

Strategic excellence and technological integration: Sustaining competitive advantage for private universities in Indonesia

Nurul Hidayah¹, Lucky Nugroho^{2*}, Fransisca Listyaningsih Utami³

^{1,2,3}Faculty of Economics and Business, Universitas Mercu Buana, Jakarta, Indonesia; nurul.hidayah@mercubuana.ac.id (N.H.)
lucky.nugroho@mercubuana.ac.id (L.N.) fransisca.listyaningsih@mercubuana.ac.id (F.I.U.).

Abstract: The competition among private universities in Indonesia is intensifying, requiring institutions to establish a sustainable competitive advantage through the right strategies, strong vision and mission, and effective use of information technology. This study analyzes the influence of strategy, vision and mission, university rankings, and information technology on the sustainable competitive advantage of private universities. It also examines the moderating role of information technology in strengthening these relationships. Using a quantitative approach with a descriptive and causal design, data were collected from 204 respondents across private universities in Indonesia via a questionnaire. Analysis using Partial Least Squares (PLS) and SmartPLS software reveals that strategy, vision and mission, university rankings, and information technology significantly impact sustainable competitive advantage. Furthermore, information technology strengthens the influence of strategy, vision, and mission but does not moderate the relationship between university rankings and competitive advantage. These findings indicate that while information technology supports strategic implementation and the achievement of institutional vision and mission, its direct role in enhancing university rankings is limited. The study emphasizes the importance of formulating innovative, sustainable strategies and integrating information technology effectively to maintain competitiveness. Practical implications include the necessity of resource planning and investment in technology to achieve strategic objectives. This study contributes to the literature by exploring the moderating role of information technology in private universities, providing valuable insights for managers on leveraging technology to navigate competitive challenges and sustain growth.

Keywords: Information technology, Private universities, Strategy, Vision and mission, Sustainable competitive advantage, University ranking.

1. Introduction

Competition in the higher education sector in Indonesia, especially among private universities, has become increasingly fierce in recent decades. The increasing public demand for quality higher education triggers the growth in private universities [1]. However, with the increasing number of institutions, private universities face significant challenges to maintain their existence and quality amid increasingly fierce competition. Moreover, to survive and thrive, universities must have a sustainable competitive advantage that can create added value in the long term [2]. Nevertheless, institutional theory emphasizes that organizations, including universities, operate to meet market needs or compete with other institutions and meet social expectations, norms, and values within their environment [3]. Sustainable competitive advantage cannot be achieved instantly but through the right strategy, a clear vision and mission, and the practical application of information technology. A university's reputation is often measured through national and international rankings, research quality, facilities in place, and alumni success [4]. Therefore, universities need to develop innovative strategies that are not only able to improve the quality of education and research but also able to answer the challenges of resource management and financial pressures faced. Currently, the number of

private universities in Indonesia reaches more than 4,000 institutions, showing that people are increasingly aware of the importance of higher education for improving the quality of life and career [5]. However, this rapid growth brings new challenges, namely maintaining quality and reputation amid increasingly intense competition. One of the main benchmarks of a university's reputation is the rankings obtained nationally and internationally. This ranking reflects various aspects such as the quality of education, the amount and quality of research, and the contribution of universities to society. Universities with good rankings make obtaining research funding easier, attract quality students, and build cooperation with other institutions at home and abroad [6]. Therefore, to achieve a high ranking, universities must develop innovative academic programs, improve facilities, and improve the quality of lecturers and teaching staff. In addition, the strategies implemented must be responsive to changes in the external environment and be able to take advantage of existing opportunities, so in today's digital era, the application of information technology is one of the critical strategies that can improve operational efficiency and support a more innovative learning process [7]. The vision and mission of the university are the main foundation for formulating strategies, so a strong vision guides the university's long-term goals. In contrast, a mission describes how the university will achieve those goals [8]. Moreover, through a clear and communicative vision and mission, the entire academic community can be actively involved in achieving common goals. Although many studies have addressed the influence of strategy, vision, mission, and information technology on the competitive advantage of universities, there is still a gap in understanding the interaction between these variables. Most studies only focus on the direct influence of each variable on competitive advantage without considering the moderation role of information technology. In fact, in the context of globalization and digitalization, information technology has a vital role in strengthening or weakening the influence of university strategies, visions, missions, and rankings on competitive advantage [9]. Information technology can improve operational efficiency and effectiveness, facilitate access to information, and support the learning and research process. However, not all universities have adequate technological infrastructure or can integrate technology into their strategies and operations. This creates a gap in the achievement of competitive advantage between universities with substantial technological resources and those without. In addition, most of the research focuses more on public universities or universities abroad, so more specific research is still needed in the context of private universities in Indonesia. Based on this phenomenon, this study raises several research questions, namely:

- Does strategy affect the sustainable competitive advantage of private universities in Indonesia?
- Does the vision and mission affect the sustainable competitive advantage of private universities in Indonesia?
- Does university ranking affect the sustainable competitive advantage of private universities in Indonesia?
- Does information technology affect the sustainable competitive advantage of private universities in Indonesia?
- Does information technology moderate the influence of strategy on the sustainable competitive advantage of private universities in Indonesia?
- Does information technology moderate the influence of vision and mission on the sustainable competitive advantage of private universities in Indonesia?
- Does information technology moderate the influence of university rankings on the sustainable competitive advantage of private universities in Indonesia?

This study aims to analyze the influence of strategy, vision, mission, university ranking, and information technology on the sustainable competitive advantage of private universities in Indonesia. In addition, this study also explores the role of information technology moderation in strengthening or weakening the influence of university strategies, visions, missions, and rankings on sustainable competitive advantage. This research is expected to provide a more comprehensive understanding of the factors that affect the competitiveness of private universities in Indonesia and how information technology can be used optimally. The findings of this study have important theoretical and practical implications. Theoretically, this research contributes to the literature on strategic management and

higher education, primarily related to the role of information technology as a moderation variable. Private university managers can use this research to formulate more effective strategies for achieving sustainable competitive advantage.

Furthermore, by understanding the interplay between strategy, vision, mission, university rankings, and information technology, universities can make better decisions in allocating resources and designing policies that support the achievement of long-term goals. The latest of this study lies in exploring the role of information technology as a moderation variable in the relationship between strategy, vision, mission, and university ranking with sustainable competitive advantage. This research provides new insights in the context of private universities in Indonesia that have not been widely discussed in previous literature. The developed theoretical model offers a more comprehensive perspective on factors affecting university competitiveness in the digital age. The Partial Least Square (PLS) method provides more robust analytical power in testing causal relationships between variables, resulting in reliable and applicable findings.

2. Literature Review

Institutional theory is a theoretical framework that explains how social, cultural, and normative institutions shape organizational structures, practices, and policies [10]. This theory emphasizes that organizations adapt to a competitive external environment and follow socially accepted rules, norms, and values [11]. In the context of private universities in Indonesia, institutional theory is relevant because higher education institutions must comply with government regulations, meet accreditation standards, and respond to public expectations regarding the quality of education. A strategy is a long-term plan designed to achieve specific goals, harness strengths, and face challenges from the external environment [12], [13]. In the context of universities, the strategy includes measures taken to improve the quality of education, research, and services and compete with other universities at the national and international levels. Effective strategies can assist universities in formulating policies, allocating resources, and developing superior academic programs. A vision is a statement about the future that an organization wants to achieve [14]. A strong vision guides the long-term direction the university wants to achieve, such as becoming the best university in a particular field or producing graduates who excel in the global market [15]. On the other hand, a mission is a statement of what the organization is doing today to achieve that vision, including a primary focus on education, research, and community service. A clear and communicative vision and mission can increase the involvement of the entire academic community in achieving common goals.

University rankings are often used as a benchmark for the quality and reputation of higher education institutions. These rankings reflect various aspects, including the quality of education, the amount and quality of research, the facilities owned, and the contribution to society [16]. A high ranking can increase the university's attractiveness to prospective students and cooperation partners and make obtaining research funds and international cooperation easier. Information technology includes systems, devices, and applications that process, store, and distribute information. In the context of universities, information technology can support various activities, ranging from administration to learning to research [17]. Practical application of information technology can improve operational efficiency, expand access to education, and support innovation in the learning process. Sustainable competitive advantage refers to an organization's ability to maintain a superior position in the market over the long term. In the context of private universities, sustainable competitive advantage can be achieved through the quality of education, innovation in the curriculum, information technology support, and a good reputation in the eyes of the community [18]–[20]. Therefore, universities that can achieve sustainable competitive advantage will more easily attract quality students, get research funds, and build cooperation with various parties.

2.1. Hypothesis Development

2.1.1. The Relationship of Strategy to Sustainable Competitive Advantage

Continuous competitive advantage is defined as a company's ability to maintain its superior performance compared to its competitors over a long period. This is usually achieved through the

implementation of strategies that are unique and difficult for competitors to replicate. The right strategy can help companies leverage unique internal resources to create added value that is different from competitors. According to Lazarenko et al. (2021) [21], integrating sustainability into the company's strategy can potentially increase the company's competitive advantage. In addition, innovation plays a crucial role in formulating strategies to achieve sustainable competitive advantage. However, service quality and product innovation have a significant relationship with competitive advantages and sustainable economic growth, thus motivating companies to continue to innovate to meet customer satisfaction and maintain their position in the market [22]. Therefore, based on the description above, the hypothesis in this study is:

H₁: Strategies affect the sustainable competitive advantage of private universities in Indonesia.

2.1.2. The Relationship of Vision and Mission to Sustainable Competitive Advantage

Integrating vision and mission into the strategic planning process is essential to ensure that all organizational activities are aligned with long-term goals. According to Lin et al. (2019) [23], having a relevant vision and mission is very important in a competitive environment, as it can help organizations formulate effective strategies to achieve their goals. Therefore, this integration can ensure that the resources are allocated efficiently and that the organization remains focused on its core competencies. When the vision and mission are consistently applied in strategic planning, the organization can maintain competitiveness by continuously developing strategies following market changes and internal needs. Additionally, a vision and mission emphasizing innovation and sustainability can encourage organizations to develop innovative and sustainable products and services [24]. According to Rupprecht et al. (2013) [25], organizations that emphasize environmental sustainability in their vision and mission can improve employee identification and engagement, supporting competitive advantage through innovation. When employees feel engaged and motivated by the organization's vision and mission, they have the potential to contribute to the development of innovative solutions that differentiate their organization from competitors in the market. Therefore, based on the description above, the hypothesis in this study is:

H₂: Vision and mission affect the sustainable competitive advantage of private universities in Indonesia.

2.1.3. The Relationship of Ratings to Sustainable Competitive Advantage

Rankings are often considered a measure of an organization's reputation and performance. Organizations that achieve high rankings are generally considered to have better quality in terms of education, research, and other operational practices. A good reputation can attract the attention of stakeholders, such as prospective students, business partners, and investors, which can increase the organization's competitiveness in the market. Hattab et al. (2023) [26] stated that combining social and technological factors that align with strategic objectives can create a sustainable competitive advantage that improves business performance. This shows that organizations that have high ratings often succeed in integrating various sustainability factors into their strategies. A high rating can strengthen the reputation and attract the attention of stakeholders, increasing the organization's competitiveness in the market [27]. Organizations can achieve and maintain a sustainable competitive advantage by implementing an effective sustainability strategy and strategically integrating it into business operations. Therefore, rankings serve as performance indicators and a strategic tool to build and maintain an organization's long-term competitiveness. Therefore, based on the description above, the hypothesis in this study is:

H₃: University rankings affect the sustainable competitive advantage of private universities in Indonesia.

2.1.4. The Relationship of Information Technology to Sustainable Competitive Advantage

Information technology plays a crucial role in improving the operational efficiency of an organization. Leão & Silva (2021) [28] stated that successful IT implementation improves efficiency and supports long-term strategic goals, strengthening a sustainable competitive advantage. With IT, organizations can automate business processes, reduce human error, and improve the speed and accuracy of operations [29]. This efficiency allows organizations to offer high-quality products and

services at a lower cost, which in turn increases competitiveness in the market. In addition, IT allows companies to adjust their strategies quickly in the face of market changes. Zainul et al. (2016) [30] showed that companies utilizing IT for marketing communication can effectively deal with technological turbulence, achieving a sustainable competitive advantage. Therefore, based on the description above, the hypothesis in this study is:

H₄: Information technology positively affects the sustainable competitive advantage of private universities in Indonesia.

2.1.5. Information Technology Can Moderately Influence Strategy, Vision, Mission, and University Rankings on The Sustainable Competitive Advantage of Private Universities in Indonesia.

IT has the potential to moderate the relationship between strategy and sustainable competitive advantage by strengthening the ability of universities to implement strategies more efficiently and effectively and encourage sustainable innovation [31]–[34]. Therefore, based on the description above, the hypothesis in this study is:

H₅: Information technology moderates the influence of strategy on the sustainable competitive advantage of private universities in Indonesia, thereby strengthening these positive relationships.

IT can strengthen the influence of vision and mission on sustainable competitive advantage by ensuring that all elements of the university work in harmony to achieve the long-term goals that have been set. Therefore, based on the description above, the hypothesis in this study is:

H₆: Information technology moderates the influence of vision and mission on the sustainable competitive advantage of private universities in Indonesia, thereby strengthening these positive relationships.

IT can strengthen the relationship between rankings and sustainable competitive advantage by improving the ability of universities to meet and exceed expected quality standards and leveraging their rankings to strengthen competitiveness. Therefore, based on the description above, the hypothesis in this study is:

H₇: Information technology moderates the influence of university rankings on the sustainable competitive advantage of private universities in Indonesia, thus reinforcing these positive relationships.

3. Research Methods

This study uses a quantitative approach to analyze the influence of variables such as strategy, vision, mission, university ranking, and information technology on sustainable competitive advantage in private universities in Indonesia and explore the moderation role of information technology.

3.1. Research Design

This research is descriptive and causal. Descriptive research describes the characteristics of the variables studied. In contrast, causality research aims to determine the cause-and-effect relationship between independent variables (strategy, vision, mission, ranking, and IT) and bound variables (sustainable competitive advantage).

3.2. Population and Sample

This study's population is all structural officials (rectors, vice-chancellors, deans, heads of study programs) from private universities in Indonesia, with a total population of 315 private universities. The sampling method used is simple random sampling, which does not pay attention to strata in the population. The number of samples used was 204 universities spread across various regions such as Java, Sumatra, Kalimantan, Papua, Bali, and Sulawesi.

3.3. Data Collection

Data was collected through questionnaires distributed to selected respondents. The questionnaire was designed to measure the variables of the study, and its distribution was carried out in two ways:

- Online: Using the Google form (G-Form) distributed through the WhatsApp groups ADAI (Association of Indonesia Accounting Lecturers), AFEBSI (Alliance of the Faculty of Economics and Private Business of Indonesia), and APTISI (Association of Private Universities of Indonesia), IAI (Indonesia Accountant Association), FDAP (Forum of Sector Public Lecturer).

- Direct: The questionnaire was distributed directly during the Association Faculty or University event.

3.4. Research Instruments

The research instrument used was a questionnaire with a Likert scale of 1-5, where one indicated "strongly disagree," and five indicated "strongly agree." The instrument is designed to measure several vital constructs, which are:

- Strategy (STR): Measures the strategic plan that the university implements to achieve competitive advantage.
- Vision and Mission (VM): This measure measures the strength of the university's vision, mission, and implementation in achieving excellence.
- Ranking: Measure respondents' perception of university rankings at the national and international levels.
- Information Technology (IT): Measures the use and effectiveness of IT in supporting university operations.
- Sustainable Competitive Advantage (CA): Measures a university's ability to maintain a competitive advantage over the long term.

3.5. Data Analysis

The collected data will be processed using Partial Least Squares (PLS)-based statistical analysis techniques with SmartPLS software. Here are the steps to analyze the data:

- Validity and Reliability Test: The convergent validity test uses an outer loading value with a \geq value threshold of 0.5. The reliability test uses Cronbach's Alpha and Composite Reliability values with a \geq value threshold of 0.7.
- Test the Measurement Model (Outer Model): Test the extent to which the indicators used can reflect the construct of each variable.
- Inner Model Test: This test tests the causal relationship between independent and bound variables and the moderation role of information technology, using bootstrapping analysis to obtain t-statistical and p-value values.
- Hypothesis Test: The hypothesis was tested by looking at t-statistical values (≥ 1.96) and p-values (≤ 0.05). If the value is met, then the hypothesis is accepted.

4. Results

This study examines the influence of strategy, vision and mission, university rankings, and information technology on the sustainable competitive advantage of private universities in Indonesia. As a moderation variable, information technology is expected to strengthen the influence of these variables on the university's competitive advantage. Based on the data collection results from respondents representing 204 private universities in Indonesia, data analysis was carried out using the Partial Least Square (PLS) method, and the following results were obtained.

4.1. Validity and Reliability Test

The results of the validity and reliability test shown in Table 1 below show that all variables in the research model have composite reliability and Cronbach's alpha values greater than 0.7, as well as Average Variance Extracted (AVE) > 0.5 . This indicates that all the constructs in this study are valid and reliable, so they can be used for further hypothesis testing.

Table 1.
Validity and reliability test.

	Cronbach's alpha	rho_A	Composite reliability	Average variance extracted (AVE)
CA	0.839	0.844	0.879	0.510
IT	0.864	0.874	0.894	0.514
Moderating effect 1	1.000	1.000	1.000	1.000
Moderating effect 2	1.000	1.000	1.000	1.000
Moderating effect 3	1.000	1.000	1.000	1.000
Rank	0.820	0.847	0.868	0.520
STR	0.826	0.833	0.878	0.590
VM	0.873	0.882	0.905	0.615

4.2. Test the Measurement Model (Outer Model)

The Outer Model test results show the convergence validity test showed that all constructs in this study have an outer loading value of more than 0.5, which means that these indicators are valid to represent their respective variables. The results are shown in Figure 1 below:

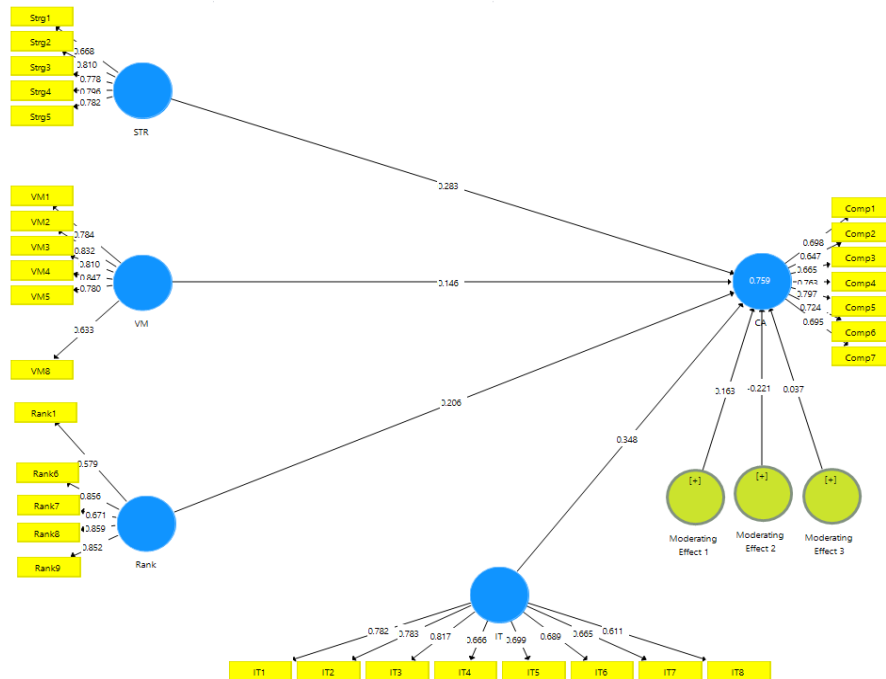


Figure 1.
Outer model test.

4.3. Inner Model Test

The results of the bootstrapping test are shown in the image below:

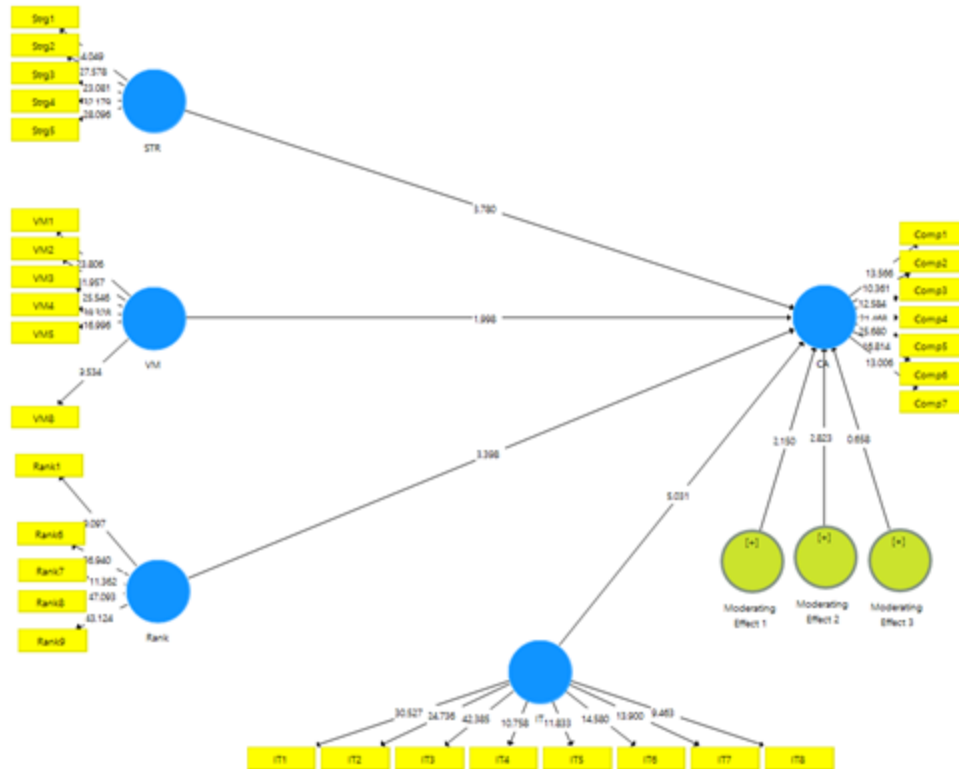


Figure 2.
Test bootstrap.

Figure 2 above shows that all path coefficients have a positive value close to +1, with a t-statistical value above 1.645. This means that the relationship between the independent variables (strategy, vision and mission, university ranking, and information technology) and the bound variable (sustainable competitive advantage) has a significant influence. The results of the path coefficient test show that:

- The strategy significantly influences sustainable competitive advantage, with a T Stat value of 3,780 and a P-value of 0.000.
- Vision and Mission also significantly influence the organization, with a T Stat value of 1.998 and a P-value of 0.046.
- The University Ranking has a significant influence, with a T-stat value of 3.398 and a P-value of 0.001.
- Information Technology showed the most significant influence, with a T-stat value of 5.031 and a P-value of 0.000.

4.4. Hypothesis Test

The hypothesis test results can be explained as follows:

The results of the determination test in Table 2 below show that the R Square Adjusted value is 0.745, or 74.5%, where the variables of strategy, vision and mission, university ranking, and information technology have high explanatory ability to sustain competitive advantage.

Table 2.
Determination test results

	R square	R square adjusted
CA	0.754	0.745

The results of the hypothesis from this study are shown in table 3 below:

Table 3.
Hypothesis test results.

Path Coefficient / Total Effect	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
STR -> CA	0.283	0.283	0.075	3,780	0.000
VM -> CA	0.146	0.148	0.073	1,998	0.046
Rank -> CA	0.206	0.216	0.061	3,398	0.001
IT -> CA	0.348	0.339	0.069	5,031	0.000
Moderating Effect 1 -> CA	0.163	0.166	0.076	2,150	0.032
Moderating Effect 2 -> CA	-0.221	-0.219	0.078	2,823	0.005
Moderating Effect 3 -> CA	0.037	0.036	0.056	0.658	0.511

Following Table 3 above, the following things can be described in detail:

1. The strategy significantly affected the university's sustainable excellence, with a t-statistical value of 3.780 (more than 1.96) and a p-value of 0.000, so H1 was accepted.
2. The Vision and Mission significantly influence the university's sustainable excellence, with a t-statistical value of 1.998 and a p-value of 0.046 so that H2 is accepted.
3. University ranking also significantly affects sustainable excellence, with a t-statistical value of 3.398 and a p-value of 0.001, so H3 is accepted.
4. Information technology has a very significant effect on the university's sustainable excellence, with a t-statistical value of 5.031 and a p-value of 0.000, so H4 is accepted
5. Information technology moderated the influence of strategy on sustainable excellence, with a t-statistic of 2.150 and a p-value of 0.032, so H5 was accepted.
6. Information technology also moderated the influence of the vision and mission on sustainable excellence with a t-statistic of 2.823 and a p-value of 0.005, so H6 was accepted.
7. Information technology did not moderate the effect of ranking on sustainable excellence, with a t-statistic of 0.658 and a p-value of 0.511, so H7 was rejected.

5. Discussion

5.1. The Influence of Strategy on the Sustainable Competitive Advantage of Private Universities in Indonesia

Strategy is a long-term plan designed to achieve specific goals by utilizing strengths and facing challenges from the external environment [35], [36]. In the context of private universities, the strategy includes steps to improve the quality of education, research, and services to compete with other universities at the national and international levels. Institutional theory explains that organizations, including universities, adapt to a competitive external environment and follow socially accepted rules, norms, and values [37]. Moreover, previous research also found that the strategy has significantly influenced the university's sustainable competitive advantage [38]. Effective strategies help universities formulate resource allocation policies and develop superior academic programs. Long-term strategies to respond to digital transformation are essential in building a sustainable competitive advantage amid rapid technological developments. Statistically, strategy has a significant positive effect on the university's sustainable competitive advantage. Implementing innovative

strategies, such as developing academic programs aligned with global trends and focusing on research that impacts society, will increase the university's competitiveness through collaboration with industry, overseas universities, and international research institutions [39], [40]. In the context of dynamic market changes, the process of strategic change is a crucial factor for universities that want to survive and thrive. Parakhina et al. (2017) [41] explained that a good strategic management framework can help universities navigate external challenges and effectively use opportunities. Universities need to remain relevant during an ever-changing educational environment. The achievement of accreditation is also an essential factor that reflects the quality and quality assurance the university offers to the community. This study's results align with the views of Moreno-Carmona et al. (2020) [42], who emphasized the importance of sustainable and integrated strategic planning in answering the complexities faced by modern universities. Furthermore, by continuously aligning operational strategies with the vision and mission, the university can ensure that all organizational activities support achieving long-term goals.

5.2. The Influence of Vision and Mission on the Sustainable Competitive Advantage of Private Universities in Indonesia

Vision and mission statements describe the organization's long-term vision and primary goals [43]. Within the framework of Institutional Theory, a strong vision and mission provide clear strategic guidance to meet social and regulatory expectations related to academic quality standards [44]. The results of the study show that the vision and mission have a significant influence on the university's sustainable competitive advantage. Universities with a clear vision and mission can attract quality students and maintain their reputation in the long term. The university's vision and mission play a vital role in shaping a sustainable competitive advantage for private universities in Indonesia. The vision and mission statement is a formality and a strategic guide that directs the institution's policies, culture, and operational practices to compete effectively in an increasingly competitive higher education landscape [45]. The university's vision describes long-term aspirations and significant goals to be achieved in the future. A clear and inspiring vision can motivate all stakeholders, such as lecturers, staff, and students, to actively contribute to achieving the university's goals. For example, the vision of becoming a leading university at the regional or international level can encourage the university to focus on improving the quality of academics, research, and innovation, ultimately improving the university's competitiveness and reputation [46].

On the other hand, the university's mission explains its primary goals and values. A strong mission gives the university a unique identity and distinguishes it from its competitors. For example, the mission to provide inclusive and local values-based education can attract students and lecturers who share the same vision and aspirations. This increases the university's attractiveness and strengthens its internal commitment to realizing the mission of the educational programs and services offered [47]. The relationship between vision, mission, and sustainable competitive advantage can be seen in how the university can align its vision and mission with its operational strategies and initiatives. Universities that integrate vision and mission in every decision-making process will more effectively allocate resources and design programs relevant to market needs and global demands [48], [49]. For example, developing innovative study programs that follow industry needs will increase the relevance and competitiveness of university graduates in the labor market [50]. In addition, a clear vision and mission can also strengthen collaboration with external parties, such as industry partners and research institutions. Universities with a vision to become a leading center for innovation and research tend to have an easier time collaborating with industry, government, and international institutions [51]. These collaborations can increase research capacity, open up funding opportunities, and expand the university's global network, all of which contribute to increasing the university's competitive advantage [52], [53]. The vision and mission are formal statements and the strategic foundation that shapes the university's development. By having a solid vision and mission, private universities in Indonesia can create clear differentiation, increase competitiveness, and build a solid reputation at the national and international levels. Therefore, preparing and implementing the right vision and mission is crucial for private universities to achieve sustainable competitive advantage in

the ever-changing dynamics of higher education.

5.3. The Effect of University Rankings on the Sustainable Competitive Advantage of Private Universities in Indonesia

University rankings are often used as a benchmark for the quality and reputation of higher education institutions. A good ranking can increase the university's attractiveness in the eyes of prospective students and cooperation partners and make it easier to obtain research funds and international cooperation [54]. Institutional theory explains that social reputation and recognition through rankings give legitimacy to universities in their efforts to compete in the higher education market [55]. The results of the study show that university rankings have a significant effect on sustainable competitive advantage. Universities with high rankings tend to be more successful in establishing international cooperation and increasing innovation [56]. The research by Elken et al. (2016) [57] mentions that a good ranking can provide greater trust from the public and stakeholders, enhance the global reputation, and strengthen the university's sustainable excellence. However, high university rankings also often indicate superior quality of education and research [58]. Universities that manage to place themselves at the top tend to be more easily interested in other universities or research institutions to collaborate [56]. Through this collaboration, private universities in Indonesia can improve their productivity and research quality, improving their academic reputation. This reputation improvement is essential to compete globally, given that competition between universities is getting tighter. In addition, it opens up the potential to collaborate with universities with a high reputation (peer-to-peer) to help private universities access more resources, such as research funds and better academic facilities. Thus, universities can be more successful in obtaining research grants and other financial support, which are used to expand research and innovation projects. This creates a positive cycle where improving the quality of research and scientific publications will contribute to future improvements in university rankings.

Furthermore, high university rankings also impact the university's attractiveness to international students and lecturers [59]. Students and lecturers choose reputable universities to pursue academic and research careers. These international talents enrich the academic environment and improve the quality of teaching and research innovation. In addition, this diversity can expand the university's international network and strengthen its position in the global academic community.

5.4. The Influence of Information Technology on the Sustainable Competitive Advantage of Private Universities in Indonesia

Information technology includes systems, devices, and applications that process, store, and distribute information [60], [61]. The effective use of information technology can improve operational efficiency, expand access to education, and support innovation in the learning process [62]. Institutional theory sees information technology as an essential adaptation mechanism for organizations to respond to rapid environmental changes and meet social expectations. The results of the study show that information technology has a significant influence on the sustainable competitive advantage of universities. Information technology has become a critical factor in supporting sustainable competitive advantage for private universities in Indonesia. In this dynamic digital era, the adoption of information technology improves operational efficiency and provides a strategic advantage in delivering quality educational services relevant to market needs [63], [64]. Information technology allows the university to improve the student learning experience through e-learning, blended learning, and other digital platforms. With the adoption of technology such as the Learning Management System (LMS), universities can provide access to flexible and interactive lecture materials and facilitate distance learning [65]. This expands the reach of education to students across various regions and meets the needs of more personalized and adaptive learning according to student's abilities and interests. In addition, information technology allows universities to operate more efficiently, establish international cooperation, and increase innovation in learning and research.

5.5. Moderation of Information Technology on the Influence of Strategy on the Sustainable Competitive

Advantage of Private Universities in Indonesia

Information technology can moderate the relationship between strategy and sustainable competitive advantage by strengthening the ability of universities to implement strategies more efficiently and effectively and encourage sustainable innovation. The results show that information technology moderates the influence of strategy on sustainable competitive advantage. With information technology, universities can optimize strategy implementation and improve operational efficiency [66]. Nevertheless, Almatrodi & Skoumpopoulou (2023) [67] mentioned that digitalization strategies can help universities adapt quickly to changes in the external and internal environment. Information technology allows universities to implement more flexible and adaptive educational strategies, such as distance learning (PJJ), thereby expanding the reach of education and responding to the needs of a dynamic market [68]. In an increasingly competitive digital era, the effective use of information technology will support strategic decision-making and increase the competitiveness of universities.

5.6. Moderation of Information Technology on the Influence of Vision and Mission on Sustainable Competitive Advantage of Private Universities in Indonesia

Information technology can strengthen the influence of vision and mission on sustainable competitive advantage by ensuring that all elements of the university work in harmony to achieve the long-term goals that have been set [69]. The results show that information technology moderates the influence of vision and mission on sustainable competitive advantage. So, based on the results, information technology allows for the widespread and effective dissemination of vision and mission, increasing the involvement of the academic community in achieving common goals [70]. In addition, using information technology in the academic environment allows for the dissemination of the university's vision and mission more widely and efficiently among students, teaching staff, and the wider community [71]. For example, implementing an excellent academic information system allows disseminating information related to the university's vision and mission to the entire academic community, increasing their involvement and active participation in achieving common goals. Furthermore, implementing academic information systems in educational institutions significantly improves the learning process by providing a structured platform for information dissemination [72], [73]. This shows that information technology can be an effective tool in supporting the achievement of the vision and mission of educational institutions. These findings supported previous research stating that an effective information system can improve organizational efficiency and achieve common goals [74], [75]. Therefore, universities must ensure that the application of information technology is not just a formality but is genuinely integrated into their operational strategies to support achieving the vision and mission set.

5.7. Moderation of Information Technology on the Influence of Vision and Mission on Sustainable Competitive Advantage of Private Universities in Indonesia

The results show that information technology does not moderate the influence of university rankings on sustainable competitive advantage. This shows that although information technology is vital in university operations, its role is not always related to how university rankings affect competitiveness. University rankings are more influenced by academic quality, number of publications, and international recognition, which are not always directly related to the use of information technology [76]. Therefore, while information technology has the potential to support a university's competitive advantage, it is essential to note that other factors, such as academic quality, research, and international recognition, play a more significant role in determining university rankings. Furthermore, to maximize ranking, the university's impact should be accompanied by marketing communication that disseminates the university's competitiveness [77].

Nevertheless, through marketing campaigns, universities must actively promote new programs, curriculum excellence, and innovative teaching methods. This can include promotional videos, webinars, and articles on academic and professional platforms to introduce those programs to a broader audience. In addition, there is a potential that uneven infrastructure conditions and high

technology investment costs can be obstacles to applying information technology in several universities, especially in remote areas. This results in information technology being unable to fully support efforts to improve university rankings and competitiveness. For information technology to function as an effective moderator, universities must ensure adequate technology investment and solid organizational support to integrate technology with ranking and reputation improvement strategies.

6. Conclusion

Based on the results of the research that has been carried out, the following are the conclusions of this study:

- The strategy has a significant positive influence on the sustainable competitive advantage of private universities in Indonesia. Effective strategies allow universities to maximize resources and better deal with external environmental challenges. Implementing innovative strategies, such as developing academic programs relevant to the global market's needs and focusing on research that impacts society, can increase the competitiveness of universities.
- The vision and mission also significantly positively affect sustainable competitive advantage. A clear vision and mission integrated with the university's strategy can provide a vital guide for the entire academic community to achieve the long-term goals that have been set. A strong vision and mission can enhance the university's reputation, attract quality students, and build public trust in the university.
- University rankings have a significant effect on sustainable competitive advantage. A high ranking improves the university's reputation and opens up opportunities for cooperation with various parties, both at home and abroad. Universities with high rankings are more successful in establishing international collaborations and increasing innovation.
- Information technology significantly affects the university's sustainable competitive advantage. Proper use of information technology can improve operational efficiency, support digital learning, and expand the reach of education. This allows the university to innovate in all areas, from administration to research.
- Information technology moderates the influence of strategy on sustainable competitive advantage. Information technology allows universities to implement strategies more efficiently and adaptively, respond quickly to environmental changes, and increase competitiveness through digital innovation.
- Information technology also moderates the influence of vision and mission on sustainable competitive advantage. With information technology, universities can effectively disseminate their vision and mission, increase the involvement of the academic community, and accelerate the achievement of strategic goals.
- However, information technology does not moderate the influence of university rankings on sustainable competitive advantage. This can be caused by the lack of technology infrastructure in some universities, especially those in remote areas, and the high cost of technology investment, which hinders technology integration with strategies to improve rankings and reputation.
- Therefore, information technology is vital in supporting the university's sustainable competitive advantage, but adequate planning and investment must be supported to achieve optimal results.

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