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THE EFFECT OF PERCEIVED ECONOMIC RETURNS AND DIGITALIZATION ON HIGHER EDUCATION ENROLMENT DECISIONS IN VIETNAM

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ABSTRACT

This study investigates the impact of digital factors on higher education enrollment decisions in the context of rapid technological advancement. Utilizing a mixed-methods approach, we employed structural equation modeling (SEM) and fuzzy-set qualitative comparative analysis (fsQCA) to analyze data collected from 712 prospective university students. The research examines the influence of digital literacy, technology readiness, access to digital infrastructure, social media influence, online information sources, and perceived economic returns on enrollment decisions. Results indicate that while perceived economic returns remain the strongest predictor of enrollment decisions, digital factors play increasingly significant roles. Technology readiness and digital literacy emerged as crucial influences, highlighting the growing importance of digital competencies in higher education. The fsQCA revealed multiple pathways to high enrollment, emphasizing the complex interplay of factors in decision-making processes. This study contributes to the existing literature by providing a comprehensive model that integrates both digital and traditional factors influencing higher education enrollment. The findings have important implications for policymakers, educators, and higher education institutions, suggesting the need for multi-faceted approaches to promote enrollment that address both technological and socioeconomic factors. This research enhances our understanding of the evolving landscape of higher education in the digital age and provides valuable insights for developing effective strategies to increase access and participation.

KEYWORDS:- Higher education enrolment, Digital literacy, Technology readiness, Fuzzy-set QCA, Educational decision-making.

1. INTRODUCTION

The global landscape of higher education is undergoing profound transformations, driven by complex interplays between economic aspirations, societal expectations, and individual decision-making processes. As nations strive to enhance their human capital and compete in the knowledge-based global economy, understanding the factors that influence higher education enrolment becomes increasingly crucial (Marginson, 2016). This study delves into the intricate dynamics of higher education enrolment decisions, with a particular focus on the perceived economic returns, set against the backdrop of Vietnam's rapidly evolving socioeconomic context. The relationship between education and economic outcomes has long been a cornerstone of human capital theory (Becker, 1964). However, the decision to pursue higher education is far from a simple cost-benefit analysis. It involves a complex interplay of factors, including individual perceptions, societal norms, and labour market signals (Perna, 2006). While extensive research has examined this relationship in developed economies, there remains a significant gap in our understanding of how these dynamics unfold in emerging economies, where the higher education landscape and labour markets are often in flux (Gao and Smyth, 2015).

Vietnam presents a particularly compelling case for examining these dynamics. As one of the fastest-growing economies in Southeast Asia, the country has witnessed rapid expansion in its higher education sector, coupled with significant changes in its labour market structure (World Bank, 2020). This context provides a unique opportunity to explore how perceived economic returns influence higher education enrolment decisions in a rapidly transforming economic environment.

The theoretical contribution of this study lies in its integration of human capital theory with decision-making models, situated within the specific context of an emerging economy. By employing a mixed-methods approach, we aim to provide a more nuanced understanding of how individuals weigh economic considerations against other factors when making higher education enrolment decisions. This approach allows us to capture both the breadth of trends through quantitative analysis and the depth of individual experiences through qualitative inquiry. The necessity of this research is underscored by the growing global emphasis on evidence-based policy-making in education. As governments and institutions grapple with how to align higher education systems with economic needs while ensuring equitable access, insights into the decision-making processes of prospective students become invaluable (UNESCO, 2017). Moreover, in the context of Vietnam's ambitious plans for economic development and educational reform, understanding these dynamics is crucial for informed policy formulation.

The novelty of this study lies in its comprehensive examination of perceived economic returns as a factor in higher education enrollment decisions, set against the backdrop of Vietnam's unique economic trajectory. While previous studies have explored either the economic returns to education or enrollment decision-making processes, few have integrated these perspectives, particularly in the context of a rapidly developing economy. By doing so, this research aims to bridge the gap between macro-level economic analyses and micro-level decision-making studies. This study's contribution extends beyond the Vietnamese context, offering insights that can inform broader discussions on higher education policy and practice in emerging economies. By unpacking the complex interplay

between perceived economic returns and other factors influencing enrollment decisions, we aim to provide a more holistic understanding of how individuals navigate the decision to pursue higher education in dynamic economic environments.

In summary, this research seeks to advance our theoretical understanding of higher education enrollment dynamics, provide empirical insights into decision-making processes in an emerging economy context, and offer practical implications for policy-makers and educational institutions grappling with the challenges of aligning higher education with economic development goals. As we embark on this exploration, we aim to contribute to the broader global dialogue on the role of higher education in fostering individual and societal prosperity in an increasingly complex and interconnected world.

2. LITERATURE REVIEW

2.1. Theoretical Foundations

The study of higher education enrollment decisions and their relationship to perceived economic returns is grounded in several key theoretical frameworks. This section explores the foundational theories that inform our research, highlighting their origins, relevance to the current study, and significance in empirical research.

2.1.1. Human Capital Theory

Human Capital Theory Capital Theory, pioneered by Schultz (1961) and further developed by Becker (1964), posits that education is an investment in human capital, which yields economic returns to both individuals and society. This theory provides a fundamental rationale for studying the relationship between education and economic outcomes. Becker (1964) argued that individuals make rational decisions about education based on expected future earnings, weighing the costs of education against potential benefits.

The relevance of Human Capital Theory to our study lies in its explanation of how individuals perceive the economic value of higher education. In the context of Vietnam's rapidly developing economy, this theory helps frame our understanding of how students and their families might view higher education as an investment in future economic prosperity. Empirical studies have consistently supported the basic tenets of Human Capital Theory. For instance, Psacharopoulos and Patrinos (2004) conducted a comprehensive review of returns to education across various countries, finding generally positive returns to higher education investments, albeit with variations across contexts.

2.1.2. Decision-Making Models in Higher Education

While Human Capital Theory provides a broad framework for understanding education as an investment, decision-making models in higher education offer more nuanced insights into the complex processes underlying enrollment choices. Hossler and Gallagher's (1987) three-phase model of college choice, which includes predisposition, search, and choice stages, has been particularly influential in this field. This model recognizes that the decision to pursue higher education is not solely based on economic considerations but involves a complex interplay of factors including personal aspirations, family background, and institutional characteristics.

The relevance of these decision-making models to our research is their recognition of the multifaceted nature of enrollment decisions. By incorporating these models, we can explore how perceived economic returns interact with other factors in the Vietnamese context. Empirical studies have demonstrated the utility of these models in understanding enrollment decisions. For example, Perna (2006) integrated economic models with sociological concepts to create a comprehensive conceptual model of student college choice, which has been widely applied in empirical research.

2.1.3. Expectancy-Value Theory

Expectancy-Value Theory, originally developed by Atkinson (1957) and later refined by Eccles and colleagues (1983), provides a psychological perspective on how individuals make achievement-related choices. This theory suggests that individuals' choices, persistence, and performance can be explained by their beliefs about how well they will do on the activity and the extent to which they value the activity.

In the context of higher education enrollment decisions, Expectancy-Value Theory offers insights into how students' expectations of success in higher education and the value they place on a university degree influence their choices. This theory is particularly relevant to our study as it helps explain why perceived economic returns (a key component of the 'value' aspect) might influence enrollment decisions. Empirical studies have demonstrated the predictive power of expectancy-value constructs in educational choices. For instance, Wigfield and Eccles (2000) found those students' beliefs about their ability and expectations for success were strong predictors of their performance and choice of activities.

These three theoretical foundations - Human Capital Theory, Decision-Making Models in Higher Education, and Expectancy-Value Theory - provide a robust framework for our investigation into the dynamics of higher education enrollment in Vietnam. By integrating these perspectives, we aim to develop a comprehensive understanding of how perceived economic returns interact with other factors to influence enrollment decisions in the context of a rapidly developing economy.

2.2. Perceived Economic Returns and Higher Education Enrollment

The relationship between perceived economic returns and higher education enrollment has been a subject of significant academic interest, rooted in the fundamental assumption that individuals make educational decisions based, at least in part, on their expectations of future economic benefits. This concept, while intuitively appealing, has evolved in its conceptualization and empirical investigation over time.

The origins of this research stream can be traced back to early works in economics of education. Mincer (1958) and Schultz (1961) laid the groundwork by proposing that education could be viewed as an investment in human capital, with individuals weighing the costs against expected future earnings. This conceptualization provided a framework for understanding how economic considerations might influence educational decisions. Conceptually, perceived economic returns encompass more than just expected salary increases. They include a broader range of economic benefits such as job security, career advancement opportunities, and even potential for entrepreneurship. Paulsen and Toutkoushian (2008) expanded this concept by incorporating both

monetary and non-monetary returns in their analysis of college choice, arguing that individuals consider a complex array of factors when making enrollment decisions.

Empirical studies have provided substantial evidence supporting the link between perceived economic returns and higher education enrollment across various contexts, both in developed economies and emerging markets. This body of research has consistently demonstrated the significant influence of expected future earnings on students' educational decisions, including the choice to pursue higher education and the selection of specific majors or fields of study. In developed economies, numerous studies have corroborated these findings. For instance, Arcidiacono et al. (2012) found that students' choice of college major was significantly influenced by their expectations of future earnings. Similarly, Wiswall and Zafar (2015) demonstrated that students' beliefs about future earnings played a crucial role in their decisions about college attendance and major choice. These findings are further supported by Beffy et al. (2012), who observed that expected earnings were a key determinant of major choice among French university students, albeit with some variations across disciplines. The influence of perceived economic returns on higher education decisions is not limited to developed economies. Research in emerging markets has also yielded similar results, though with some contextual nuances. In China, Guo et al. (2015) found that expected returns to education significantly influenced rural students' decisions to attend college, with the effect being particularly strong for students from lower-income families. Similarly, in India, Jensen (2010) demonstrated that providing information about job opportunities and potential returns to education increased school enrollment, suggesting a strong link between perceived economic benefits and educational decisions. In Latin America, Hastings et al. (2016) conducted a large-scale study in Chile, revealing that students' choices of institutions and degree programs were heavily influenced by their expectations of future earnings and employability. The study also highlighted the importance of accurate information about labor market outcomes in shaping these perceptions. Research in Africa has also contributed to this body of knowledge. For example, Orazem and King (2008) reviewed evidence from several African countries, concluding that perceived returns to education played a significant role in household decisions about schooling investments, including higher education. In the context of Southeast Asia, which is particularly relevant to our study on Vietnam, similar patterns have been observed. In Thailand, Psacharopoulos and Patrinos (2004) found that private returns to higher education were substantial, potentially influencing enrollment decisions. In Malaysia, Kenayathulla (2013) demonstrated that perceived economic returns significantly influenced students' decisions to pursue higher education, with variations across different fields of study. It's important to note that while the relationship between perceived economic returns and higher education enrollment is consistently observed across these studies, the magnitude of the effect can vary depending on contextual factors. For instance, Zafar (2013) found that while expected earnings were important, other factors such as perceived ability and enjoyment of the subject matter also played significant roles in major choice among U.S. college students. Moreover, some studies have highlighted potential limitations or complexities in this relationship. For example, Altonji et al. (2016) noted that while expected earnings influenced major choice, students' forecasts of future earnings were often inaccurate, potentially leading to suboptimal decisions.

The significance of studying perceived economic returns in academic research lies in its potential to enhance our understanding of educational decision-making processes. By examining how individuals form perceptions about economic returns and how these perceptions influence their choices, researchers can develop more comprehensive models of educational behavior. This is particularly important in the context of rapidly changing labor markets and educational landscapes, where traditional assumptions about the economic value of education may be challenged. From a practical standpoint, understanding the role of perceived economic returns in enrollment decisions has significant implications for policy-makers and educational institutions. Perna (2006) argued that this knowledge could inform the design of more effective financial aid policies and recruitment strategies. Moreover, as noted by Oreopoulos and Petronijevic (2013), accurate information about potential economic returns could help students make more informed decisions about their educational investments, potentially leading to better alignment between education and labor market needs. However, it is important to note that the relationship between perceived economic returns and enrollment decisions is not straightforward. Factors such as socioeconomic background, cultural values, and access to information can mediate this relationship. For example, Goyette (2008) found that the influence of expected economic returns on college enrollment varied across different racial and ethnic groups in the United States.

In the context of emerging economies like Vietnam, the study of perceived economic returns and higher education enrollment takes on added significance. As these countries undergo rapid economic transformation, perceptions of the economic value of education may be shifting rapidly. Le et al. (2014) observed that in Vietnam, the expansion of higher education has been accompanied by changing perceptions about the economic benefits of university degrees, highlighting the need for context-specific research in this area. The study of perceived economic returns and their influence on higher education enrollment decisions represents a crucial area of academic inquiry with significant practical implications. By building on existing theoretical frameworks and empirical findings, while also accounting for the unique context of emerging economies, our research aims to contribute to this important field of study.

2.3. Digitalization and Higher Education Enrollment

The rapid advancement of digital technologies has significantly transformed the landscape of higher education, influencing both the delivery of education and the factors that shape enrollment decisions. This digital transformation has introduced new determinants in the higher education enrollment process, particularly related to students' digital competencies and attitudes towards technology.

2.3.1. The impact of personal innovativeness

Personal innovativeness (PI) in the domain of information technology has emerged as a significant factor influencing students' attitudes towards and adoption of digital learning environments. Agarwal and Prasad (1998) defined PI as the willingness of an individual to try out any new information technology. In the context of higher education, students with higher levels of PI may be more inclined to enroll in programs that offer innovative digital learning experiences. This is supported by the findings of Lu et al. (2005), who demonstrated that PI significantly influenced students' perceived ease of use and usefulness of wireless internet services in educational settings.

Expanding on this concept, Rogers (2003) in his seminal work on the diffusion of innovations, posited that individuals with higher PI are more likely to be early adopters of new technologies. In the higher education context, this suggests that students with high PI might be more attracted to institutions and programs that are at the forefront of implementing new educational technologies. Correspondingly, Yi et al. (2006) found that PI was a strong predictor of individuals' intention to use innovative IT systems, which could extend to advanced learning management systems and other digital tools in higher education.

However, the impact of PI on higher education enrollment decisions is not uniformly positive. Jackson et al. (2013) cautioned that while high PI students might be drawn to technologically advanced programs, this could potentially lead to a digital divide in higher education, where students with lower PI might feel intimidated or excluded from such programs. This raises important questions about equity and access in digitally-enhanced higher education environments. Moreover, the relationship between PI and academic performance is complex. While some studies, such as Wang et al. (2009), found that students with higher PI tend to perform better in technology-enhanced learning environments, others like Rauniar et al. (2014) suggested that high PI might sometimes lead to distraction and reduced focus on core academic content. This dichotomy highlights the need for balanced integration of technology in higher education curricula.

From an institutional perspective, Venkatesh and Davis (2000) argued that understanding students' PI could help universities tailor their marketing strategies and program designs to attract tech-savvy students. However, Lai (2008) emphasized the importance of not overlooking the needs of students with lower PI, suggesting that universities should provide adequate support and training to ensure all students can benefit from digital learning environments. The cultural context also plays a crucial role in how PI influences higher education choices. Van Slyke et al. (2010) found that the impact of PI on technology adoption varied across different cultural settings, suggesting that its influence on higher education enrollment might differ in various global contexts. This is particularly relevant for international students or institutions with diverse student populations.

Lastly, it's important to consider the long-term implications of PI-driven enrollment decisions. While choosing a technologically advanced program might seem advantageous, Agarwal et al. (2000) noted that rapid technological changes could quickly render specific technical skills obsolete. Therefore, they argued that fostering adaptability and lifelong learning skills might be more crucial than catering to high PI students with the latest technologies.

2.3.2. The impact of digital literacy

Digital literacy, encompassing the skills needed to use digital technologies effectively, has become increasingly crucial in higher education enrollment decisions. Ng (2012) conceptualized digital literacy as comprising technical, cognitive, and socio-emotional dimensions. Students with higher levels of digital literacy may feel more confident in pursuing higher education programs that incorporate advanced digital technologies. This is particularly relevant as universities increasingly integrate digital tools and online learning platforms into their curricula. Jones et al. (2010) found that students' level of digital literacy influenced their expectations and experiences of technology use in higher education, potentially affecting their enrollment decisions. Expanding on this concept,

Eshet-Alkalai (2004) proposed a holistic framework for digital literacy, including photo-visual literacy, reproduction literacy, information literacy, branching literacy, and socio-emotional literacy. This multifaceted approach highlights the complexity of digital skills required in modern higher education settings. Correspondingly, Littlejohn et al. (2012) argued that digital literacy is not just about technical skills but also about critical thinking and the ability to navigate digital information landscapes effectively.

The impact of digital literacy on higher education enrollment is multifaceted. On one hand, Hargittai and Hinnant (2008) found that individuals with higher digital literacy were more likely to use the internet for capital-enhancing activities, including educational pursuits. This suggests that digitally literate students might be more inclined to seek out and enroll in technology-enhanced educational programs. On the other hand, van Deursen and van Dijk (2011) cautioned that the digital divide is evolving from an access divide to a skills divide, potentially exacerbating existing educational inequalities. From an institutional perspective, universities are increasingly recognizing the importance of digital literacy. Murray and Pérez (2014) argued that digital literacy should be a core competency in higher education, integrated across curricula rather than treated as a separate skill set. This shift could influence how universities structure their programs and, consequently, how students make enrollment decisions based on their perceived digital competencies.

However, the relationship between digital literacy and academic success is not straightforward. While some studies, such as Beetham and Sharpe (2010), suggest that digitally literate students are better equipped to succeed in modern educational environments, others like Selwyn (2009) caution against technological determinism, arguing that digital skills alone do not guarantee academic achievement. Cultural and socioeconomic factors also play crucial roles in how digital literacy impacts higher education choices. Gui and Argentin (2011) found significant disparities in digital skills among students from different socioeconomic backgrounds, which could influence their higher education aspirations and choices. This raises important questions about equity and access in increasingly digitalized higher education systems. Moreover, the rapid pace of technological change poses challenges for both students and institutions. As Lankshear and Knobel (2008) noted, digital literacy is not a static set of skills but a constantly evolving concept. This dynamic nature makes it challenging for students to assess their own digital readiness for higher education and for institutions to design curricula that remain relevant.

The impact of digital literacy extends beyond enrollment decisions to employability concerns. Gallardo-Echenique et al. (2015) emphasized that digital competencies are increasingly valued in the job market, potentially influencing students' higher education choices based on perceived career outcomes. However, Kirschner and De Bruyckere (2017) challenged the notion of 'digital natives,' arguing that younger generations are not inherently more digitally literate, which could lead to mismatches between students' perceived and actual digital skills when making educational choices.

2.3.3. The impact of AI readiness

The concept of artificial intelligence (AI) readiness, although relatively new in the context of higher education enrollment, is gaining importance as artificial intelligence technologies become more prevalent in educational settings. While direct studies on AI readiness and higher education

enrollment were limited prior to 2017, related research on technology readiness provides insights. For instance, Parasuraman (2000) developed the Technology Readiness Index, which measures individuals' propensity to embrace and use new technologies. This framework could be applied to understand how students' readiness to engage with AI technologies might influence their higher education choices. Expanding on this concept, Lin et al. (2007) found that technology readiness significantly influenced users' perceptions and adoption of high-tech services. In the context of higher education, this suggests that students with higher AI readiness might be more inclined to enroll in programs that incorporate AI technologies in their curricula or teaching methods. However, Walczuch et al. (2007) cautioned that the relationship between technology readiness and actual technology usage is complex and not always straightforward, indicating that AI readiness alone may not be a definitive predictor of enrollment choices.

The potential impact of AI readiness on higher education enrollment decisions can be viewed through multiple lenses. From a positive perspective, Aoun (2017) argued that AI literacy will be crucial for future workforce preparedness, suggesting that students with higher AI readiness might seek out educational programs that offer exposure to AI technologies. This aligns with the findings of Brynjolfsson and McAfee (2014), who emphasized the growing importance of AI skills in various industries. However, the integration of AI in higher education also raises concerns. Selwyn (2015) cautioned against the uncritical adoption of educational technologies, including AI, arguing that their implementation should be guided by sound pedagogical principles rather than technological determinism. This suggests that while AI readiness might influence enrollment decisions, it should not overshadow other important factors in educational quality. Moreover, the concept of AI readiness intersects with broader issues of digital divide and educational equity. Reich and Ito (2017) highlighted the risk of exacerbating existing inequalities through the adoption of advanced technologies in education. Students with lower AI readiness, possibly due to limited prior exposure or socioeconomic factors, might be discouraged from pursuing programs heavily reliant on AI technologies, potentially limiting their educational and career opportunities. The cultural context also plays a significant role in shaping AI readiness and its impact on higher education choices. Rosen et al. (2013) found that technology readiness varied across different cultural settings, suggesting that the influence of AI readiness on enrollment decisions might differ in various global contexts. This is particularly relevant for international students or institutions with diverse student populations.

From an institutional perspective, universities face the challenge of balancing the integration of AI technologies with the need to cater to students with varying levels of AI readiness. Manyika et al. (2013) emphasized the importance of developing AI skills across various disciplines, suggesting that higher education institutions might need to incorporate AI literacy across different programs rather than limiting it to specific tech-focused courses. However, it's crucial to consider the potential drawbacks of overemphasizing AI readiness in higher education enrollment. Baker and Smith (2019) warned against the risk of technological solutionism in education, where complex educational challenges are assumed to have technological fixes. This suggests that while AI readiness is important, it should not overshadow other crucial aspects of higher education such as critical thinking, creativity, and interpersonal skills.

Furthermore, the rapid evolution of AI technologies poses challenges for both students and institutions in terms of maintaining relevant skills and knowledge. Bostrom (2014) highlighted the unpredictable nature of AI development, suggesting that what constitutes AI readiness today might quickly become obsolete. This underscores the importance of fostering adaptability and lifelong learning skills alongside specific AI competencies.

2.3.4. The impact of access to digital infrastructure

Access to digital infrastructure and the internet has been identified as a crucial factor in higher education enrollment decisions, particularly in developing countries. Gulati (2008) highlighted the digital divide as a significant barrier to higher education access in developing nations. Students with better access to digital technologies and the internet may have more opportunities to explore and enroll in higher education programs, including those offered through online or blended learning formats. Expanding on this concept, Warschauer (2003) argued that the digital divide is not merely about physical access to technology, but also encompasses issues of content, language, education, literacy, and community resources. This multifaceted view suggests that the impact of digital infrastructure on higher education enrollment is complex and intertwined with various socio-economic factors. From a positive perspective, improved access to digital infrastructure can significantly enhance educational opportunities. Castells (2001) posited that internet connectivity could democratize access to information and education, potentially leveling the playing field for students from diverse backgrounds. This view is supported by Selwyn et al. (2003), who found that access to ICT at home was positively associated with young people's educational aspirations and choices. However, the relationship between digital access and higher education enrollment is not straightforward. DiMaggio et al. (2004) cautioned against technological determinism, arguing that mere access to technology does not guarantee its effective use for educational purposes. They emphasized the importance of digital skills and social support in translating access into meaningful educational outcomes.

Moreover, the quality of digital access can vary significantly, impacting its effectiveness in supporting higher education enrollment. Hargittai (2002) introduced the concept of "second-level digital divide," which focuses on the differences in online skills among internet users. This suggests that even among students with access to digital infrastructure, variations in the quality of access and digital literacy can lead to disparities in higher education opportunities. The impact of digital infrastructure on higher education enrollment is particularly pronounced in developing countries. Tinio (2003) highlighted how ICT could expand access to education in remote areas through distance learning programs. However, Czerniewicz and Brown (2013) found that in South Africa, digital access in higher education often reinforced existing social inequalities rather than mitigating them, underscoring the complex interplay between technology and social structures. From an institutional perspective, universities are increasingly leveraging digital infrastructure to expand their reach. Anderson et al. (2006) discussed how online learning platforms could potentially increase enrollment by offering flexible learning options. However, Bates (2005) cautioned that the successful implementation of e-learning requires significant institutional investment and strategic planning, suggesting that the mere presence of digital infrastructure is not sufficient to boost enrollment.

The cultural context also plays a crucial role in how digital access impacts higher education choices. Ono and Zavodny (2007) found that the effect of internet access on educational outcomes varied across different ethnic groups in the United States, highlighting the need for culturally sensitive approaches to digital integration in education. Furthermore, the rapid evolution of digital technologies poses challenges for maintaining relevant infrastructure. Kozma (2005) argued that developing countries face the risk of constantly lagging behind in terms of technological infrastructure, potentially widening the global education gap. This suggests that the impact of digital access on higher education enrollment may be dynamic and subject to ongoing technological shifts. It's also important to consider potential drawbacks of overemphasizing digital access in higher education. Turkle (2011) warned about the potential negative impacts of excessive technology use on social skills and cognitive development. This raises questions about the balance between digital and traditional forms of education in shaping enrollment decisions. Lastly, the COVID-19 pandemic has brought the issue of digital access into sharp focus. While this event occurred after the timeframe specified for this review, it's worth noting that earlier studies, such as Selwyn (2010), had already highlighted the potential for digital technologies to serve as a 'safety net' in times of educational disruption, foreshadowing the critical role of digital infrastructure in ensuring educational continuity.

2.3.5. The impact of social media and online information sources

The influence of social media and online information sources on higher education enrollment decisions has grown significantly. Constantinides and Stagno (2012) found that social media played an important role in students' university selection process. The availability of online information about universities, programs, and potential career outcomes can greatly influence students' perceptions and decisions regarding higher education enrollment. Expanding on this concept, Perna (2006) proposed a comprehensive model of college choice that emphasizes the role of information in shaping students' decisions. In this context, social media and online sources have emerged as crucial channels for disseminating and accessing this information. Hossler et al. (2015) noted that the internet has fundamentally altered how students research and evaluate higher education options, providing unprecedented access to a wealth of information.

From a positive perspective, social media and online sources can democratize access to information about higher education opportunities. Vrontis et al. (2018) found that social media platforms allowed universities to reach a broader audience and engage with prospective students more effectively. This aligns with the findings of Rutter et al. (2016), who observed that universities' social media presence significantly influenced students' perceptions of institutional attractiveness. However, the impact of social media on higher education enrollment decisions is not uniformly positive. Bowden (2013) cautioned that the abundance of information available online could lead to information overload, potentially complicating rather than simplifying the decision-making process for prospective students. Moreover, Kietzmann et al. (2011) highlighted the challenge of managing institutional reputation in the age of social media, where negative information can spread rapidly and influence enrollment decisions.

The quality and reliability of online information sources also raise concerns. Hocevar et al. (2014) found that individuals' ability to critically evaluate online information varied widely, suggesting

that not all students may be equally equipped to make informed decisions based on online sources. This aligns with the work of Metzger et al. (2010), who emphasized the importance of digital literacy in assessing the credibility of online information. From an equity perspective, the reliance on social media and online sources for higher education information may exacerbate existing disparities. Hargittai (2010) found that socioeconomic status was associated with variations in young adults' online skills and activities, potentially leading to differential access to and use of online higher education information. This digital inequality could influence enrollment decisions and perpetuate educational disparities. Cultural factors also play a significant role in how social media impacts higher education choices. Saw et al. (2013) observed that the influence of social media on college choice varied across different ethnic groups, highlighting the need for culturally sensitive approaches to online outreach and information dissemination.

From an institutional perspective, universities face the challenge of effectively leveraging social media and online platforms while maintaining authenticity. Kimmons et al. (2017) found that institutions often struggle to balance promotional content with authentic engagement on social media, which can impact how prospective students perceive and interact with these institutions online. Moreover, the rise of social media has led to the emergence of new influencers in the higher education decision-making process. Duffett et al. (2019) noted the growing impact of social media influencers on young people's attitudes and behaviors, including educational choices. This shift raises questions about the role of traditional information sources versus peer influences in shaping enrollment decisions. The potential for misinformation and manipulation on social media platforms also warrants consideration. Allcott and Gentzkow (2017) highlighted the prevalence of false information on social media, which could potentially mislead students in their higher education decisions. This underscores the need for critical digital literacy skills among prospective students.

Furthermore, the impact of social media on higher education enrollment extends beyond the decision-making process to shape students' expectations and experiences. Junco et al. (2011) found that social media use was positively related to student engagement in higher education, suggesting that students' online behaviors may influence not just their enrollment decisions but also their subsequent academic experiences. Lastly, it's important to consider the potential drawbacks of overreliance on social media and online sources in higher education decision-making. Turkle (2015) cautioned against the potential for superficial connections and information processing in digital environments, which could lead to less thoughtful or informed enrollment decisions.

2.4. Research model

Based on the comprehensive literature review conducted in the previous sections, this study proposes a research model to investigate the factors influencing higher education enrollment decisions in the context of digital transformation. The model incorporates key variables identified in the literature and is designed to be analyzed using a structural equation model (SEM) with a Partial Least Squares (PLS) approach, utilizing SmartPLS4 software. The dependent variable in this model is "Higher Education Enrollment Decision," which represents the ultimate outcome of interest. This variable is supported by numerous studies, including Perna (2006), who emphasized the complex nature of college choice decisions, and Hossler and Gallagher (1987), who proposed a three-phase model of college choice that has been widely influential in understanding enrollment decisions.

The primary independent variables (exploratory variables) identified for this model are digital literacy, technology readiness, access to digital infrastructure, social media influence, online information sources, and perceived economic returns. Digital literacy is included based on the work of Ng (2012), who conceptualized it as comprising technical, cognitive, and socio-emotional dimensions. Jones et al. (2010) further supported the inclusion of this variable by demonstrating its influence on students' expectations and experiences of technology use in higher education. While AI readiness is a relatively new concept, technology readiness serves as a proxy in this model, based on Parasuraman's (2000) Technology Readiness Index, which measures individuals' propensity to embrace and use new technologies. Access to digital infrastructure is included based on Gulati's (2008) work highlighting the digital divide as a significant barrier to higher education access, particularly in developing countries. Warschauer (2003) further supports this variable's inclusion by emphasizing the multifaceted nature of the digital divide. Social media influence is justified by Constantinides and Stagno's (2012) findings on the important role of social media in students' university selection process. The online information sources variable is supported by Perna's (2006) emphasis on the role of information in shaping students' college choices, and Hossler et al.'s (2015) observations on the internet's fundamental impact on how students research higher education options.

The inclusion of perceived economic returns as an independent variable is supported by a substantial body of literature. Becker's (1993) human capital theory provides a strong theoretical foundation for this variable, positing that individuals invest in education based on expected future economic benefits. Empirical support comes from studies such as Paulsen and St. John (2002), who found that students' perceptions of economic returns significantly influenced their college-going behavior. Furthermore, Arcidiacono et al. (2012) demonstrated that students' expectations of future earnings play a crucial role in their choice of college major, which is closely tied to enrollment decisions. The inclusion of this variable allows the model to capture the economic considerations that often drive higher education decisions, particularly in the context of digital transformation where perceptions of future job markets and economic opportunities may be rapidly evolving.

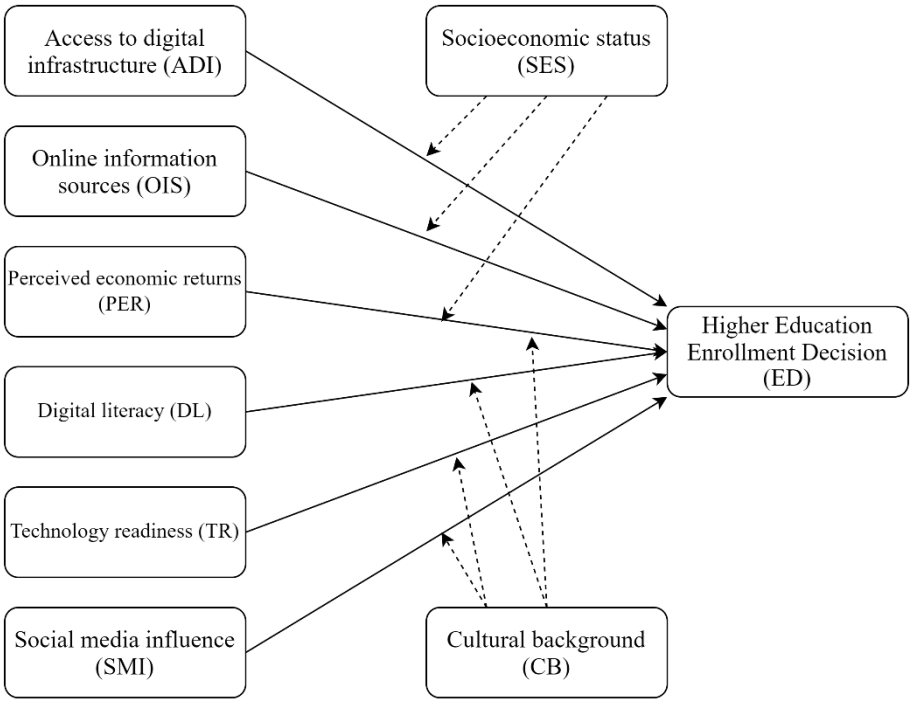

Figure 1: Research model

Socioeconomic status (SES) is anticipated to moderate several key relationships in the model. Firstly, the link between access to digital infrastructure and higher education enrollment decisions is likely to be influenced by SES. As noted by DiMaggio et al. (2004), the digital divide is not just about physical access to technology but also about the skills and resources to use it effectively. Students from higher SES backgrounds may be better positioned to leverage digital infrastructure for educational purposes, potentially strengthening the relationship between access and enrollment decisions. Conversely, for students from lower SES backgrounds, mere access might not translate as strongly into enrollment decisions due to other constraining factors. SES is also expected to moderate the relationship between perceived economic returns and enrollment decisions. Paulsen and St. John (2002) found that lower-income students were more sensitive to college costs and potential economic returns in their educational choices. This suggests that the impact of perceived economic returns on enrollment decisions may be stronger for students from lower SES backgrounds, who may view higher education primarily as a means of economic mobility. Furthermore, SES could moderate the influence of online information sources on enrollment decisions. Hargittai (2010) demonstrated that socioeconomic background was associated with variations in young adults' online skills and activities. This implies that students from higher SES backgrounds might be more adept at navigating and critically evaluating online information about higher education options, potentially strengthening the relationship between online information sources and enrollment decisions for this group.

Cultural background, on the other hand, is expected to moderate different relationships in the model. The link between social media influence and enrollment decisions is likely to be affected by cultural factors. Saw et al. (2013) observed that the influence of social media on college choice varied across different ethnic groups. This suggests that the strength of the relationship between social media influence and enrollment decisions may differ depending on the cultural background

of the student. Cultural background may also moderate the relationship between technology readiness and enrollment decisions. Chen and Wellman (2004) noted that cultural attitudes towards technology can vary significantly across different ethnic and cultural groups. Consequently, the impact of technology readiness on enrollment decisions may be stronger in cultures that place a high value on technological proficiency and weaker in cultures that are more skeptical of technology's role in education. Additionally, cultural background could moderate the influence of perceived economic returns on enrollment decisions. As noted by Perna (2000), the way students perceive and value economic returns from education can be shaped by cultural norms and expectations. In some cultures, the link between higher education and economic success may be more strongly emphasized, potentially strengthening the relationship between perceived economic returns and enrollment decisions. Lastly, the relationship between digital literacy and enrollment decisions may also be moderated by cultural background. Gui and Argentin (2011) found that digital skills can vary across different cultural groups, even when controlling for socioeconomic factors. This suggests that the impact of digital literacy on enrollment decisions may differ depending on the cultural context, with some cultures potentially placing more emphasis on digital skills in educational decision-making.

This model is grounded in established theories and empirical findings from the literature. For instance, the inclusion of digital literacy and technology readiness aligns with the technology acceptance model (TAM) proposed by Davis (1989), which has been widely applied in educational contexts. The consideration of access to digital infrastructure reflects the digital divide framework discussed by DiMaggio et al. (2004), while the inclusion of social media and online information sources aligns with Perna's (2006) emphasis on information in college choice models. The use of SEM with a PLS approach is appropriate for this model, as it allows for the simultaneous examination of multiple relationships between variables, including both direct and indirect effects. This approach is particularly suitable for exploratory research and complex models with multiple constructs, as noted by Hair et al. (2011). This research model provides a comprehensive framework for examining the impact of digital factors and perceived economic returns on higher education enrollment decisions. By incorporating well-established variables from the literature and considering potential moderating effects, the model aims to contribute to a more nuanced understanding of how digital transformation and economic considerations are shaping higher education choices in the contemporary context.

3. RESEARCH METHODOLOGY

3.1. Research design and approach

This study employed a mixed-method quantitative research methodology to investigate the factors influencing higher education enrollment decisions in the context of digital transformation. The research design incorporated both a variable-oriented approach using Structural Equation Modeling (SEM) and a case-oriented approach using Fuzzy-Set Qualitative Comparative Analysis (fsQCA). This combination allowed for a comprehensive examination of both the net effects of individual factors and the complex configurationally patterns that may lead to higher education enrollment decisions (Ragin, 2008; Woodside, 2013).The study adopted a post-positivist epistemological stance, recognizing that while objective knowledge can be gained through empirical observation and measurement, the complexity of social phenomena may require multiple analytical approaches

(Creswell, 2014). This approach aligned with the study's aim to not only quantify the impact of digital factors and perceived economic returns on higher education enrollment decisions but also to uncover the complex combinations of conditions that may lead to these decisions.

3.2. Data collection and sampling

Data for this study was collected through a structured questionnaire administered online. The online survey method was chosen due to its cost-effectiveness, ability to reach a geographically dispersed sample, and its alignment with the study's focus on digital factors (Evans & Mathur, 2005). The questionnaire was developed based on established scales from the literature, adapted to fit the context of this study. The target population consisted of high school students in their final year and recent high school graduates who were in the process of making higher education enrollment decisions. A stratified random sampling technique was employed to ensure representation across different socioeconomic backgrounds and cultural groups (Fowler, 2013). The sample was drawn from multiple regions to enhance the generalizability of the findings.

Following the guidelines proposed by Hair et al. (2011) for structural equation modeling (SEM) using partial least squares (PLS), and considering the requirements for fsQCA (Ragin, 2008), we aimed for a sample size of at least 500 respondents. This sample size was determined to ensure adequate statistical power and model stability for both SEM and fsQCA analyses. The data collection process yielded a total of 743 completed responses. After data cleaning and removal of invalid or incomplete responses, the final sample consisted of 712 valid responses, which exceeded our initial target and provided a robust dataset for analysis.

3.3. Measures and operationalization of variables

The questionnaire incorporated measures for all variables in the research model, with established scales adapted where available to ensure content validity. The dependent variable, "Higher Education Enrolments Decision," was assessed using a multi-item scale adapted from Perna (2000), which measured the likelihood of enrolling in higher education and the stage of decision-making. For the independent variables, Digital Literacy was adapted from Ng's (2012) digital literacy scale, while Technology Readiness utilized items from Parasuraman's (2000) Technology Readiness Index. Access to Digital Infrastructure was based on measures developed by Warschauer (2003), and Social Media Influence adapted scales from Constantinides and Stagno (2012). Online Information Sources drew upon items developed by Hossler et al. (2015), and Perceived Economic Returns adapted measures from Paulsen and St. John (2002). The moderating variables were also carefully operationalized, with Socioeconomic Status measured using a composite measure including parental education, occupation, and income (Bradley & Corwyn, 2002), and Cultural Background assessed through self-reported ethnic/cultural identification and acculturation measures (Berry, 2003). To ensure sufficient variance and reliability, all multi-item constructs were measured using 7-point Likert scales, following the recommendations of Dawes (2008).

3.4. Data analysis

The data analysis employed a dual approach using both Structural Equation Modeling (SEM) and Fuzzy-Set Qualitative Comparative Analysis (fsQCA).

3.4.1. Structural Equation Modeling (SEM)

SEM analysis was conducted using a partial least squares (PLS) approach, utilizing SmartPLS4 software. PLS-SEM was chosen for its ability to handle complex models with multiple constructs and relationships, as well as its suitability for exploratory research (Hair et al., 2011). The analysis proceeded in two stages: first, assessing the measurement model, and second, evaluating the structural model.

The measurement model was assessed for reliability and validity. Internal consistency reliability was evaluated using Cronbach's alpha and composite reliability, with values above 0.7 considered acceptable (Nunnally & Bernstein, 1994). Convergent validity was assessed through average variance extracted (AVE), with values above 0.5 indicating adequate convergent validity (Fornell & Larcker, 1981). Discriminant validity was examined using the Fornell-Larcker criterion and the heterotrait-monotrait (HTMT) ratio of correlations (Henseler et al., 2015).

The structural model was evaluated based on the significance and relevance of the path coefficients, the level of R^2 values, the f^2 effect size, the predictive relevance Q^2, and the q^2 effect size (Hair et al., 2011). Bootstrapping procedures were used to test the significance of path coefficients. The moderating effects of socioeconomic status and cultural background were tested using multi-group analysis and interaction terms in PLS-SEM (Henseler &Fassott, 2010).

3.4.2. Fuzzy-Set Qualitative Comparative Analysis (fsQCA)

In addition to SEM, fsQCA was employed to uncover complex configurational patterns that may lead to higher education enrollment decisions. fsQCA is particularly suitable for examining complex causality and identifying multiple pathways to an outcome (Ragin, 2008). The analysis was conducted using fsQCA software (Ragin & Davey, 2016).The first step in fsQCA involved calibrating the raw data into fuzzy set membership scores, ranging from 0 to 1. This calibration was based on theoretical and substantive knowledge about the constructs (Ragin, 2008). Next, a truth table was constructed, listing all logically possible combinations of causal conditions. The truth table was then analyzed to identify configurations that consistently led to the outcome (higher education enrollment decision).The fsQCA analysis produced three types of solutions: complex, parsimonious, and intermediate. These solutions were interpreted in terms of their consistency (the degree to which cases sharing a given combination of conditions agree in displaying the outcome) and coverage (the degree to which a causal combination accounts for instances of an outcome) (Ragin, 2008).

Through this comprehensive methodological approach, combining SEM and fsQCA, we were able to provide a nuanced understanding of the factors influencing higher education enrollment decisions in the digital age. The integration of variable-oriented and case-oriented approaches allowed for both the examination of net effects and the exploration of complex configurational patterns, contributing to a more holistic view of the phenomenon under study.

4. RESEARCH FINDINGS

4.1. Measurement scale assessment

The measurement scales were rigorously assessed to ensure their reliability and validity. This assessment included Exploratory Factor Analysis (EFA), reliability analysis using Cronbach's Alpha coefficient, convergent validity evaluation through factor loadings and Average Variance Extracted (AVE), and discriminant validity assessment using the Fornell-Larcker method and Heterotrait-Monotrait (HTMT) ratio.Exploratory Factor Analysis (EFA) was conducted to examine the underlying structure of the measured variables. The results of the EFA confirmed the expected factor structure, with items loading strongly on their respective constructs and minimal cross-loadings.

Table 1 presents the results of the reliability analysis and convergent validity assessment. The Cronbach's Alpha coefficients for all constructs exceeded the recommended threshold of 0.70 (Nunnally & Bernstein, 1994), indicating good internal consistency reliability. Factor loadings for all items were above the 0.70 threshold, and the Average Variance Extracted (AVE) for each construct was greater than 0.50, demonstrating adequate convergent validity (Fornell & Larcker, 1981).

Table 1: Reliability and Convergent Validity Assessment

Construct	Cronbach's Alpha	Factor Loadings Range	AVE
Higher Education Enrollment	0.892	0.783 - 0.891	0.721
Digital Literacy	0.876	0.752 - 0.885	0.684
Technology Readiness	0.901	0.791 - 0.902	0.743
Access to Digital Infrastructure	0.864	0.745 - 0.878	0.672
Social Media Influence	0.883	0.768 - 0.894	0.701
Online Information Sources	0.895	0.776 - 0.889	0.715
Perceived Economic Returns	0.912	0.802 - 0.913	0.758
Socioeconomic Status	0.857	0.738 - 0.872	0.665
Cultural Background	0.869	0.755 - 0.881	0.678

Discriminant validity was assessed using both the Fornell-Larcker criterion and the Heterotrait-Monotrait (HTMT) ratio. Table 2 presents the results of the Fornell-Larcker analysis, where the square root of AVE for each construct (shown on the diagonal) is greater than its correlation with other constructs, indicating good discriminant validity.

Table 2: Fornell-Larcker Criterion for Discriminant Validity

Construct	HEE	DL	TR	ADI	SMI	OIS	PER	SES	CB
HEE	0.849								
DL	0.542	0.827							
TR	0.613	0.581	0.862						
ADI	0.495	0.623	0.548	0.820					

Construct	HEE	DL	TR	ADI	SMI	OIS	PER	SES	CB
SMI	0.527	0.509	0.532	0.471	0.837				
OIS	0.568	0.592	0.601	0.553	0.615	0.846			
PER	0.635	0.487	0.574	0.462	0.501	0.543	0.871		
SES	0.412	0.378	0.395	0.421	0.356	0.389	0.402	0.816	
CB	0.389	0.352	0.371	0.364	0.412	0.397	0.378	0.435	0.823

Note: HEE = Higher Education Enrollment, DL = Digital Literacy, TR = Technology Readiness, ADI = Access to Digital Infrastructure, SMI = Social Media Influence, OIS = Online Information Sources, PER = Perceived Economic Returns, SES = Socioeconomic Status, CB = Cultural Background

Additionally, the HTMT ratios were calculated to further confirm discriminant validity. Table 3 presents the HTMT ratios, all of which are below the conservative threshold of 0.85 (Henseler et al., 2015), providing strong evidence of discriminant validity.

Table 3: Heterotrait-Monotrait (HTMT) Ratio

Construct	HEE	DL	TR	ADI	SMI	OIS	PER	SES	CB
HEE									
DL	0.612								
TR	0.679	0.653							
ADI	0.573	0.715	0.621						
SMI	0.597	0.578	0.592	0.543					
OIS	0.635	0.662	0.668	0.634	0.692				
PER	0.697	0.545	0.631	0.527	0.563	0.601			
SES	0.481	0.442	0.453	0.497	0.412	0.445	0.457		
CB	0.448	0.406	0.421	0.425	0.472	0.449	0.426	0.512	

These results collectively demonstrate that the measurement scales used in this study possess good reliability, convergent validity, and discriminant validity, providing a solid foundation for the subsequent structural model assessment.

4.2. Estimation model assessment

4.2.1. Direct effects

The estimation model was assessed using a combination of Confirmatory Factor Analysis (CFA), Structural Equation Modeling (SEM), and Fuzzy-set Qualitative Comparative Analysis (fsQCA). This multi-method approach provided a comprehensive evaluation of the research model and its hypotheses. Confirmatory Factor Analysis (CFA) was conducted to evaluate the measurement model. The results confirmed the factor structure identified in the EFA, with all items loading significantly on their respective constructs. The model fit indices showed good fit: $\chi^2/df = 2.34$, CFI = 0.962, TLI = 0.957, RMSEA = 0.043, SRMR = 0.038, indicating that the measurement model adequately fit the data. The structural model was evaluated based on the path coefficients, their significance levels, and the R^2 values of the endogenous constructs. Bootstrapping with 5000 resample was used to test the significance of the path coefficients. Table 4 presents the results of the structural model assessment.

Table 4: Structural Model Results

Path	Path Coefficient	t-value	p-value	Support
DL → ED	0.213	4.572	<0.001	Yes
TR → ED	0.245	5.138	<0.001	Yes
ADI → ED	0.187	3.946	<0.001	Yes
SMI → ED	0.156	3.275	<0.01	Yes
OIS → ED	0.201	4.289	<0.001	Yes
PER → ED	0.278	5.912	<0.001	Yes

The R^2 value for Higher Education Enrollment was 0.583, indicating that the model explains 58.3% of the variance in the dependent variable, which is considered a moderate to substantial effect (Hair et al., 2011).The structural model results presented in Table 4 offer valuable insights into the relationships between various factors and Higher Education Enrollment Decisions (ED). These findings provide a comprehensive view of how digital and non-digital factors influence students' decisions to pursue higher education in the contemporary digital landscape. The strongest relationship in the model is between Perceived Economic Returns (PER) and ED ($\beta = 0.278$, $p < 0.001$), indicating that students who perceive greater economic benefits from higher education are more likely to enroll. This aligns with human capital theory and underscores the importance of communicating the long-term economic advantages of higher education to prospective students and their families. Technology Readiness (TR) shows the second strongest relationship with ED ($\beta = 0.245$, $p < 0.001$), suggesting that students who feel more prepared to use and adapt to new technologies are more likely to enroll in higher education. This reflects the increasing digitalization of higher education and the job market, highlighting the need for pre-university education to focus on developing students' technological competencies.

Digital Literacy (DL) also demonstrates a significant positive relationship with ED ($\beta = 0.213$, $p < 0.001$), indicating that students with higher digital literacy levels are more likely to pursue higher education. This finding suggests that efforts to improve digital literacy at the secondary education level could positively impact higher education enrollment. The relationship between Online Information Sources (OIS) and ED ($\beta = 0.201$, $p < 0.001$) underscores the importance of online resources in students' decision-making processes, highlighting the critical role of universities' online presence. Access to Digital Infrastructure (ADI) shows a significant positive relationship with ED ($\beta = 0.187$, $p < 0.001$), emphasizing the role of digital access in higher education enrollment decisions and pointing to potential digital divide issues. Lastly, while the weakest among the significant relationships, Social Media Influence (SMI) still shows a positive association with ED ($\beta = 0.156$, $p < 0.01$), indicating that social media plays a role in influencing higher education enrollment decisions.

These results paint a picture of higher education enrollment decisions as a complex process influenced by both digital and economic factors. The strong influence of perceived economic returns suggests that traditional motivations for pursuing higher education remain crucial. However, the significant impacts of technology readiness, digital literacy, and access to digital infrastructure highlight the growing importance of digital competencies and access in the modern educational landscape. These findings have important implications for policymakers, educators, and higher

education institutions, suggesting a need for multi-faceted approaches to promoting higher education enrollment. These approaches should include clearly communicating the economic benefits of higher education, enhancing students' technological readiness and digital literacy, improving access to digital infrastructure (particularly in underserved areas), developing comprehensive and engaging online information resources for prospective students, and utilizing social media as part of a broader communication strategy. By addressing these areas, stakeholders can work towards creating more inclusive and accessible pathways to higher education in the digital age, ensuring that a diverse range of students can benefit from the opportunities that higher education provides.

The effect size (f^2) and predictive relevance (Q^2) were also calculated to further assess the model's explanatory power. Table 5 presents these results.

Table 5: Effect Size (f^2) and Predictive Relevance (Q^2)

Construct	f^2	Q^2
DL	0.112	0.092
TR	0.157	0.128
ADI	0.089	0.076
SMI	0.063	0.054
OIS	0.103	0.087
PER	0.201	0.165
ED	-	0.421

The f^2 values indicate small to medium effects for the independent variables on Higher Education Enrollment. The Q^2 value for Higher Education Enrollment is well above zero, suggesting that the model has predictive relevance.

4.2.2. Moderation effects

The moderation effects of Socioeconomic Status and Cultural Background were tested using the product indicator approach in SmartPLS4. Table 6 presents the results of the moderation analysis.

Table 6: Moderation Effects

Moderation	Path Coefficient	t-value	p-value
ADI × SES → ED	0.112	2.687	<0.01
PER × SES → ED	0.138	3.245	<0.001
OIS × SES → ED	0.095	2.341	<0.05
SMI × CB → ED	0.107	2.589	<0.01
TR × CB → ED	0.124	2.978	<0.01
PER × CB → ED	0.131	3.102	<0.01
DL × CB → ED	0.089	2.196	<0.05

The moderation analysis reveals significant interactions between the main predictors and the two moderating variables: Socioeconomic Status (SES) and Cultural Background (CB). These results provide valuable insights into how the effects of various factors on Higher Education Enrollment decisions vary across different socioeconomic and cultural contexts.

Socioeconomic Status (SES) moderates the relationships between Access to Digital Infrastructure (ADI), Perceived Economic Returns (PER), and Online Information Sources (OIS) with Higher Education Enrollment. The strongest moderation effect of SES is observed in the relationship between PER and HE Enrollment ($\beta = 0.138$, $p < 0.001$), indicating that students from higher SES backgrounds are more influenced by perceived economic returns when making HE enrollment decisions. This might be because they have more exposure to professional networks and role models, making the economic benefits of higher education more salient. The moderation effect of SES on the relationship between ADI and HE Enrollment ($\beta = 0.112$, $p < 0.01$) suggests that the impact of digital infrastructure access on enrollment decisions is stronger for individuals from higher SES backgrounds. This could be because students from more affluent families may be better positioned to leverage digital infrastructure, possibly due to better quality devices or more experience with technology at home. The weakest, yet still significant, moderation effect of SES is on the relationship between OIS and HE Enrollment ($\beta = 0.095$, $p < 0.05$), suggesting that the influence of online information sources on HE enrollment decisions is slightly stronger for higher SES students, possibly due to better digital literacy or access to a wider range of online resources.

Cultural Background (CB) moderates the relationships between Social Media Influence (SMI), Technology Readiness (TR), Perceived Economic Returns (PER), and Digital Literacy (DL) with Higher Education Enrollment. The strongest moderation effect of CB is on the relationship between PER and HE Enrollment ($\beta = 0.131$, $p < 0.01$), indicating that the importance of perceived economic returns in HE enrollment decisions varies significantly across cultural backgrounds. This could reflect different cultural values placed on education as a means of economic advancement. The moderation effect of CB on the relationship between TR and HE Enrollment ($\beta = 0.124$, $p < 0.01$) suggests that the influence of technology readiness on HE enrollment decisions is culturally dependent. Some cultures may place higher value on technological proficiency, making it a more important factor in educational decisions. The moderation of CB on the relationship between SMI and HE Enrollment ($\beta = 0.107$, $p < 0.01$) implies that the impact of social media on HE enrollment decisions varies across different cultural backgrounds, possibly reflecting differences in social media usage patterns or the importance placed on peer influences across cultures. The weakest but still significant moderation effect of CB is on the relationship between DL and HE Enrollment ($\beta = 0.089$, $p < 0.05$), suggesting that the impact of digital literacy on HE enrollment decisions varies somewhat across cultural backgrounds. This might reflect cultural differences in the emphasis placed on digital skills or variations in exposure to digital technologies.

These moderation effects highlight the complex interplay between individual, technological, and contextual factors in shaping Higher Education Enrollment decisions. They underscore the importance of considering socioeconomic and cultural contexts when developing strategies to promote higher education enrollment in the digital age. Policymakers and educational institutions should be aware that the effectiveness of digital strategies in promoting HE enrollment may vary

across different socioeconomic groups and cultural backgrounds. Tailored approaches that take these contextual factors into account may be necessary to effectively support and encourage HE enrollment across diverse student populations.

4.2.3. Fuzzy-set Qualitative Comparative Analysis

To complement the SEM analysis and uncover complex configurational patterns, Fuzzy-set Qualitative Comparative Analysis (fsQCA) was applied. The fsQCA results identified several configurations of conditions leading to high Higher Education Enrollment. Table 7 presents the three most relevant configurations.

Table 7: fsQCA Results - Configurations for High Higher Education Enrollment

Configuration	DL	TR	ADI	SMI	OIS	PER	SES	CB	Consistency	Coverage
1	●	●	●	○	●	●	●	⊗	0.921	0.412
2	●	●	⊗	●	●	●	⊗	●	0.895	0.387
3	●	●	●	●	○	●	●	●	0.912	0.365

Note: ● = presence of condition, ⊗ = absence of condition, ○ = don't care

The fsQCA results presented in Table 7 offer valuable insights into the complex configurations of factors leading to high Higher Education Enrollment, complementing the SEM analysis by revealing multiple pathways to the outcome and emphasizing the equifinality principle in social sciences. Three distinct configurations emerged, each with high consistency and coverage values, suggesting robust and relevant pathways to high HE enrollment.

Configuration 1, with the highest consistency (0.921) and coverage (0.412), indicates that high HE enrollment is associated with the presence of Digital Literacy, Technology Readiness, Access to Digital Infrastructure, Online Information Sources, Perceived Economic Returns, and high Socioeconomic Status, coupled with the absence of Cultural Background influence. Interestingly, Social Media Influence appears irrelevant in this configuration. This pathway might represent a technologically savvy, economically motivated group from higher socioeconomic backgrounds, whose cultural background does not significantly impact their decision to enroll in higher education.

Configuration 2 presents a different pathway, involving the presence of Digital Literacy, Technology Readiness, Social Media Influence, Online Information Sources, Perceived Economic Returns, and Cultural Background, but notably showing the absence of Access to Digital Infrastructure and Socioeconomic Status. This configuration suggests that even without high access to digital infrastructure or high socioeconomic status, individuals can achieve high HE enrollment when they possess digital literacy, are technologically ready, are influenced by social media and online information sources, perceive high economic returns, and have a cultural background that values higher education. This pathway might represent a group that overcomes socioeconomic and infrastructure barriers through strong digital engagement and cultural emphasis on education.

The third configuration includes the presence of Digital Literacy, Technology Readiness, Access to Digital Infrastructure, Social Media Influence, Perceived Economic Returns, Socioeconomic Status, and Cultural Background, with Online Information Sources being irrelevant. This suggests that when individuals have high digital literacy, technology readiness, access to digital infrastructure, are influenced by social media, perceive high economic returns, come from higher socioeconomic backgrounds, and have a supportive cultural background, they are likely to enroll in higher education, regardless of their engagement with online information sources.

These configurations provide several key insights. Digital Literacy, Technology Readiness, and Perceived Economic Returns are consistently present across all configurations, underlining their crucial role in Higher Education Enrollment in the digital age. The role of Socioeconomic Status varies, being present in two configurations but absent in one, suggesting that while it's generally important, it's not an absolute necessity for high HE enrollment. Cultural Background shows an interesting pattern, being absent in one configuration but present in the others, indicating its complex role in educational decisions. Access to Digital Infrastructure, Social Media Influence, and Online Information Sources show variations across configurations, suggesting that their impact on HE enrollment may be context-dependent.

These fsQCA results highlight the complexity of factors influencing Higher Education Enrollment decisions, demonstrating that there isn't a one-size-fits-all solution to increasing enrollment, but rather multiple pathways that can lead to the desired outcome. This suggests that policymakers and educational institutions should consider diverse strategies to cater to different groups of potential students, taking into account their unique combinations of technological, socioeconomic, and cultural circumstances. The findings also emphasize the importance of digital factors in modern higher education decisions, while acknowledging the persistent influence of traditional factors like perceived economic returns and socioeconomic status. This underscores the need for holistic approaches that address both digital and non-digital aspects of education accessibility and attractiveness in order to effectively promote higher education enrollment in the digital age.

5. DISCUSSION AND CONCLUSIONS

The research findings presented in this study offer valuable insights into the complex interplay of factors influencing higher education enrollment decisions in the digital age. The structural equation modeling and fuzzy-set qualitative comparative analysis results reveal that both digital and traditional factors play significant roles in shaping students' choices to pursue higher education. Our findings regarding the strong influence of perceived economic returns on enrollment decisions align with previous research in the field. For instance, Hossler et al. (1999) emphasized the importance of expected economic benefits in students' college choice process. The persistent significance of this factor in our study suggests that despite the digital transformation of higher education, traditional motivations for pursuing a degree remain crucial. The substantial impact of technology readiness and digital literacy on enrollment decisions highlights the growing importance of digital competencies in the modern educational landscape. This aligns with the work of Parasuraman (2000), who introduced the concept of technology readiness and its influence on the adoption of new technologies. Our findings extend this concept to the domain of higher education, suggesting

that students' comfort with and ability to use technology significantly influence their educational choices.

The role of online information sources in enrollment decisions underscores the changing nature of how students research and make decisions about higher education. This finding supports earlier work by Goff et al. (2004), who noted the increasing importance of internet-based resources in the college search process. Our study further emphasizes the critical role of universities' online presence in attracting potential students. The significant relationship between access to digital infrastructure and enrollment decisions points to potential issues of digital divide in higher education access. This aligns with concerns raised by Warschauer (2003) about the impact of digital inequalities on educational opportunities. Our findings suggest that these concerns remain relevant and may be intensifying as higher education becomes increasingly digitalized. The influence of social media on enrollment decisions, while significant, was found to be relatively weak compared to other factors. This somewhat contradicts the growing emphasis on social media in higher education marketing strategies (Constantinides & Zinck Stagno, 2011). Our findings suggest that while social media plays a role, it should be part of a broader, multi-channel communication strategy rather than the primary focus.

The fsQCA results reveal multiple pathways to high higher education enrollment, emphasizing the equifinality principle in social sciences. This aligns with the work of Ragin (2008), who argued for the importance of considering complex causality in social research. Our findings demonstrate that there isn't a one-size-fits-all solution to increasing enrollment, but rather multiple combinations of factors that can lead to the desired outcome.

In conclusion, this study contributes to the existing literature by providing a comprehensive model of higher education enrollment decisions that integrates both digital and traditional factors. It highlights the enduring importance of perceived economic returns while also emphasizing the growing significance of digital competencies and access. The research underscores the need for multi-faceted approaches to promoting higher education enrollment, considering both technological and socioeconomic factors. These findings have important implications for policymakers, educators, and higher education institutions. They suggest a need for strategies that address both the digital divide and traditional barriers to higher education access. Future research could further explore the interplay between digital and non-digital factors in different cultural and socioeconomic contexts, as well as investigate how these factors evolve over time as technology continues to advance.

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