Original Article

Analyzing the Effectiveness of Technology and Social Development on Higher Education Accessibility: The Case Study of Private Higher Education in Myanmar

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Abstract - This study underscores the significant influence of technology effectiveness, social norms, and opportunities on higher education outcomes in Myanmar. Leveraging theoretical frameworks such as Bandura's Social Cognitive Theory and the Technological Acceptance Model, the research demonstrates how these factors positively impact self-competencies, accessibility, and awareness within the educational landscape. Despite the study's limitations in sample size and geographic scope, it provides valuable insights into the transformative potential of education and technology integration, highlighting the need for further research to address these limitations and advance understanding on a global scale. Ultimately, this research contributes to the ongoing discourse on equitable access to education and informs the development of strategies to foster inclusive educational environments worldwide.

Keywords - Effectiveness, Higher education, Myanmar, Social development, Education awareness.

1. Introduction

The diverse region of Southeast Asia, comprising 11 nations including the Association of Southeast Asian Nations (ASEAN) and Timor Leste, is characterized by a young population, with 51% in their productive years (20 to 54 years age group), and a third aged below 20 years. Based on the World Bank's definition of national income, the ASEAN Member States span three economic development stages, with a total GDP of about USD 3 trillion in 2020 (BUSTOS-OROSA, 2022). The size and capability of ASEAN's higher education systems vary widely, and they are primarily managed by the national organizations or ministries assigned to each of the member nations. At the regional level, there are several organizations active in the development of an ASEAN higher education community, including The ASEAN Secretariat's Education, Youth, and Sports Division; the ASEAN University Network (AUN), and the Southeast Asian Ministers of Education Organization Regional Centre for Higher Education and Development (SEAMEO-RIHED). These organizations pursue slightly different aims, such as promoting lifelong learning, advancing future-ready education at basic and higher education levels, and ensuring inclusive education (BUSTOS-OROSA, 2022). The COVID-19 pandemic has brought about significant challenges and disruptions to private Higher Education Institutions (HEIs) across

Southeast Asia (Lim et al., 2022). Before the pandemic, private universities had extensive reach in college enrollment and were a growing sector. However, at the beginning of 2020, the COVID-19 pandemic, which had a significant impact on many areas, including education, the economy, society, and public health, created a variety of challenges for the global populace. Myanmar, like other developing countries, felt the adverse effects of this crisis (Htet et al., 2023). They now have to deal with large enrolment drops and increased dropout rates as a result of protracted, unpredictable school closures, financial instability, and changes to the way that conventional education is delivered. The pandemic has exacerbated the already precarious financial standing of private universities. It has also highlighted the challenges faced by these institutions, including problems relating to quality, retention, high costs, access, and equity (Lim et al., 2022). In the ten years prior to the COVID-19 outbreak, improvements in access to education at all levels were made in Myanmar. The literature attests to notable improvements, especially in post-primary education, with the Net Enrollment Rate (NER) in middle school increasing from 51% to 67% and high school from 26% to 43% between 2010 and 2017 (Bhatta & Katwal, 2022). Despite these advancements, the education sector in Myanmar faced severe disruptions due to the pandemic. In the realm of higher education, Myanmar faced formidable

challenges in 2021 due to the confluence of COVID-19 and the military coup. The National Education Strategic Plan (NESP) played a pivotal role in the past decade, focusing on strengthening governance, improving quality, and expanding access to higher education (Tertiary, 2021). Despite successes such as increased budget allocation to education and surges in student enrollments, challenges persisted. In 2021, the military coup disrupted the education sector profoundly, raising concerns about the long-term recovery of the higher education system.

1.1. Research Motivation

There is a general shortage of private tertiary education services within the Rakhine State community. The community is presently bombarded with various challenges that have struck its academic environment. To date, the long, exhaustive closure of public schools, partly due to the lasting impact of COVID-19 and caused politically by the aftermath of the military coup, has created an effect on the industry of private schools. This has further led to an increase in the number of schools closed and decreased enrollments at all levels, schooling especially higher education. Due to this combination of the COVID-19 disruptions and the military takeover, many young people in Rakhine State are interested in going to school no longer. People have become so engrossed in the pursuit of survival amidst prevailing economic uncertainties that enrollment in schools has fallen, including interest in higher education. The overall impacts of the COVID-19 epidemic, complemented by the military takeover, have translated into a condition whereby most of the adult population in Rakhine State avoided going to school in the past three years. As a result, an enviable percentage of people lacked basic education knowledge and information about higher education opportunities.

Simultaneously, notwithstanding all these challenges, a nascent encouraging trend was visible in rural areas, where some parents were also willing to continue their children's higher education. This shift is notably influenced by emerging opportunities for employment in the Foreign Direct Investment (FDI) sector, especially with ongoing projects such as the construction of Phase 1 of the Belt and Road Initiative (BRI) and the Kyaukphyu port, led by China. Teachers are in limited supply in the neighborhood, a problem made worse by their desire to pursue possibilities elsewhere or their involvement in the Civil Disobedience Movement. The government's directive not to accept teachers associated with the movement has further strained the availability of qualified teaching staff. Multiple challenges hamper the integration of educational technology in higher education. The community grapples with deficiencies in technology support, coupled with internet connection supply cuts from the government and weak connections. These challenges limit the effective adoption of technology in the learning environment. The intersection of disruptions stemming from the COVID-19 epidemic and the occurrence of a military coup has resulted in heightened inflation, with the exchange rate of the US dollar exhibiting a twofold increase compared to the rates recorded in 2019.

This escalation in inflation and exchange rates has engendered instability in the pricing of imported electronic gadgets. Consequently, parents and investors are confronted with challenges in procuring electronic devices, including but not limited to laptops, projectors, and digital webcams, essential for facilitating online teaching and other educational activities. The adverse effects of currency issues have introduced a significant impediment to the accessibility and affordability of electronic educational tools in the context of the prevailing economic conditions. Looking forward, the future of higher education in Myanmar appears uncertain. The withdrawal of most Foreign Direct Investment (FDI) companies has resulted in limited job opportunities for educated individuals. The destruction of electric power stations and towers by the People's Defence Force under the national unity government of Myanmar poses significant limitations on the use of technology due to internet and electrical power supply constraints. Myanmar community faces a complex set of challenges encompassing enrollment declines, teacher shortages, and obstacles to technological integration, all within the broader context of the evolving socio-political and economic landscape in Rakhine State, Myanmar. Addressing these challenges, the researcher proposes to enhance higher education accessibility in the Rakhine communities through self-competencies and educational awareness.

1.2. Research Gap

The accessibility of higher education in Myanmar has been a persistent challenge, exacerbated by political instability and socio-economic factors. Despite some progress in educational reforms, including the National Education Strategic Plan (NESP), significant barriers remain, particularly for marginalized communities such as those in Rakhine State. Previous studies pointed to factors associated with inadequate infrastructure, teacher unavailability, and a lack of technological integration that are especially deeply inherent in the rural and conflict-affected parts of the country. Not much research has been done regarding how these technological changes and social development can be translated into better access to higher education within these disadvantaged parts. Many studies have been done on the influence of technology in education, but most of them relate to urban areas or more stable regions. There is a certain lack of research concerning how this intersection of technology and social development could help improve educational barriers in politically and economically unstable regions like Myanmar. More precisely, no comprehensive research has been conducted on the role that self-competencies and educational awareness can play in overcoming such barriers to higher education in private institutions. Accordingly, this research will try to fill this gap in the literature by

investigating ways in which technology and social development increase access to higher education in Myanmar, focusing on private higher education institutions. This research will investigate some of the factors that are leveraged to use technology and social development to bridge the gap between systemic challenges and opportunities for development that face the education sector in Myanmar.

1.3. Research Questions

This study aims to investigate how technology and social development affect access to higher education in Myanmar. This is especially true in the context of private institutions. The following research questions guided this investigation.

- How does the effectiveness of technology influence higher education accessibility in Myanmar?
- How do social norms impact self-competencies and educational awareness in higher education?
- What opportunities exist for leveraging social development initiatives to improve higher education accessibility?
- How do self-competencies and educational awareness contribute to improving higher education accessibility in Myanmar?

2. Literature Review

The Socio-Technical Systems Theory is a broad framework for understanding the complex interaction between the social and technical aspects of any work system (Ward et al., 2017). The theoretical perspective also applies to the cybersecurity domain, in which a framework based on the Socio-Technical Systems Theory pursues an improvement in the security of information and computer systems (Malatji et al., 2019). A Socio-Technical Ecologies approach, subject to an editorial review by Botev et al. (2022), describes the creation of human-machine systems, emphasizing the inseparability between both social and technical parts of the information. Finally, Varshney (2016) deals with the Fundamental Limits of Data Analytics in Sociotechnical Systems, explaining the natural limits and impediments that come inherently into play within these complex contexts of data analytics. Lettieri et al. (2012) further highlight the lessons learned from a rehabilitation hospital by showing ways through which technology can sustainably facilitate effectiveness in health care; hence, an implication for technology in health education. Kumar et al. (2023) present machine learning and artificial intelligence-induced technostress in organizations with implications for Socio-Technical Systems Theory as coping mechanisms.

This provides further insights into the well-being of educators and learners within technology-rich educational environments. Carroll (2016) discusses the socio-technical dynamics of public service innovation. He constructs a theoretical perspective that sets a framework within which

one can consider the implications of IT innovation in education, given the changing landscape of educational technology. Kompella (2022) uses Socio-Technical Systems Theory to analyze a socio-technical system's transition to a smart grid and hence shows relevance for understanding social norms associated with technological transitions within the Indian Electricity Network. Appelbaum, 1997, places STS as an intervention strategy in organizational development and hence proposes its usefulness in molding educational institutions towards the integration of technology that shapes social norms. Shin and Jin Park (2017) emphasize the need to understand the ecosystem of the Internet of Things through multi-level analysis and also show how STS could be used to analyze users, society, and ecology toward a change in social norms within educational technology ecosystems. Durán et al. (2023) demonstrate how Socio-Technical Systems Theory enables transitions toward sustainable agriculture and thus provides some indication of how sustainable practices can be combined with agricultural education. Varshney (2016) investigates some of the inherent boundaries of data analytics and hence highlights a few factors that limit and give possibilities for educational data analytics with regards to Socio-Technical Systems Theory.

Truong et al. (2022) explore how Socio-Technical Lock-In leads to unsustainable consumption and, in turn, provides an opportunity for reshaping mobility in education toward sustainability. The methodologies adopted by Barbon et al. (2021) utilize Participatory Action Research methods and point toward opportunities regarding community-based adaptation in education, especially for smallholder communities.

3. Hypotheses and Research Model Development

3.1. Technology Effectiveness

The effectiveness of technology in education has been the subject of extensive research. Hence different studies have been able to shed more light on its impact in various educational domains. Meta-analyses showed proof of the positive effect that technology use has had on reading outcomes (Cheung and Slavin,2011).

They integrated studies that were focused on technology usage for reading achievement. Secondly, Beer and Mulder, (2020) discuss the changes in technology, how it affects work and its impacts on continuous vocational education and training for better and effective technology effects at the vocational sites. Grübler, (1998) provides the basic concepts and definitions of technology, which gave an in-depth understanding of the term for sufficient basis for analysis of the effectiveness in different contexts. Apart from that, the meaning of technology effectiveness by researching technology-enhanced learning focuses on the transformational role of technology in the educational field(Sen and Leong,2020).

H1: Technology Effectiveness has a significant positive effect on Self-Competencies.
H2: Technology Effectiveness has a significant positive effect on Higher Education Accessibility.
H3: Technology Effectiveness has a significant positive effect on Educational Awareness.

3.2. Social Norms

Social norms are crucial in shaping behaviors and expectations within the education industry. Researchers have extensively studied the influences and dynamics of social norms across various domains, shedding light on their conceptualization, effects, and implications. Lapinski and Rimal (2005) provide a foundational explication of social norms, offering insights into conceptualizing and understanding these shared societal expectations. The influences of social norms on sustainable consumption behavior, disentangling the factors that determine when social norms effectively shape environmentally conscious actions (Pristl et al.,2020). Young (2015) contributes to the understanding of social norms by examining their evolutionary dynamics, shedding light on the mechanisms that drive the emergence and persistence of these norms over time.

H4: Social Norms have a significant positive effect on Self-Competencies.
H5: Social Norms have a significant positive effect on Higher Education Accessibility.
H6: Social Norms have a significant positive effect on Educational Awareness.

3.3. Opportunities

The education industry is a dynamic field filled with many possibilities for growth and development (Gustafsson-Wright et al.,2022). The authors present some outlooks on trends in education that may face the world in 2022. In addition, they point toward many new areas of research that have opened avenues for growth in education. This research highlighted the possibility of innovative development and the creation of new pathways in education.

Furthermore, Raghupathi (2020) empirically examine the influence of education on health, emphasizing the opportunities for health improvement through education. The study, based on data from the OECD countries in the 1995-2015 years, underlines that education can contribute much to better health, thus creating real chances of collaboration between the departments of education and health.

For example, Kaur et al. (2017) discuss a survey taken regarding global health education opportunities available to U.S. anesthesiology residency programs. It is in this regard that their findings also bring to light the fact that health and education can interact in terms of collaboration and innovation, which results in holistic educational programs.

H7: Opportunities have a significant positive effect on Self-Competencies.
H8: Opportunities have a significant positive effect on Higher Education Accessibility.
H9: Opportunities have a significant positive effect on Educational Awareness.

3.4. Self-Competencies

Competencies of the self are the pivot of modern education. This trend has been reflected in studies from many disciplines and fields. Giddens (2020) identifies the major self-competencies that nursing education should emphasize. These are communication skills and problem-solving skills. On the other hand, Sawleshwarkar and Negin (2017) list communication skills, IT skills, and postgraduate public health education. These competencies are also an integral part of entrepreneurship education, and Huang et al. (2020) underline that self-competencies like communication and problem-solving skills are decisive for teachers. Wang et al. (2019) deal with aspects of developing entrepreneurial competencies, such as problem-solving skills and cooperation, in a new form of entrepreneurship education. Moore and Thaller (2023) reiterate that self-competencies such as communication and problem-solving skills are crucial in career readiness for social work education. Gitonga (2023) agrees with the importance of communication and IT skills within public education and awareness of crises.

3.5. Education Awareness

Awareness of education involves an in-depth appreciation of the existing educational environment within a community, such that individuals are pretty aware of the various opportunities available (Smeyers & Smith, 2014). In relation to the measurement of awareness, however, Gafoor (2012) discusses the various methods involved, thereby setting into perspective the various elements involved in influencing the awareness level of individuals regarding educational opportunities. As such, Dring et al. (2022) present ontological awareness as a core constituent in the educational framing of food systems, whereby such awareness can be an important impetus toward a deeper ontological understanding of interconnectedness within food systems. In this respect, Ratinen and Linnanen (2022) also note that environmental awareness may be related to improved anticipatory competence; they thus underline the importance of awareness in light of the preparation for future challenges. They focus on the construction and practice path of a college safety education mechanism, highly emphasizing that students' psychological characteristics should be integrated into awareness cultivation.

3.6. Higher Education Accessibility

According to Weeden (2023), it is a broad spectrum that involves admission requirements, understanding the curriculum comprehensively related to one's field that he or she desires to dive into, and career opportunities after. In

addition, there are a lot of alternative pathways, such as online programs or vocational training, that account for the increasing expansion of accessibility. Accessibility and access form the core of online learning, where McAlvage and Rice (2016) reflect a variety of voices in making higher education accessible. Understandably, McGinty, (2016) brings to light faculty perceptions and experiences, shedding light on how accessibility and inclusion of all intersect in a higher education context. Further, Lowenthal and Lomellini (2023) extend the discussion of accessibility by addressing educational technologists' and faculty members' knowledge and competencies inaccessible to online learning. The influence of reputation within higher education on questions of accessibility was explored by Mateus and Acosta (2022), who highlighted perception and choice connected to institutional status. Yunita et al. (2022) portray another evidence of field-specific awareness as they explore the fields relating to the knowledge and practices concerning antibiotic use by women. Sun (2023) researches higher education management strategies, focusing on an educational power strategy and positive psychology that will be developed in the name of accessibility. Lewthwaite et al. (2023) call for an appeal to workplace approaches to teaching digital accessibility, emphasizing a shared foundation of knowledge and understanding.

H10: Self-competencies have a significant positive effect on Higher Education Accessibility.
H11: Educational Awareness has a significant positive effect on Higher Education Accessibility.

3.7. Research Design

The researcher examined the existing state of technology and social development in Myanmar higher education. Based on the results of the evaluation, the researcher defined the factors that could enhance higher education in Myanmar: Technology Effectiveness, Social Norms, Opportunities, Self-Competencies, Educational Awareness, and Higher Education Accessibility. This research will adopt a quantitative research method to delineate the significance of these factors by applying validated research instruments in terms of content construct validity and reliability. The data analysis will be done through the method of Structural Equation Modeling (SEM).

Quantitative research involves a systematic collection and numerical data analysis for extracting any trends, patterns, and relationships between variables. According to Creswell (2014), in this approach, surveys and questionnaires are normally used, which are not only effective in collecting a huge amount of data in a short time but also from a large number of respondents, according to Dillman et al. (2014). These are standardized tools comprising a number of pre-formulated questions targeted at measuring certain constructs or variables. The questions in questionnaires and surveys may be closed-ended, where responses are given as a selection from options provided, or open-ended, where the respondents provide their responses.
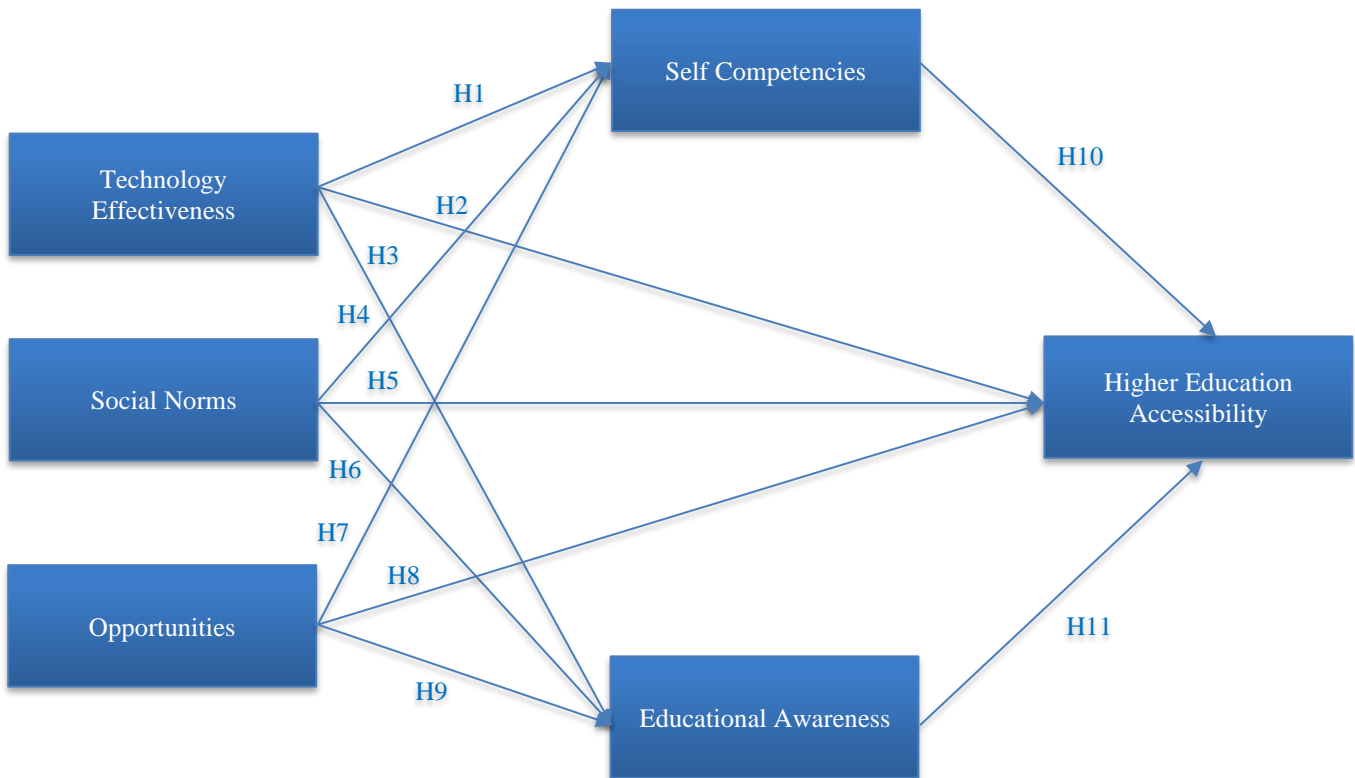

Fig. 1 Research model

3.8. Sampling Procedure

The sample was collected by using a structured survey questionnaire among higher education stakeholders in Myanmar. Efforts have been made to ensure the representativeness of the sample by taking respondents with different educational backgrounds, age groups, and occupations. The percentage distribution of the sample was females comprised 56.9%, males were 43.1%, while the majority of respondents had a bachelor's or master's degree.

3.9. Reliability and Validity

In research, the reliability and validity of the sample are major concerns since they ensure the accuracy and consistency of the findings. After removing outliers, this research has 255 valid respondents, which is more than the minimum recommended for SEM, as suggested by Kline (2011). The sample was carefully selected to include a diversified range of participants, such as students, educators, and working professionals from various private higher education institutions in Myanmar.

4. Data Analysis and Findings

A total of 320 people participated in the survey. However, in order to improve the quality of the data set, Therefore, outliers were removed according to the standard deviation of each data set. This resulted in a valid data set of 255 items. Additionally, it is recommended to have a dataset of at least 200 entries for Structural Equation Modeling (SEM). Kline (2011) further advises a ratio of 10 respondents (N) per questionnaire item (q) (N: q = 10:1). Hence, for our research, a minimum of 180 respondents was required, and this actually analyzed 255 datasets, exceeding the required minimum. Initially, the questionnaire comprised 34 items designed to measure the model's constructs. Yet, following a pilot study, 16 indicators were deemed unreliable or invalid, leaving us with the necessity to eliminate them. According to Kline (2011), each construct should be assessed by a minimum of three indicators. Male respondents make up 43.1% of the sample, while female respondents make up 56.9% of the total in the remaining valid dataset.

Based on the age distribution, the majority of respondents (i.e., 24.3%) are in the 31–35 age bracket. The distribution of the other age groups is very equal, with the exception of the 18–20 age group, which makes up only 6.3% of the total. Sixty-four percent of respondents have a bachelor's degree, and twenty-two percent have a master's degree.

The proportion of responders with a Ph.D. (10.2%) or diploma (5.5%) is lower. With 52.9% of the sample being workers, this is the biggest occupational category among the respondents. The remaining groupings are made up of students (10.6%), public servants (14.1%), and independent contractors (22.4%). These results provide a summary of the 255 respondents' demographic profiles (Table 1) and emphasize important details, including age, gender, employment, and level of education.

4.1 Reliability Analysis

To assess the internal consistency of the constructs, Cronbach's Alpha was used. All constructs demonstrated a Cronbach's Alpha value exceeding the recommended threshold of 0.7, indicating high internal reliability. Specifically, Technology Effectiveness (α = 0.854), Social Norms (α = 0.893), Self-Competencies (α = 0.901), and Higher Education Accessibility (α = 0.842) all exhibited strong reliability.

Table 1. Summary of respondents' Demographic profile

Demographic Profile		Frequency (n = 255)	Percent
Gender	Male	110	43.1
	Female	145	56.9
Age	18-20 years	16	6.3
	21-25 years	50	19.6
	26-30 years	50	19.6
	31-35 years	62	24.3
	36-40 years	44	17.3
	over 41 years	33	12.9
Education	Diploma	14	5.5
	Bachelor	159	62.4
	Master	56	22.0
	Ph. D	26	10.2
Occupation	Civil Servent	36	14.1
	Employee	135	52.9
	Self-employed	57	22.4
	Student	27	10.6

Table 2. Analysis results of data normality and T-test

Items	Std. Deviation	Skewness	Kurtosis	Mean	μ = 3	
					t-Value	Sig. (2-tailed)
TEF1	1.009	-.412	-.422	3.71	11.235	.000
TEF2	.858	-.438	-.185	3.97	18.109	.000
TEF3	.944	-.232	-.469	3.69	11.747	.000
SN1	.843	-.301	-.725	3.95	17.985	.000
SN2	.939	-.428	-.273	3.75	12.738	.000
SN3	.886	-.317	-.281	3.77	13.855	.000
OPT1	1.097	-.468	-.278	3.42	6.048	.000
OPT2	1.129	-.176	-.556	3.25	3.549	.000
OPT3	1.218	-.044	-.922	2.77	-2.982	.003
SC1	.982	-.059	-.018	3.18	2.869	.004
SC2	.957	-.055	-.057	3.16	2.684	.008
SC3	.884	-.217	.257	3.16	2.905	.004
EA1	.909	-.216	.066	3.33	5.717	.000
EA2	.835	-.194	.543	3.31	6.003	.000
EA3	.858	-.165	-.088	3.36	6.718	.000
HE1	.867	-.076	-.887	3.80	14.740	.000
HE2	.841	-.300	-.772	3.97	18.387	.000
HE3	.949	-.331	-.552	3.76	12.731	.000

4.2. Validity Analysis

Convergent and discriminant validity were also assessed using Confirmatory Factor Analysis (CFA). The standardized regression weights for all indicators ranged from 0.575 to 0.927, meeting the threshold of 0.5, which confirms convergent validity. Additionally, the Average Variance Extracted (AVE) values for all constructs exceeded the recommended minimum of 0.5, further validating the measurement model. Discriminant validity was established by confirming that the square root of the AVE for each construct was higher than the correlation between that construct and others.

4.3. Data Normality and Independent Sample T-Test Analysis

Table 2 provides summary statistics for various indicators, including their standard deviation, skewness, kurtosis, mean, t-statistic, and significance level. The standard deviation range of all the indicators is from 0.835 to 1.218 and it indicates varying levels of dispersion. All the values of Skewness and Kurtosis are generally between -2 and 2. Therefore, it is suggesting data distribution is normal. The highest mean is 3.97, and the lowest is 2.77. Respondents have a positive attitude at a significant level of 0.000 on HE2 with t= 18.387, TEF2 with t= 18.109, SN1 with t= 17.985, HE1 with t= 14.740, SN3 with t= 13.855, SN2 with t= 12.738, HE3 with t= 12.731, TEF3 with t= 11.747, TEF1 with t= 11.235, EA3 with t= 6.718, OPT1 with t= 6.048, EA2 with t= 6.003, and EA1 with t= 5.717. Respondents also have a significant positive attitude on OPT2 with t = 3.549, SC3 with t = 2.905, SC1 with t = 2.869, and SC2 with t = 2.684 respectively. However, the respondents have a negative attitude at a significant level of .002 on OPT3 with t = -2.982.

4.4. Construct Reliability and Convergent Validity Analysis

Using AMOS software, the measurement model for the research model was first built and presented in the prior session as part of the Confirmatory Factor Analysis (CFA) procedure. This was carried out in order to evaluate discriminant and convergent validity. All of the indicators' standardized regression weights, which ranged from 0.575 to 0.927, were found to be more than 0.5. Furthermore, the Average Variance Extracted (AVE) values, which ranged from 0.763 to 0.566, were greater than the minimal requirement of 0.5.

Additionally, the Composite Dependability (CR) values, which ranged from 0.906 to 0.792, were higher than the minimally acceptable threshold of 0.7. Thus, it may be said that convergent validity has been shown based on the data shown in Table 3. Additionally, all of the constructions' Cronbach's Alpha values were higher than the acceptable 0.7 criterion, falling between 0.769 and 0.903. As a result, every question on the questionnaire was judged appropriate for further analysis.

4.5. Discriminant Validity Analysis

The square root of the Average Variance Extracted (AVE) for each component must be higher than the correlation between that factor and any other factors in order to demonstrate discriminant validity. The square roots of the AVE values—which were discovered via the convergent validity analysis—are bolded and underlined in Table 4. All of these squared AVE values, according to the study, are greater than the correlations between the corresponding sets of components. As a result, the study validates that the measurement model has sufficient discriminant validity, hence endorsing its appropriateness for future data analysis.

Table 3. Convergent validity and construct reliability analysis outcome

Factors	Indicators	Standardized Regression Weights	AVE	CR	CA
Technology Effectiveness	TEF1	0.830	0.660	0.854	0.851
	TEF2	0.819			
	TEF3	0.788			
Social Norms	SN1	0.842	0.747	0.898	0.893
	SN2	0.927			
	SN3	0.820			
Opportunities	OPT1	0.785	0.566	0.792	0.769
	OPT2	0.867			
	OPT3	0.575			
Self-Competencies	SC1	0.851	0.752	0.901	0.898
	SC2	0.905			
	SC3	0.844			
Education Awareness	EA1	0.850	0.763	0.906	0.903
	EA2	0.912			
	EA3	0.857			
Higher Education Accessibility	HE1	0.816	0.674	0.861	0.842
	HE2	0.875			
	HE3	0.768			

Table 4. Analysis result of discriminant validity analysis

Factors	TEF	SN	OPT	SC	EA	HE
TEF	0.812					
SN	0.611	0.864				
OPT	0.613	0.517	0.752			
SC	0.349	0.507	0.398	0.867		
EA	0.400	0.526	0.464	0.605	0.873	
HE	0.717	0.597	0.570	0.511	0.633	0.821

Table 5. Analysis result of model fit indices

Fit Indices	Measurement Model	Research Model	Result
χ^2/DF	3.406	3.510	Marginal Fit
GFI	0.856	0.846	Acceptable Fit
AGFI	0.795	0.783	Marginal Fit
NFI	0.878	0.872	Marginal Fit
CFI	0.910	0.904	Good Fit
RMSEA	0.097	0.099	Marginal Fit

4.6. Goodness-Fit Indices Analysis

The model-fit indices for the measurement model and the research model are evaluated in Table 5 and include the Root Mean Square Error of Approximation (RMSEA), Chi-Square per degree of freedom ratio (χ^2/df), Goodness of Fit (GFI), Adjusted Goodness of Fit (AGFI), Comparative Fit Index (CFI), Normed Fit Index (NFI), and Goodness of Fit (GFI). The values of X^2/df, AGFI, NFI, and RMSEA are all within the marginal fit range. On the other hand, the CFI number indicates a good match and the GFI value shows an adequate fit. Thus, the study model is considered to provide a good match for the gathered data in light of these findings.

4.7. Casual Effects Analysis

The hypotheses were validated as proposed in the previous session. The results of the hypotheses testing are presented in Table 6. Technology Effectiveness (β=0.474, p<0.001, t=5.495), Social Norms (β=0.047, p<0.05, t=2.577), Opportunities (β=0.072, p<0.05, t=2.890), Self-Competencies (β=0.114, p<0.01, t=2.852), Educational Awareness (β=0.325, p<0.001, t=4.881), with regard to Higher Education, all evidenced a positive effect Higher Education Accessibility. Therefore, H2, H5, H8, H10 and H11 were supported. Self-Competencies is positively influenced by Technology Effectiveness (β=0.088, p<0.05, t=2.898), Social Norms (β=0.444, p<0.001, t=5.123) and Opportunities (β=0.252, p<0.01, t=2.754), which means that H1, H4 and H7 were supported. In addition, Technology Effectiveness (β=0.055, p<0.05, t=2.583), Social Norms (β=0.418, p<0.001, t=4.980), and Opportunities (β=0.310, p<0.001, t=3.462) positively affected Educational Awareness. Thus, H3, H6 and H9 are accepted.

Table 6. Analysis result of casual effects

Hypotheses	Effects	Std. Effect (β)	t-Value	p-Value	Result
H1	TEF → SC	0.088	2.898	*	Support
H2	TEF → HE	0.474	5.495	***	Support
H3	TEF → EA	0.055	2.583	*	Support
H4	SN → SC	0.444	5.123	***	Support
H5	SN → HE	0.047	2.577	*	Support
H6	SN → EA	0.418	4.980	***	Support
H7	OPT → SC	0.252	2.754	**	Support
H8	OPT → HE	0.072	2.890	*	Support
H9	OPT → EA	0.310	3.462	***	Support
H10	SC → HE	0.114	2.852	**	Support
H11	EA → HE	0.325	4.881	***	Support

* means p < 0.05, ** means p < 0.01, *** means p < 0.001
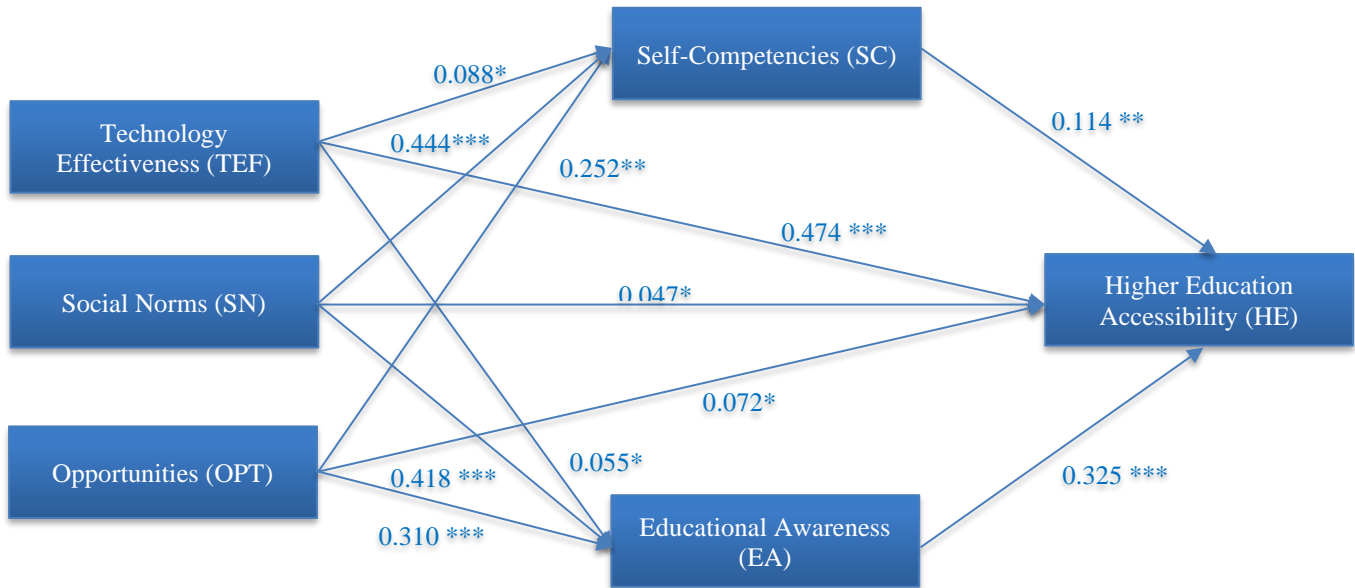
Fig. 2 Research model with hypothesis testing results

4.8 Findings

The findings from this study are aligned with the research questions and provide insights into the effectiveness of technology and social development in improving higher education accessibility in Myanmar. Below are the key findings for each research question:

1. How does the effectiveness of technology influence higher education accessibility in Myanmar?

The results indicate that technology plays a significant role in enhancing access to higher education. The analysis showed a positive correlation between technology effectiveness and accessibility (β = 0.474, p < 0.001). Respondents acknowledged that digital tools, such as online learning platforms and virtual classrooms, have improved their access to educational content, particularly in private institutions where traditional methods were limited.

2. How do social norms impact self-competencies and educational awareness in higher education?

Social norms were found to have a positive impact on both self-competencies (β = 0.444, p < 0.001) and educational awareness (β = 0.418, p < 0.001). The data suggest that in communities where education is valued, students are more likely to develop the necessary self-competencies (such as time management, communication, and problem-solving skills) to succeed in higher education. Furthermore, social expectations have driven greater awareness of the importance of education, particularly in families and communities that prioritize learning.

3. What opportunities exist for leveraging social development initiatives to improve higher education accessibility?

The study highlights that social development initiatives, such as scholarships and community-based education programs, present significant opportunities to improve higher education accessibility (β = 0.072, p < 0.05). Respondents from rural and marginalized communities noted that such initiatives have helped mitigate financial and logistical barriers to education, making it more feasible for them to pursue higher education.

4. How do self-competencies and educational awareness contribute to improving higher education accessibility in Myanmar?

The self-competencies and educational awareness are both positively influencing accessibility to higher education, with (β = 0.114, p < 0.01) and (β = 0.325, p < 0.001), respectively. In terms of the effects of these competencies, better levels of competencies amongst the students in areas such as digital literacy and independent learning resulted in them having greater success in accessing educational opportunities. Students who were more aware of the available options within higher education, including online or vocational alternatives, more easily navigated their way through the system into programs which suit their needs. These findings underscore both technological and social elements that improve the accessibility of higher education in Myanmar and have important implications for policy and development strategies aimed at fostering educational inclusiveness.

4.9. Theoretical Contribution

The hypotheses tested in this study relate to the relationship of various factors in their impact on higher education in Myanmar. This, therefore leads to the first hypothesis: technological effectiveness has a positive influence on self-competencies, having important theoretical support from Bandura's Social Cognitive Theory and Self-Determination Theory. These theories explain that new behaviors and skills can be learned through observations and experiences, both of which technology use can facilitate very effectively. The second hypothesis is that technology effectiveness increases higher education accessibility. This is in line with theories like the Technological Acceptance Model-TAM and the Diffusion of Innovations Theory, which indicate that perceived usefulness and ease of use facilitate technology acceptance and adoption.

Evidently, the third hypothesis is that technology effectiveness positively impacts educational awareness. This notion is thus supported by sundry theories, such as the IMB model and TAM, regarding the role of technology in equipping individuals in a timely and relevant manner with information about education opportunities. The fourth and fifth hypotheses test the positive influence of social norms on self-competencies and accessibility of higher education, respectively. These are based on the hypotheses that the former falls under Bandura's Social Learning Theory and the latter under his Social Cognitive Theory, both of which postulate that people learn from observing others and from general societal expectations about the level of competence and education required. The sixth hypothesis is that social norms positively influence educational awareness. In this respect, this would be supported by a number of theories, including Social Identity Theory and Social Learning Theory; these theories suggest that individuals derive part of their identity and self-esteem from the memberships in groups and learn from observing others in the social environment. The seventh hypothesis assumes opportunities have a positive effect on self-competencies, according to theories such as the Social Cognitive Theory and the environmental enrichment approach through observational learning and mastery experiences, rich in stimuli, that serve to shape behavior and beliefs.

This is elaborated by the eighth and ninth hypotheses, where the presence of opportunities has a positive effect on higher education accessibility and improvement in educational awareness. Theories like Social Cognitive Theory and the Theory of Planned Behavior elaborate on how these may occur because, in general, people's behaviors and intentions are guided by perceived control, attitudes, and subjective norms about education. Lastly, hypotheses ten and eleven state that self-competencies and educational awareness serve to make higher education more accessible. Various theories underlie these hypotheses: the Social Cognitive Theory and the Theory of Planned Behavior explain how self-efficacy beliefs, knowledge acquisition, attitudes, and intentions drive individuals' behaviors and outcomes regarding education.

4.10. Managerial Contribution

Generally, the respondents have viewed the integration of technology in education as an intervention that could bring improvement to learning experiences and enhance innovation in education. These positivities reflect a larger recognition of how technology has transformed educational perspectives and helped address broader social problems. Optimism towards the role of education in driving social change and ensuring progress for society is expressed by the key informants. They see and understand that education generally assists in advocating, empowering, and addressing development issues within the community, especially with systemic concerns and inclusive platforms.

While respondents were able to identify certain challenges that surround the use of technology in education, they also showed resilience and determination to surmount barriers. This, in turn, points to a readiness to adapt and learn in light of technological changes unfolding; these underpin the development of one key facet of digital literacy skills that enable individuals to thrive in an increasingly technology-driven world. It can also be noticed that the questioned individuals are very much inclined towards being positive, considering education as a catalyst for breaking the vicious circle of poverty and ensuring socio-economic mobility. They stress the use of education for life improvement, along with that of society in general, urging equal opportunities concerning access to quality education. Overall, the respondents express proactive and future-oriented views on education, technology, and social change, which match the shared vision of lifelong learning, personal growth, and social development.

5. Conclusion

These findings confirm that technology effectiveness is very much improving self-competencies, as stated by Bandura's Social Cognitive Theory and Self-Determination Theory, since with effective technology tools, one is able to develop competencies through experiences of mastery and autonomous learning. Secondly, effective usages of technology have an influential power towards higher education accessibility since, by this theory, such as the Technological Acceptance Model and Diffusion of Innovations Theory, educational resources become more accessible and inclusion is promoted. Also, technology effectiveness enables individuals to enhance their educational awareness through timely information on educational opportunities. This supports the tenets of the Information-Motivation-Behavioral Skills model and the Technological Acceptance Model. The study also realizes the positive impact of social norms and opportunities on self-competencies, higher education accessibility, and educational awareness as it points out how social influence and environment shape responses in educationist behaviors and beliefs. The theoretical notions that underpin the explanation of how technology effectiveness, social norms, and opportunities are related to educational outcomes were, therefore, quite substantial. This study generally contributes to the knowledge base in education and to strategy development targeted at fostering equal opportunity in access to educational opportunities.

Limitations and Future Research Direction

The present study has a number of limitations that inspire caution in the interpretation of its findings. First, the relatively small respondent pool may limit the depth and breadth of insight that could affect generalizability and perspective on diverse opinions. Excluding all respondents under 18 years of age further delimits the scope and potentially skews findings regarding the perceptions of younger persons. As this is focused exclusively on Myanmar, generalizing findings to other contexts may not be appropriate. A focus only on higher education does not capture the full perspective of educational complexities. The research has examined only six factors; this may limit the depth of understanding, given that other variables can also play a significant role. Also, not providing the missing mediator and moderator tests can make research incomplete, which may trigger a lack of important information on the underlying mechanisms or modifications in different conditions or contexts. While focusing exclusively on Myanmar does raise questions of transferability, the methodologies and frameworks require careful extrapolation from the findings.

This will undoubtedly yield valuable insights into specific phenomena within Myanmar but does point to limitations in the study regarding the importance of considering contextual specificity in the application of findings to other settings. This limitation should be addressed by future studies aimed at increasing sample sizes and including those under 18 years to have a wider range of perspectives. Cross-cultural variations shall be considered, and research models adapted to that effect. Expansion into other settings outside the Higher Education sector with the addition of more factors would go a long way toward comprehensive analysis. Besides, tests of mediation and moderation effects would turn on the lights to underlying mechanisms and conditional relationships of variables, hence making more meaningful understandings of educational processes. Accomplishing these recommendations above will allow researchers to contribute to the world's knowledge of education and also inform evidence-based policies and practices.

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