultural mediation. Breaking down the language barriers and being respectful toward cultural nuances, AI can improve the quality of cross-cultural exchanges and makes possible more meaningful global communication. This eventually will support universities and other higher education institutions to meet their objectives to enhance their international presence through online degree courses and virtual exchanges.

5. LIMITATIONS AND NEEDS FOR FURTHER RESEARCH

This conceptual paper on the role of AI in Internationalisation of Higher Education outlines key findings and opportunities, but major limitations are tied to additional research requirements.

One major limitation of this research is its conceptual nature. On the basis of bringing together existing literature, there is an absence of empirical data and quantitative analysis to support these claims. Such

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dependence on second-hand sources and theoretical argumentation also implies that inferences in the study are more speculative than definitive, pending empirical validation through more stringent methodologies. Future research then has to orient itself to the holding of more empirical studies toward the testing of hypotheses and conceptual frames as advanced in this paper. Quantitative data regarding how AI will potentiate Internationalisation efforts would give a more concrete footing for understanding its potential and limitations.

Another limitation is that the scope of the study mainly focuses on the positive impacts of AI, leaving out all complexities and possible evils. Although ethical concerns and challenges that relate to personal data protection, algorithmic bias, and the digital divide are recognized in the underlying context, it does not present them deeply. There is a critical need for further research into the ethical implications of AI in higher education. This would require a critical look at the biases in AI algorithms that might put some groups at a disadvantage, assessment of long-term effects on data privacy, and strategies for mitigating the digital divide to ensure equity in access to AI technologies.

Further research needs to be conducted within a wide range of institutions, to learn more about how AI can operate within alternative settings-thereby finding out specific challenges such institutions may face. This would give an expanded view of AI's role in Internationalising HE across the globe.

This conceptual framework is heavily dependent upon the current AI capabilities, which themselves are also still in exponential growth. With fast-paced development of technologies in AI, possibilities and limitations identified in this paper may easily become outdated soon. The research needs to be continuous with technological advancement process in order to reassess time and again the role of AI in HEI. This includes but is not limited to tracking technological advancement and analysis of how such advancement is put into educational practice and strategies of Internationalisation.

The study also underlines, therefore, the potential of AI in transforming eventually such areas like personalized learning, including but not limited to, virtual exchange and global research collaboration. Such realms associated with the actual execution of AI-driven strategies are not deeply covered by this research. These also amount to quite a number of infrastructural investments—that is, huge investment in infrastructure; the training of educators and administrators; large-scale support systems for students and staff. It would be most applicable to research into best practices on how to effectively bring AI into higher education, cost-benefit estimates, and case examples of successes and failures of implementations.

While the paper stresses the potential of AI to enable further collaboration across countries and intercultural learning, the possible cultural implications and pitfalls resulting from resistance to AI adoption are hardly discussed. What is really essential is learning how different cultural contexts influence the acceptance and efficiency of AI use in education. Such future research would need to highlight issues of

implementation and effectiveness that cultural factors attribute to AI-driven Internationalisation efforts and outline methods for culturally sensitive AI integration methods.

This study is therefore instrumental in laying some important conceptual groundwork for an appreciation of the role of AI in the Internationalisation of higher education, underscoring that more systematic empirical research, ethical analysis, and inclusive case studies with continuous reassessment of technological developments, practical implementation strategies, and cultural considerations will need to come about in order to enable AI's full potential for transforming higher education globally.

6. CONCLUSION

Al in the transformation of higher education and its increased Internationalisation could be in the wide range of its capabilities. Among other mechanisms, it is focused support for faster removal of language barriers, virtual exchange, and building intercultural competencies through research collaborations with researchers around the world. The present conceptual paper, through a synthesis of existing literature, aimed to clarify the way Al might confer some solution to the most pertinent challenges of HEI: making HEI accessible, efficient, and effective. The real integration of Al into higher education will be far from simple. The use of Al raises a whole lot of ethical concerns, such as personal data protection, algorithm bias, and digital underdevelopment. The institutions should invest in basic infrastructure, training, and support systems to enable successful execution of strategies driven by Al. In addition, large-scale, empirical research with quantitative data must be undertaken to test the conceptual ideas presented here. In particular, more research is needed on the impacts of Al on a larger range and spectrum of educational settings.

Technological changes related to AI are extremely fast and thus are characterized by the constant rethinking of potentials and limitations in higher education. Future research should further explore practicalities of AI implementation, cost-benefit analysis, and methods of doing this in a culturally sensitive way. Looking into how these complexities are addressed and the potential of AI continues to evolve hand in hand with technological progress, HEIs can effectively exploit its potential to enhance global collaboration, student mobility, and cross-cultural learning in the pursuit of the Internationalisation agenda in higher education.

The findings and derived conceptual framework can serve policymakers and higher education administrators as a guiding document to establish and further enhance international degree and exchange programs through online distance education and virtual exchange platforms that could save the costs and enable the institutions to expand their international presence.

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