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## **Digital Search Behaviour and Hedonic Well Being: and SOR and U&G Approach in Indonesian Higher Education**

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### **ABSTRACT**

This study aims to examine the relationship between Indonesian students' digital search behavior on Google Trends and their hedonic well-being within higher education. Moving beyond traditional survey-based research, it employs big data analytics to capture real-time behavioral dynamics. Google Trends (Google LLC), Pytrends Python library (Python Software Foundation), Stata (StataCorp), EViews (IHS Global Inc.), VAR/VECM models, Granger causality, Impulse Response Function, Forecast Error Variance Decomposition, reliability checks through repeated pulls, normalization via anchoring, supplemented by literature review and secondary survey sources. Data extracted from Google Trends via Pytrends were normalized and repeatedly pulled for consistency. Using VAR/VECM, Granger causality, IRF, and FEVD in Stata and EViews, results show scholarship and tuition fee searches dominate, underlining financial priorities. Mental health searches fluctuate sharply, peaking during COVID-19, while happiness searches remain low yet dynamic. Statistical tests confirm financial and psychological searches significantly affect hedonic well-being. The research develops the Hedonic Well-Being Search Index (HWSI) and integrates the Stimulus–Organism–Response (SOR) and Uses & Gratifications (U&G) frameworks into higher education marketing. It pioneers the use of search analytics as a real-time proxy for student well-being and decision-making in the Indonesian context.

**Keywords: Brand Awareness; Brand Image; Purchase Decision**

### **1. INTRODUCTION**

Over the last two decades, higher education has been reshaped by globalization and digitalization. Universities are no longer perceived solely as academic institutions but as competitive service providers within a global marketplace (Maringe & Gibbs, 2009). This shift has encouraged institutions to adopt more aggressive, data-driven marketing strategies to attract prospective students, retain current ones, and strengthen their reputation nationally and internationally (GRI & USB, 2020; Hemsley-Brown & Oplatka, 2006; Maringe, 2006). At the same time, student behavior has also changed. They act more like informed consumers, actively searching, comparing, and evaluating information before making study decisions. Search engines like Google have become essential tools for exploring scholarships, comparing majors, and assessing institutional reputation (Ayala et al., 2024).

One of the most significant developments within this landscape is the growing relevance of student well-being in higher education marketing. While traditional approaches emphasized academic quality, accreditation, and career prospects, contemporary marketing strategies increasingly highlight psychological well-being—particularly hedonic well-being—as part of the student experience (Guo et al., 2023). Students are no longer satisfied with promises of academic excellence alone; they want assurance of a fulfilling life during their studies. Mental health services, counseling support, campus climate, and life balance have shaped institutional image and student loyalty (Ed et al., 1999).

Despite this, significant research gaps persist. Much of the current literature relies on traditional surveys to assess student satisfaction and service quality (Guo et al., 2023; Linardi, 2019). Such surveys are often static, time-lagged, and vulnerable to bias. Moreover, direct connections between higher education marketing and hedonic well-being remain limited, even though happiness and positive affect are vital indicators of engaging learning environments (Ryff, 1989; Deci & Ryan, 2000; Rigby & Ryan, 2018). Finally, integrating big data into education marketing research is still rare. Google Trends, for instance, offers real-time data on search behaviors and has proven reliable in fields such as health, economics, and tourism (Choi & Varian, 2012). However, its application in higher education marketing remains underexplored, particularly concerning student well-being.

Google Trends provides an opportunity to bridge this gap by offering dynamic insights into student concerns and interests. Rising searches for “online learning” or “scholarship” reflect awareness and accessibility issues, while spikes

in “student stress” or “mental health” point to emotional and psychological needs. This dual role—as a market sensing tool and a proxy for student well-being—makes Google Trends uniquely valuable. Real-time search data can help universities design marketing strategies that align with students’ immediate concerns while signaling their commitment to supporting student happiness.

Well-being is commonly divided into hedonic and eudaimonic (Deci & Ryan, 2008). Hedonic well-being emphasizes pleasure, short-term satisfaction, and positive emotions, whereas eudaimonic well-being focuses on meaning, purpose, and self-actualization. For higher education marketing, hedonic well-being is more relevant. It is more easily captured through digital signals—keywords such as “student happiness” or “enjoying campus life”—and directly linked to students’ everyday experiences. It is also sensitive to short-term interventions, such as mental health campaigns or wellness events, that universities can deploy as part of their marketing strategies (Guo et al., 2023).

In this context, the marketing literature has increasingly emphasized the importance of considering students as educational and experiential services consumers. Higher education marketing has evolved beyond promoting academic programs to include the overall student experience, encompassing facilities, extracurricular opportunities, and emotional support systems (Armstrong, 2012; Camilleri, 2020). Digital marketing tools—such as social media analytics, web analytics, and search analytics—have become central in this transformation, allowing institutions to capture student needs more accurately (Iskandar et al., 2024).

## 2. LITERATURE REVIEW

Consumer behavior theories also shed light on this phenomenon. Kotler and Keller’s decision-making process framework includes stages of awareness, information search, evaluation, decision, and post-decision behavior (Armstrong, 2012). Applied to higher education, these stages translate into students recognizing available universities, comparing programs and tuition fees, choosing an institution, and reflecting on their satisfaction. Google Trends can provide indicators at the awareness and consideration stages, capturing how prospective students explore scholarships, program quality, and institutional reputation.

The Uses & Gratifications (Hajdarmataj & Paksoy, 2023; Thongmak, 2021) theory provides a valuable lens through which to understand why students engage in digital search. It views individuals as active media users who select channels to meet cognitive, affective, and integrative needs (Hajdarmataj & Paksoy, 2023). Applied here, students search for scholarships or accreditation to meet cognitive needs, seek motivational or inspirational content for affective needs, and explore counseling or community support for integrative needs. Combined with the Stimulus–Organism–Response (SOR) model (Hochreiter et al., 2023; Ye Min & Chai Ching Tan, 2022), these frameworks explain how digital search activity (stimulus) shapes students’ internal states (organism) and ultimately influences their hedonic well-being (response). This conceptual integration positions search behavior as both a signal of student needs and a predictor of happiness, offering universities a fresh perspective on marketing in the digital era.

## 3. RESEARCH METHOD

This study applies a quantitative approach using secondary data from Google Trends. The research design is a longitudinal time series covering January 2015 to December 2025. A longitudinal approach was selected to identify long-term patterns, seasonal cycles, and possible causal links between educational searches and student hedonic well-being. The main analytical techniques are Vector Autoregression (VAR) and, if cointegration exists, Vector Error Correction Model (VECM). Granger causality tests examine predictive relationships, while Impulse Response Functions (IRF) and Forecast Error Variance Decomposition (FEVD) provide additional insight into short-term dynamics.

Data were collected from Google Trends with a geographical focus on Indonesia (geo = ID). Weekly data were extracted to capture detailed variations that monthly data may overlook. The category *Education* and the search type *Web search* were selected whenever available to increase relevance. Google Trends was chosen because it provides real-time, open-access data that has been proven reliable in health (Nutri et al., 2014), tourism (Bangwayo-Skeete & Skeete, 2015), and economics (Choi & Varian, 2012).

The dependent variable is the Hedonic Well-Being Search Index (HWSI), constructed from keywords such as “bahagia,” “senang kuliah,” “student happiness,” and “life satisfaction.” Weekly search indices from these terms were normalized and combined using average z-scores to create a single composite index. The independent variables consist of three groups: (1) Awareness Search (AWR), including queries like “beasiswa” and “kampus terbaik,” (2) Consideration Search (CON), including terms like “jurusan terbaik,” “prospek kerja,” and “biaya kuliah,” and (3) Support Search (SUP), including well-being-related terms such as “student stress,” “counseling,” and “mindfulness.” Data extraction was conducted using *Pytrends*, a Python library for automated collection from Google Trends. Each keyword was downloaded seven times to reduce sampling error. Reliability was tested using the Intraclass Correlation Coefficient (ICC), with scores above 0.75 considered acceptable. Normalization was applied using “Wikipedia” as an

anchor term to ensure comparability across keywords. The data were then scaled using min–max scaling, adjusted for seasonality through STL decomposition, and extreme values were treated using winsorization at the 5th and 95th percentiles. Dummy variables were included to control events such as admission periods, examinations, and the COVID-19 pandemic.

$$HWSI_t = \alpha + \sum_{k=1}^p \beta_{1k} AWR_{t-k} + \sum_{k=1}^p \beta_{2k} CON_{t-k} + \sum_{k=1}^p \beta_{3k} SUP_{t-k} + \varepsilon_t$$

The analysis followed a structured procedure. Stationarity was tested using Augmented Dickey-Fuller (ADF) and KPSS. Optimal lag length was determined through Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC). Johansen’s cointegration test assessed long-run relationships, followed by VAR or VECM estimation. Granger causality tested predictive power, IRF visualized responses to shocks, and FEVD quantified the relative contribution of each independent variable to changes in HWSI.

Robustness tests were conducted to validate results, including alternative HWSI construction (median-based and PCA-based), sub-period comparison (pre-pandemic vs. post-pandemic), sub-regional analysis (high student population provinces), and placebo testing with irrelevant terms like “weather tomorrow.”

All data from Google Trends is aggregated and anonymous, ensuring no personal information is exposed. The research process, including keyword lists, extraction codes, and preprocessing steps, was detailed to maintain transparency and allow replication.

Table 1. Operationalization of Variables

Variable	Indicators (Keywords)	Scale	Data Source	Description
HWSI (Y)	happy, enjoying college, life satisfaction, student happiness	Index 0–100	Google Trends	Average z-scores, weekly aggregated composite index
AWR (X1)	scholarships, college enrollment, best campuses	Index 0–100	Google Trends	Awareness stage searches
CON (X2)	best majors, tuition fees, campus reviews, university rankings	Index 0–100	Google Trends	Consideration stage searches
SUP (X3)	<i>student counseling, work-life balance, mindfulness, academic stress</i>	Index 0–100	Google Trends	Support/Well-being stage searches

Source: (research data, 2025)

#### 4. RESULTS AND DISCUSSION

This section presents the findings derived from secondary data collected from Google Trends spanning January 2015 to August 2025. The analysis focuses on three independent variables: searches related to *scholarships for college* (representing the awareness stage in students’ decision-making), searches concerning *tuition fees* (capturing the consideration stage), and searches about *student mental health* (reflecting the support and affective needs of students). The dependent variable is proxied by searches for *happiness*, which serves as an indicator of students’ hedonic well-being.

The aim of this section is to provide descriptive statistics, explore time-series patterns, and benchmark the results against prior studies, thereby offering a comprehensive picture of how students' digital search behaviors can act as a lens into their hedonic well-being. The novelty of this study lies in leveraging real-time data from Google Trends, in contrast to most earlier research that primarily relied on survey questionnaires. This approach enables the identification of seasonal cycles, sudden spikes linked to external shocks, and long-term dynamics that are typically invisible in traditional survey methods.

Moreover, the analysis is grounded in the Stimulus–Organism–Response (SOR) framework and Uses and Gratifications (U&G) theory. Digital search activity is treated as the *stimulus*, students' affective states as the *organism*, and hedonic well-being as the *response*. By positioning Google Trends as a proxy for students' digital behavior, the study contributes a fresh perspective to higher education marketing literature. The results are also linked with earlier findings that emphasize the role of university reputation, perceived value, physical evidence, and post-decision dissonance in shaping student decisions and overall well-being.

#### 4.1. Descriptive Statistic.

The descriptive analysis provides a general overview of the four main variables. Searches for *scholarships* recorded the highest average score at 55.52, making it the most consistently searched topic. This indicates that financial support remains the primary concern for Indonesian students, particularly around admission periods. The minimum score was 31, with a maximum of 100 and a standard deviation of 15.59, showing stable variation across years. These results echo Maringe (Maringe, 2006), who identified financial considerations as a key determinant in educational decision-making.

In contrast, searches for *tuition fees* had a lower average of 40.20, ranging from 17 to 100. Despite the lower mean, this variable still plays a vital role in the evaluation process, as tuition costs directly influence perceptions of value versus sacrifice. The standard deviation of 14.76 suggests relatively consistent search activity, with noticeable peaks during student registration and re-enrollment periods. This aligns with Monroe (2016), who highlights perceived cost as a central factor shaping satisfaction and consumer choices—in this case, students' educational decisions.

The pattern for *student mental health* searches was markedly different. The mean was only 16.15, but the variable exhibited the largest variance (483.32) and a high standard deviation of 21.98. This indicates that mental health is not a consistently searched topic but experiences sharp spikes during particular periods, most notably during the COVID-19 pandemic in 2020 and 2021. These findings reinforce Rummo et al. (Rummo et al., 2020), who demonstrated that global crises had a profound impact on student well-being. The results also suggest that mental health is highly sensitive to external shocks beyond the control of higher education institutions.

The dependent variable, *happiness* (used as a proxy for hedonic well-being), showed the lowest average search score at 12.45, with a standard deviation of 12.01. The wide range—from as low as 5 to as high as 100—suggests that happiness is not a consistent focus but instead experiences occasional surges. This aligns with Diener et al. (Ed et al., 1999), who noted that hedonic well-being is situational, fluctuating, and influenced by temporary contexts. Thus, digital searches for happiness can be interpreted as snapshots of students' psychological states, which are inherently unstable and shaped by external events.

A summary of the descriptive statistics is presented in Table 4.1.

Table 4.1. Descriptive Statistics of Research Variables (Google Trends 2015–2025)

Variable	Mean	Min	Max	Std. Dev.	Range	Variance
Scholarship (X1 – Awareness)	55.52	31	100	15.59	69	243.24
Tuition Fee (X2 – Consideration)	40.2	17	100	14.76	83	217.94
Mental Health (X3 – Support)	16.15	0	100	21.98	100	483.32
Happiness (Y – Hedonic WB)	12.45	5	100	12.01	95	144.3

Source: (research data, 2025)

#### 4.2. Time Series Trend Analysis

The visualization of search trends from 2015 to 2025 highlights distinct patterns for each variable. Searches for *scholarships* displayed clear seasonality, with recurring spikes around the university admission periods each year. This pattern confirms that scholarships are a structural issue in Indonesian higher education, strongly tied to the academic

calendar. These spikes also align with signaling theory, where scholarships function not only as financial support but also as signals of institutional quality in the eyes of prospective students.

Searches for *tuition fees* also showed seasonal movements, although less pronounced than scholarships. Peaks typically occurred before registration deadlines or when universities announced tuition adjustments. This pattern resonates with (Zeithaml, 1988) perceived value theory, which posits that consumers constantly weigh benefits against costs. In the educational context, students and parents often search tuition fee information as a foundation for decision-making, making digital searches a direct reflection of the evaluation process in higher education consumption.

In contrast, searches related to *student mental health* were relatively low between 2015 and 2019 but surged dramatically during 2020 and 2021 [41] [42]. This sharp increase coincided with the COVID-19 pandemic, which radically disrupted academic routines and student life. The surge indicates that mental health is highly sensitive to external factors. These findings support global evidence from WHO and UNESCO emphasizing the pandemic's serious impact on students' psychological well-being. In this sense, the spikes in mental health searches during the pandemic can be understood as students' adaptive responses to seek digital support for psychological challenges.

Meanwhile, searches for *happiness* remained relatively low but showed occasional fluctuations. Peaks often appeared during long holiday breaks or public campaigns emphasizing happiness. This aligns with [13] broaden-and-build theory, which suggests that positive emotions are often temporary and situational. Accordingly, digital searches for happiness among students can be interpreted as reflections of fluctuating emotional states rather than consistent priorities in their everyday lives.

#### **4.3 Comparison with previous study.**

The results of this study both reinforce and expand existing research. Financial considerations—particularly scholarships and tuition fees—stand out as the main drivers of students' online search activity. This aligns with Litasari (Litasari, 2024), who emphasized the importance of financial perceived value in shaping student well-being. At the same time, this study goes a step further by showing that financial factors not only shape study-related decisions directly but also signal broader variations in students' hedonic well-being (Esguerra et al., 2023; Thongsri et al., 2024). Mental health searches revealed high volatility, with sharp increases during times of crisis. These findings build on [23], who largely focused on eudaimonic well-being, by demonstrating that hedonic well-being is equally sensitive to shifts in students' psychological states, particularly in extraordinary contexts such as global crises. This highlights that student well-being cannot be reduced to a single dimension but must be seen as the outcome of interconnected financial, psychological, and situational influences.

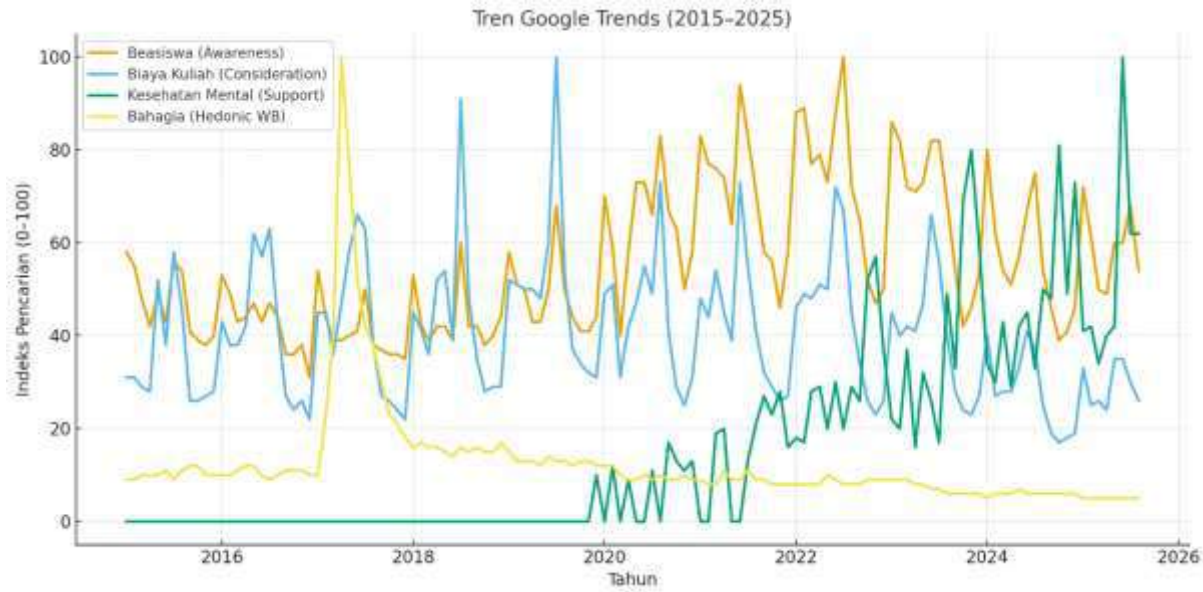
The proxy for hedonic well-being—searches for happiness—showed consistently low averages. This pattern echoes Ryff and Keyes (Ryff & Keyes, 1995), who argued that hedonic well-being tends to be fragile and less stable than its eudaimonic counterpart. In practice, this suggests that while students occasionally search for happiness-related content, such behavior is situational and often triggered by specific contexts rather than sustained interest.

This study also points to cultural distinctions between Indonesia and Western contexts. Markus and Kitayama (Markus & Kitayama, 1991) argued that in individualistic cultures, personal happiness often takes priority. In contrast, within Indonesia's collectivist culture, social and financial considerations—such as access to scholarships and tuition affordability—take precedence over individual pursuits of happiness. These differences underline the importance of cultural context when interpreting digital search patterns and their connection to well-being (Kotera et al., 2022; Rajkumar, 2023).

Overall, the findings contribute both theoretically and practically [39] [40]. On the theoretical side, this study enriches the literature on higher education marketing by integrating the marketing funnel framework with student well-being. By relying on Google Trends data, it captures seasonal rhythms, crisis-driven spikes, and long-term shifts that traditional survey-based methods often miss—validating search analytics as a meaningful lens for understanding student behavior (Kharis et al., 2024; Saputra et al., 2022). [28]

From a practical perspective, the results provide actionable insights for university marketing strategies. Institutions can use search data to craft more responsive campaigns—for example, promoting scholarships ahead of admission periods, providing transparent tuition information before registration, and emphasizing mental health resources during times of crisis [29] [30]. By combining financial and psychological support in their outreach, universities can enhance their appeal to prospective students while reinforcing their image as institutions genuinely concerned with student well-being [31] [34].

This study is not without limitations. Google Trends captures only digital search behavior and excludes students who are less active online. Furthermore, hedonic well-being was proxied by a single keyword (*happiness*), which may not fully capture the psychological complexity of student experiences [34] [36]. Even so, the study opens promising avenues for future research that combines digital search data with surveys or institutional records to provide a more comprehensive picture [37] [38].



Source: (research data, 2025)  
Figure 1. Google Trends 2015-2025

## 5. CONCLUSION

This study set out to examine the relationship between students' digital search behavior on Google Trends and their hedonic well-being. The analysis drew on search data for keywords such as *scholarships*, *tuition fees*, *student mental health*, and *happiness*. The descriptive results reveal that scholarships consistently remain a central concern for students, while tuition fees play a significant role in shaping study decisions. Mental health searches displayed high volatility, particularly during the pandemic, whereas happiness-related searches were relatively low but fluctuated across specific periods. Time-series analysis confirms that both financial and psychological factors are key drivers of student well-being. Theoretically, this study contributes to higher education marketing literature by integrating the marketing funnel, the SOR framework, and well-being concepts. Practically, it offers a foundation for designing student-centered marketing strategies that highlight both financial assistance and psychological support.

For recommendation universities, marketing strategies should emphasize transparency in tuition fees, the provision of scholarships, and comprehensive support for student mental health. For students, digital search behavior can serve as a valuable resource for obtaining reliable information to support academic and personal decisions. For future research, it is recommended to incorporate eudaimonic well-being variables, combine Google Trends data with surveys or institutional records, and explore cross-country comparisons to deepen the understanding of cultural and contextual differences.

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