INTRODUCTION

Private universities must thrive in an increasingly competitive global context in the digital era (Farhat et al., 2021; Gibbs, 2018; Koris et al., 2015; Brumby, 2014; Arambewela & Hall, 2013). Due to their dependency to the number of students as the main financial sources, private universities have the stronger need to promote their good image to maintain a competitive position in the higher education market (Musselin, C., 2018; Spry, L., Poorrezaei, M., & Pich, C., 2018). In addition, marketing efforts of private educational institutions were conducted to maintain other income-generating activities, such as research grants or philanthropic donations (Nguyen, N. P., & Mogaji, E. 2022). Furthermore, university marketisation required appropriate brand image or identity – as a part of branding efforts- for creating better marketing strategy. Thus, the domain of university brand image has still become a challenging and trending topic in recent studies.

Previous research has shown that technological infrastructure and university image has strong relations with students’ satisfaction. As an example, Panda, S., Pandey, S. C., Bennett, A., and Tian, X. (2019) demonstrate that a unique brand image plays a key influence on students’ levels of satisfaction in both the United States and India, and that it is connected to service quality, which has a larger effect on the levels of student satisfaction. Casidy (2019) explores the effect of brand orientation on loyalty, student satisfaction, and post-purchase
communication behavior in higher education. This study examined its connection to satisfaction, positive word of mouth, and service quality. Kaushal, V., and N. Ali (2020) investigate the impact of university legacy and reputation on prospective students' attitudes. Nguyen et al. (2016) address the significance of brand ambidexterity in increasing student engagement in the higher education industry. Tien, N. H., Minh, H. T. T., and Dan, P. V. (2019) propose that engaging in branding and strategically positioning the brand can help universities build a distinct image as the part of marketing strategy. Furthermore, the SUI-based marketing strategy is appropriate considering the students are gen Z which is very familiar with the “smart” application and ICT.

Current research in exploring university brand image has strongly connected it to the terms of digitalization. The concept of smart university, smart education, digital university, cyber university, intelligent university, and similar topics were the primary subjects of various branding-based marketing plans. Tikhomirov (2015) and Uskov et all (2016) define, the notion of "smart" in education implies the advent of technology. In the other hand, Cesur, R., Torkul, O., Cedimolu, H., and Seda, U. A. R. (2019) explain the concept of a smart campus, which has been proposed for many years, with the goal of providing excellent services dynamically and proactively for students, teachers, and other university employees in the Internet of Things era.

Despite the use of different terminologies in universities in the digital era, the concept of brand image related to university has been applied in various ways. The idea of brand image is often ill-defined due to a lack of widely accepted definitions, ambiguous and far from the original intent (Lee, J. L., James, J. D., & Kim, Y. K. (2014). As a consequence of various terminologies, the elements of university brand image in the digital era are widespread and fragmented. However, in the global competition, it is becoming increasingly important for university management to understand brand image concepts for making appropriate strategic marketing decisions (Tight, M. 2019). Therefore, a revised construct is proposed namely Smart University Image (SUI). SUI is expected to become a powerful marketing strategy.

In addition to the theoretical gap above, there is a research gap that encourages the need for SUI as a new construct to resolve inconsistencies in research results on consumer satisfaction. This research gap lies in the inconclusiveness of the relationship between Value Co-Creation (VCC) and customer satisfaction. Spurred by Vargo and Lusch's (2004) influential study of co-creative Service Dominant Logic (SDL) marketing, research interest in VCC on customer satisfaction has grown in recent years. However, the theoretical roots and several empirical studies show contradictory results, and make this VCC ambiguous. Several studies that yield inconsistencies with theory have resulted in an equivocal understanding of VCC (Cova et al. 2011; Ford 2011; Grönroos 2012; Leroy et al. 2013).

Several studies have shown that VCC can increase consumer value and satisfaction (Dong, Evans, & Zou, 2008; Ranjan & Read, 2016). On the other hand, several studies are inconsistent with theory, showing that VCC has no significant effect on customer satisfaction. Zwick, Bonsu, & Darmody (2008) in their research showed that VCC did not have a positive effect, where the co-production dimension did not have a positive effect on consumer satisfaction due to increased pressure and stress. In addition, Gligor, D. M., & Maloni, M. J. (2021) shows that a higher VCC level does not always lead to better consumer satisfaction. In the B2C context, Chan et al. (2010) show that customer participation increases costs and benefits, and companies should review it regularly and find the point where the additional costs outweigh the additional benefits. The previous researches strengthen the importance behind this research. It shown the urgency of the marketization toward students belong to generation Z who were born between 1996-2012, where one of these characters is to like to innovate and easily adapt to technology and were defined as "self-aware, independent, innovative and goal-oriented." These researchers also note that Gen Z is very adept at learning things on their own using "web-based" research resources, therefore they tend to find the environment using advanced technology. This is also explain that SUI need to be studied.

In this relation, the objective of this study is to analyse how a new construct of SUI can be a mediator between VCC and students satisfaction as well as how SUI works as marketing strategy in private universities through the increasing of students' satisfaction. The research framework is depicted in the Figure 1.
METHOD

The research used quantitative method by applying Structural Equation Model to analyse relationship between variables. Lisrel is used as statistic tools in this research. We use primary data which is questionnaires distributed to 210 respondents with the total population 21,564 person. Data analysis is supported by secondary data which are some reports from related departments as well as interview with students. Private universities which are categorized as smart university according to rating made by APIC (Asosiasi Indonesia Cerdas) located in West Java are studied as sample. The sample universities are taken from campus in big category such as Telkom University and Binus University, medium category such as Widyatama University and Maranatha University, small category such as Institut Teknologi Garut. Respondents were the students of 2nd and 3rd year from mentioned university were obtained proportionally based on their total students by slovin formula (see Table 1).

<table>
<thead>
<tr>
<th>University</th>
<th>Population</th>
<th>Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tel-U</td>
<td>7554</td>
<td>71</td>
</tr>
<tr>
<td>Binus</td>
<td>10085</td>
<td>94</td>
</tr>
<tr>
<td>Widyatama</td>
<td>2102</td>
<td>20</td>
</tr>
<tr>
<td>Maranatha</td>
<td>1566</td>
<td>15</td>
</tr>
<tr>
<td>Institut Teknologi Garut</td>
<td>257</td>
<td>12</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>21564</strong></td>
<td><strong>202</strong></td>
</tr>
</tbody>
</table>

H0: ρ ≤ 0 there is no mediating effect in parallel SUI, SE and VCC on Private University in West Java Province

Ha: ρ > 0 there is a mediating effect in parallel SUI, SE and VCC on Private University in West Java Province.

RESULTS

![Figure 2. Diagram of Structural Standard Solutions Model](image)

Table 2. The results of Hypothesis test

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Variable</th>
<th>Path Coefficient</th>
<th>t-count &gt; 1.96</th>
<th>F-count</th>
<th>Hypothesis Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1</td>
<td>VCC → SUI</td>
<td>0.81</td>
<td>12.22</td>
<td></td>
<td>Accepted</td>
</tr>
<tr>
<td>H2</td>
<td>VCC → SE</td>
<td>0.05</td>
<td>0.54</td>
<td></td>
<td>Rejected</td>
</tr>
<tr>
<td>H3</td>
<td>SUI → SE</td>
<td>0.78</td>
<td>8.43</td>
<td></td>
<td>Accepted</td>
</tr>
<tr>
<td>H4</td>
<td>SUI → SS</td>
<td>0.78</td>
<td>4.22</td>
<td></td>
<td>Accepted</td>
</tr>
<tr>
<td>H5</td>
<td>SE → SS</td>
<td>0.24</td>
<td>5.73</td>
<td></td>
<td>Accepted</td>
</tr>
<tr>
<td>H6</td>
<td>VCC → SS</td>
<td>0.57</td>
<td>11.90</td>
<td></td>
<td>Accepted</td>
</tr>
</tbody>
</table>

Mediation Hypotheses

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Variable</th>
<th>Path Coefficient</th>
<th>t-count &gt; 1.96</th>
<th>F-count</th>
<th>Hypothesis Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>H7</td>
<td>VCC → SUI → SE</td>
<td>6.939</td>
<td></td>
<td></td>
<td>Accepted</td>
</tr>
<tr>
<td>H8</td>
<td>SUI → SE → SS</td>
<td>4.739</td>
<td></td>
<td></td>
<td>Accepted</td>
</tr>
<tr>
<td>H9</td>
<td>VCC → SE → SS</td>
<td>0.536</td>
<td></td>
<td></td>
<td>Rejected</td>
</tr>
</tbody>
</table>
Figure 2 and Table 2 shown that the t-count value for the Value Co-Creation variable is 12.22 which is greater than the t-crisis 1.96. Because the t-count value is greater than the t-crisis, then at an error level of 5% it is decided to accept H1 and reject H0. So it can be concluded that Value Co-Creation has a positive and significant effect on Smart University Image. The direction of the relationship between Value Co-Creation and Smart University Image is positive which means that when there is an increase in Value Co-Creation, Smart University Image will increase and vice versa.

The t-count value for the Value Co-Creation variable is 0.54 which is smaller than the t-crisis 1.96. Because the t-count value is smaller than the t-crisis, then at an error level of 5% it is decided to reject H2 and accept H0. So it can be concluded that Value Co-Creation has a positive and insignificant effect on Self Efficacy. The direction of the relationship between Value Co-Creation and Self Efficacy is positive which means that when there is an increase in Value Co-Creation then Self Efficacy will increase and vice versa.

The t-count value for the Smart University Image variable of 8.43 is greater than the t-crisis of 1.96. Because the t-count value is greater than the t-crisis, then at an error level of 5% it is decided to accept H3 and reject H0. So it can be concluded that Smart University Image has a positive and significant effect on Self Efficacy. The direction of the relationship between Smart University Image and Self Efficacy is positive which means that when there is an increase in Smart University Image, Self Efficacy will increase and vice versa.

The t-count value for the Self Efficacy variable is 5.73 which is greater than the t-crisis 1.96. Because the t-count value is greater than the t-crisis, then at an error level of 5% it is decided to accept H5 and reject H0. So it can be concluded that Self Efficacy has a positive and significant effect on Student Satisfaction. The direction of the relationship between Self Efficacy and Student Satisfaction is positive which means that when there is an increase in Self Efficacy, Student Satisfaction will increase and vice versa.

The t-count value for the Value co-creation variable is 11.90 greater than the t-crisis 1.96. Because the t-count value is greater than the t-crisis, then at an error level of 5% it is decided to accept H6 and reject H0. So it can be concluded that Value co-creation has a positive and significant effect on Student Satisfaction. The direction of the relationship between Value co-creation and Student Satisfaction is positive which means that when there is an increase in Value co-creation, Student Satisfaction will increase and vice versa.

The results of the Sobel test show that the calculated t value for the mediation effect test on hypothesis seven is 6.939. If α = 0.05 then t table = 1.96. From the calculation above it can be concluded that t count (6.939) is greater than t table (1.96) with a significance level of 0.05, it can be concluded that Smart university image is able to mediate the relationship between Value co-creation and Self Efficacy. Thus hypothesis 7 is accepted.

The Sobel test results show that the calculated t value for the mediation effect test on the eighth hypothesis is 4.739. If α = 0.05 then t table = 1.96. From the calculation above it can be concluded that t count (4.739) is greater than t table (1.96) with a significance level of 0.05, it can be concluded that Self Efficacy is able to mediate the relationship between Smart University Image and Student Satisfaction. Thus hypothesis 8 is accepted. The Sobel test results show that the calculated t value for the mediation effect test on this hypothesis is 0.536. If α = 0.05 then t table = 1.96. From the calculation above it can be concluded that t count (0.536) is smaller than t table (1.96) with a significance level of 0.05, it can be concluded that Self Efficacy is not able to mediate the relationship between Value co-creation and Student Satisfaction. Thus hypothesis 9 is rejected.

DISCUSSION

The results in Table 2 shown that VCC influence SUI significantly. This results is in line with the prior finding of the research in higher education sector, universities use their image to compete to recruit more students, mainly due to marketization and globalization and community feedback (VCC) on social media. Student value-creating behavior plays an important role in creating and maintaining a brand image and university reputation (Foroudi, P., Yu, Q., Gupta, S., & Foroudi, M. M., 2019). A strong corporate image is a valuable intangible asset, because it symbolizes quality, trust and uniqueness. Organizations that are weak in terms of branding, usually lack a clear promise on the company’s brand. It means, in the smart university domain, university brand refers to how a company is perceived as truly "smart" by students.

The results in Table 2 shown that Value Co-Creation (VCC) is not influence Student Engagement (SE). Several previous studies are in line with the results. Therefore, the relationship between VCC and SE can be moderated by other variables that ensure that shared value creation exists to a certain extent in the good impression left by a product, service or brand in the minds of consumers (Bovill, C., 2020), related to perceived value and student engagement and satisfaction namely University Image. VCC needs to be moderated by university image because consumers' negatively valenced engagement is shown through negative thoughts, impressions, feelings, and behaviors toward the brand during interactions (Hollebeek and Chen, 2014). Therefore, a good university image moderation will strengthen the VCC relationship to consumer satisfaction.
The results is contradictive with the previous research. The process of creating Value Co-creation (VCC) has been recognized as a fundamental factor for student engagement and the university's movement towards achieving sustainability (Ushkov, H. N., Alamanos, E., & Kuznesof, S., 2021). It is also influenced by two general factors: (1) university factors; and (2) factors related to students. In the context of a smart university, university-related factors mostly concentrate on training activities and ICT infrastructure, and university management support for university sustainability with student engagement (Ushkov, 2019).

Factors related to student affairs are more focused on student psychological problems and are influenced by academic factors. If students are psychologically bound, it is hoped that they will realize the creation of a good VCC. In fact, as the quality of teaching by instructors increases the sustainability of training developing in the university environment, trust among operators, students' perceptions of self-efficacy for engagement in interactive processes and sustainability-oriented values will be enhanced (Palma, F. C., Trimi, S., & Hong, S.G., 2019).

If universities have to compete through their image, the first step they have to take is to measure the university's image captured by students and student satisfaction (Duarte et al., 2010). Analyzing university image dimensions is very important to identify the attributes needed for university sustainability in this competitive environment. A successful university brand image model can produce various results, such as student satisfaction and loyalty (Teeroovengadum et al., 2019), which can affect the sustainability of learning. The role of students and their involvement as co-creators, increases their feelings of satisfaction with the organization (Carle, M. S. et all, 2021). Value can be created jointly by students when they play a more collaborative and active role through their participation, including becoming university ambassadors spreading positive word of mouth when they have graduated in the community so as to attract prospective new students.

According to Shehzad, S., Nisar, Q. A., Hussain, M. S., Basheer, M. F., Hameed, W. U., & Chaudhry, N. I. (2020) University image affects student satisfaction. This is in line with the results of previous research which states that it is very important to understand how universities create images that create student satisfaction (Azoury, N., Daou, L., & Khoury, C. E., 2014).

Browden, J. L. H., Tickle, L., & Naumann, K. (2021) research explains that the dimensions of Student Engagement (SE), namely affective, social, cognitive and behavioral are closely related and when integrated effectively, they are a determining factor for success and image for college. Other research that is in line with the results of this study is the research of Vivek, S. D., Beatty, S. E. & Morgan, R. M. 2012 which states that the cognitive and affective elements of SE combine experiences and feelings and form an organizational image. Brodie, R. J., Hollebeek, L. D., Juric, B, & Ilic, A. 2011 suggests that customer involvement in today's interactive and dynamic business environment represents a strategic imperative to produce increased company performance, including sales growth, image, competitive advantage and profitability.

This is different from previous research conducted by Park, C. et all. (2010) which stated that it is brand image that influences SS. This is because brand image reflects the direction and degree in which the brand exists in the minds of consumers. Agreeing with this research, Wittke, V. & Hanekop, H. (2011) explained that SE motives include pleasure, satisfaction, self-fulfillment, interest in certain things/issues and increased knowledge and abilities as well as image formation.

The research results show significant influence of VCC on consumer satisfaction. The results are in line with the previous research claimed that VCC has emerged as an important concept in achieving customer satisfaction (Ramaswamy & Ozcan, 2018). Today's consumers have become active participants in co-creation and they invest a lot of time and effort during the creation of a service offer, which implies consolidation of their relationship with the company. Involving the customer in this process leads the company to provide the right response.

Other research stated that VCC is at the heart of the Relationship Marketing (RM) approach that helps facilitate organizations to build strong and sustainable relationships with their consumers (Schlesinger, Cervera, & Iniesta, 2015). In the context of higher education, VCC means making student value creation a very important thing where student value propositions must match their needs as a digital generation. VCC is a process whereby student resources are integrated with university resources to facilitate various activities and experiences that encourage exchange and interaction that can lead to better practice. Value Co-Creation (VCC) should be considered as an ongoing process in student-university relations.

In line with RM, the Service Dominant Logic (SDL) theory explains that the consumer's role has changed from a passive audience to an active participant in creating a service experience (Vargo & Lusch, 2004 Lusch, Vargo, & O'Brien, 2007). Consumers extract value primarily from their interactions with companies (Ramaswamy, 2011). SDL theory is applied to higher education because currently students as PT consumers have shown an interest in playing a more active role in their higher education experience as partners and creating shared value which is called Value Co-Creation (VCC) (Bovill & Felten, 2016; Healey, Flint, & Harrington, 2014).
The literature mentions the mutual influence of satisfaction and image on one another. Teeroovengadum, V., (2019) in their study found that the cognitive and affective components of perceived university image affect student satisfaction. In their study involving 6775 students, the overall image of the university influences student satisfaction. In contrast, Nhi, L. Q. T., & Le Ha, N. T. (2021) reported the highest impact of university image on satisfaction. It shown that satisfaction drives university image rather than image influencing student satisfaction. Student satisfaction improves the university’s image (Ali F et al., 2016; Sultan & Yin Wong, 2012).

The quality of teaching and learning is very important for academics and determines the overall quality and image of the institution in the long term and will ultimately increase student satisfaction (Chandra T, et all 2019). Shehzadi, S. et all research (2021) explains that the performance of lecturers inside and outside the classroom is very important to shape the university's image which will ultimately increase student satisfaction. This is in line with the research results of Garcia-Aracil (2009) which shows that teaching quality has a statistically significant impact on university image and student satisfaction. In the context of higher education, university image serves as one of the main determinants of student satisfaction (Cahyono, Y., 2021). Research on image and SS was also recently carried out by Osman, A. R., & Saputra, R. S. (2019) which indicated that the affective component of image and image as a whole and significantly affected total student satisfaction.

Many previous studies have shown the effect of Student Engagement (SE) on Student Satisfaction. Muzammil, M., et al (2020) showed that SE has a positive impact on SS. This study emphasizes the importance of creating student involvement to achieve student satisfaction, especially in the management of online learning. The physical environment, university facilities and services have been found to strongly influence student satisfaction (Adler et al., 2021; Hanssen & Solvoll, 2015). A supportive campus environment creates student engagement which ultimately significantly increases student satisfaction (Chen et al., 2014). Research Tharapos, M., et al. (2022) also supports the positive relationship between SE and SS which was also noted by Chen et al. (2014), Kebritchi et al. (2017) and Muzammil et al. (2020). The results of this study explain the highly interconnected nature of SE and SS in a crisis learning environment. The findings of this study indicate that well-designed learning materials and content can motivate students to invest more time and energy in their learning. This, in turn, can increase students' sense of accomplishment and consequently their satisfaction, even though they may be learning in highly disturbed conditions.

This research investigates managerial perspectives on the significance of SUI. The placement of a university brand in the minds of major internal and external stakeholders is one of the most critical strategic decisions made by university administration. SUI, according to the research, is ultimately driven by students and all stakeholders, and is manifested through cognitive, emotive, conative, and collaborative characteristics. Using a smart university perspective, the research adds to the literature on historical developments affecting the origins, uses, and meanings of university branding, as well as information on the historical development of the branding and the key causes driving these developments. According to the essay, numerous causes have influenced the branding notion in a significant way. It also provides advice for universities on how to transition from a traditional to a smart system and manage their SUI effectively in order to get a competitive advantage. Certainly, branding has become a prominent topic among academics and researchers who have done major work in the smart university arena in recent years.

The marketing strategy through Smart University Image for current students, who are a generation in the digital era, commonly known as Generation Z or Gen Z, is considered to be more on target. These students are a generation who grew up online and spend most of their time accessing the internet and social media through various digital technology devices. Various statistical data show how high the use of the Internet and social media by Gen Z is. Rideout and Robb's research (2018) found that more than 92% of Gen Z use social media platforms, where 70% use it more than once a day, 38% use it several times. in an hour, and 16% use it almost continuously. Ahmed (2019), revealed that more than half of Gen Z access various social media several times a day, while 1 in 5 Gen Z admit to accessing social media every hour of the day.

The Smart University Image (SUI) idea labels a certain brand image in the university's strategy that considers SU as a value to increase student satisfaction. As such, SUI is offered as a school of thought and can be found at the intersection of several frameworks (brand image, marketing strategy, engineering, digitization and professional management). In other words, the notion of image and positioning must be defined in a special conceptual framework according to a basic semiotic perspective (Rossolatos, G. 2018). Therefore, a special conceptual framework, namely Smart University, which is also applied as an integrated IoT-based space needs to be applied and integrated into the idea of "image". To that end, SUI is offered as a material source for the formation, reinterpretation, and reinforcement of instilled brand ideology and the subjectivity that accompanies it, because space serves as a material vessel for brand meanings and values to be semioticised, consumed, and adapted.
CONCLUSION

Building a new appropriate construct-Smart University Image (SUI)- and managing it have become significant components of marketing strategy. It is proven on the accepted hypotheses that SUI can be a mediator to increase student satisfaction which is in turn it can be an effective marketing strategy. However, there is one hypothesis rejected that is student engagement which unable to mediate between Value Co Creation and Students Satisfaction. It’s also proven that Value Co creation can increase directly students’ satisfaction, no need to go through student engagement variables. In addition, a strong corporate image is a valuable intangible asset, because it symbolizes quality, trust and uniqueness. The Smart University Image construct is specific and more appropriate to the Smart University framework; therefore, it can strengthen VCC to increase student satisfaction. It is proven by the results that almost all of hypotheses with SUI variable were accepted as well as mediator.

REFERENCES


Muzammil, M., Sutawijaya, A., & Harasi, M. 2020. Investigating Student Satisfaction In Online Learning: The Role Of Student Interaction And Engagement In Distance Learning University. Turkish Online Journal of Distance Education, 21(Special Issue-IODL), 88-96.


Nguyen, N. P., & Mogaji, E. 2022. Universities’ Endowments In Developing Countries: The Perspectives, Stakeholders And Practical Implications. In Re-imagining Educational Futures in Developing countries (pp. 261-282). Palgrave Macmillan, Cham


Tharapos, M., Peszynski, K., Lau, K. H., Heffernan, M., Vesty, G., & Ghalebeigi, A. 2022. Effective Teaching,