

# Developing Measurement Indicators for Stress Academic Models at Higher Education Institutions: An Importance Performance Analysis Approach

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## ABSTRACT

The purpose of this study is to identify and implement the most suitable and prominent dimensions for stress in the learning process of students, which are key to the development of academic stress models. This research conducts a comprehensive review of research results related to various aspects of academic stress. The *Importance Performance Analysis* approach is modified with the dimensions of academic stress used in tertiary institutions. Based on the results of the literature review conducted, *Importance Performance Analysis* is the most appropriate approach that can be used in future research.

**Keywords:** stress academic model, higher education, Importance Performance Analysis

## 1. INTRODUCTION

Indonesia is one of the countries in Southeast Asia which has the highest number of tertiary institutions, namely 4,712 [1]. The amount is expected to be in line with the academic atmosphere that supports the learning process. The competitive academic environment considers various services from various tertiary institutions which will have an impact on the high quality of graduates.

This paper presents a comprehensive review of the latest investigations and advances in learning models as an alternative to the development of effective assessments for tertiary education in Indonesia. In addition, research results related to the use of academic stress are reported and examined to assess the importance and influence of each dimension. Based on comprehensive literature the review and discussion are presented to model stress academics who be different and indicators accordingly, the model stress academic with four indicators proposed in this paper and can be used as a tool for the assessment of stress academic higher education in Indonesia.

This paper is focused on psychosocial stress, to the total exclusion of physical and/or physiological stress (such as exposure to intense levels of noise or heat, or crowding, or too high levels of toxic substances). In addition, the knowledge of the researcher 's about stress academic Importance Performance Analysis approach has never been done, so this is an originality in the paper this.

## 2. Stress Academic Indicator in Higher Education

Despite the many studies of stress, researchers in defining stress differ from one another. Stress is defined as a stimulus, response, and hypothetical state [2]. Stress is always regarded as a psychological process that involves one's interpretation and personal response to every threatening event. It is important to note that stress can have positive and negative effects on each individual.

The results showed that the measurement of academic stress in each study differed from one another. Factors of cultural diversity, demographic characteristics and organizational culture in tertiary institutions determine the academic stress used in each study. For example, [2] in his research suggested that academic stress on students is based on four dimensions namely based on examinations, class meeting assignments, teaching processes and lectures while working.

Then developed with the addition of the dimensions of wealth of non-student peers, length of tutorials / lectures, dealing with opposite sex [3], objective tests, subjective tests, attendance, and pop quizzes, courses/ college, academic/study, personal, interpersonal and practical [4], academic curriculum and course requirements, course evaluation procedures, college instruction, social milieu and cultural factors on campus, college administration and bureaucracy, physical conditions and accommodations, economic factors, organismic and interpersonal factors, student expectations, daily hassles and constraints [5], depression, social evaluation trait

anxiety, task oriented coping (trait), emotion-oriented coping (trait), avoidance-oriented coping (trait) [5], Final grades, excessive homework, term papers, examinations, forgotten pencil / pen, studying for exams, class speaking, poor classroom lighting, evaluating classmates' work, classes without open discussion, crowded classes, irrelevant classes toward major, noisy classroom, note-taking in class, waiting for graded tests, fast-paced lectures, unclear course objectives, pop quizzes, forgotten assignments, incomplete assignments, unclear assignments, unprepared to respond to questions, announced quizzes, studied wrong material, incorrect answers in class, arriving late for class, cold classrooms, late dismissals of class, attending wrong class, boring class, non-native language lectures, hot classrooms,

buying textbooks [6], final and mid-term exams [7], academic stress based on mild, moderate and severe levels [8], stress related to academic, social, emotional health and personal habits [9], school factors, family factors and social factors [10]. Academic stress related to physical stress, psychological stress, and psychosocial stress [11], inadequate academic environment in college / university, lack of adjustment, apprehensive about the future, poor administration, and worries [12], work stress, family stress, academic stress, and financial stress [13] and personal factors, academic factors, and environmental factors [14]. Table 1 summarizes the dimensions of academic stress used in several studies related to academic stress in higher education, in various countries.

**Table 1.** Academic Stress Dimensions Reported in the Literature

Study	Student Stress Dimensions
[2]	Academic stress based on examinations, class meeting assignments, teaching processes and lectures while working
[3]	Academic stress based on a number of assignments, wealth of non-student peers, length of tutorials/lectures, dealing with the opposite Sex
[19]	Academic stress related to objective tests, subjective tests, projects and assignments, attendance, pop quizzes and class participation
[4]	Academic stress related to dealing with courses/colleges, academic / study, personal, interpersonal and practical.
[18]	Academic stress based on academic curriculum and course requirements, course evaluation procedures, college instruction, social milieu and cultural factors on campus, college administration and bureaucracy, physical conditions and accommodations, economic factors, organismic and interpersonal factors, student expectations, daily hassles and constraints
[20]	Academic stress based on depression, social evaluation trait anxiety, task-oriented coping (trait), emotion-oriented coping (trait), avoidance-oriented coping (trait)
[6]	Academic stress related to final grades, excessive homework, term papers, examinations, forgotten pencils / pens, studying for exams, class speaking, poor classroom lighting, evaluating classmates' work, classes without open discussion, crowded classes, irrelevant classes toward major, noisy classroom, note-taking in class, waiting for graded tests, fast-paced lectures, unclear course objectives, pop quizzes, forgotten assignments, incomplete assignments, unclear assignments, unprepared to respond to questions, announced quizzes, wrong material, wrong answers, incorrect answers in class, arriving late for class, cold classrooms, late dismissals of class, attending wrong class, boring classes, non-native language lectures, hot classrooms, buying textbook
[7]	Academic stress related to the final and mid-term exam
[8]	Academic stress is based on mild, moderate and severe levels
[9]	Stress-related to academic, social, emotional health and personal Habits
[10]	Academic stress is based on school factors, family factors and social factors
[11]	Academic stress is related to physical stress, psychological stress, and psychosocial stress
[12]	Academic stress related to the inadequate academic environment in colleges/universities, lack of adjustment, apprehensive about the future, poor administration, and worries.
[13]	Academic stress related to work stress, family stress, academic stress, and financial stress
[14]	Academic stress related to other people, personal factors, academic factors, and environmental factors

### III. IMPORTANCE-PERFORMANCE ANALYSIS: STRESS ACADEMIC DIMENSION IN HIGHER EDUCATION

Proposed the Importance-Performance Analysis (IPA) model derived from the SERVQUAL model, but this model was later adjusted by [15] to suit the education sector. Despite the fact that the IPA model is based primarily on performance, it also takes into account the priority that the customer gives to each service feature. As such, this depends on what the customer considers important and attempts to categorize the importance of the service quality dimension to customers. IPA has also been used in stress management [16]. The results of his study suggest that this work intends to help managers to identify job characteristics (items) requiring a priority action for reducing perceived work-related stress [20].

We used an importance-performance analysis (IPA), a valuable and popular approach for prioritizing improvements to the quality of services. The IPA typically yields a two-dimensional plot, with importance on the vertical axis and performance mean on the horizontal axis, which is divided into four quadrants with different managerial implications. Management should concentrate on the north-west quadrant where falls every item with lower performance and higher importance, indicating that managers must devote further resources on such items to improve its performance. This paper develops measurement indicators for stress Academic Model At Higher Education Institution with a scientific approach. *The Importance-Performance Analysis* method was used in measuring the importance and stress levels that can be found in the quadrants of the *Importance-Performance Matrix*.

The method was required in measuring the similarity index to know the importance of exams, in-class assignments, teaching processes and students who are both studying and having a job at the same time to the pressure that affects students' stress levels and how to understand the educational services about the students' need that surfaced up after the pressure they gave. Below is the equation applied:

$$RSI^* = \frac{\frac{\text{The Mean Value of Stress Level}}{\text{The Mean Value of Importance Possibilities}}}{\text{The Mean Value of Importance Possibilities}}$$

\* Respondent Similarity Index

- a. After the similarity index measurements, the next step was to make the *importance-performance* map positions in a form which is divided into four quadrants and bounded by two lines intersecting perpendicular axes to the points, as follows:

$$X_{\text{Axis}} = \frac{\sum \text{Mean value of Importance}}{\text{The number of attributes that affect the Importance Level}}$$

$$Y_{\text{Axis}} = \frac{\sum \text{Mean value of Stress Level}}{\text{The number of attributes that affect Stress}}$$

- b. Next, the horizontal axis (X) was filled with the importance level's score, while the vertical axis (Y) was filled with perceived stress levels. In the equation simplification process, every attribute was calculated using these equations:

$$\text{Mean Value of Importance} = \frac{\sum X_i}{\text{Number of respondents}}$$

$$\text{Mean Value of Stress Pressure} = \frac{\sum Y_i}{\text{Number of respondents}}$$

### IV. CONCLUSION

Academic stress applied in various countries shows that they have not used the same measurement. Academic stress that will be used in the future must consider the cultural and environmental factors of higher education in each country. This paper proposes a modified academic stress model to be used as a basis for assessing academic stress in tertiary institutions.

In the absence of research on academic stress with a scientific approach, this paper provides a basis for developing effective academic stress assessment tools for universities. In addition, this paper can also be used as guidelines and recommendations for leaders, planners, professors and administrators for universities. This paper also provides valuable feedback and recommendations for improving the overall academic stress assessment methodology at various tertiary institutions. This paper is also a step forward in improving the overall status of tertiary institutions which aims to maintain value in an increasingly competitive academic environment.

### REFERENCES

- [1] Higher Education Database. Accessed on August 7, 2019, at 10:14 CEST <https://forlap.ristekdikti.go.id/perguruan tinggi/home-graphpt>
- [2] Shirom, A. 1986. Student's stress. Higher Education, 15 (6), 667-676.
- [3] Sarros, JC, & Densten, IL (1989). Undergraduate Student Stress and Coping Strategies. Higher Education Research & Development, 8 (1), 47-57.
- [4] Bradley, G., McLachlan, A., & Sparks, B. (1990). *Concerns of our Students: A Cross-institutional Study*. Higher Education Research & Development, 9 (2), 111-121.
- [5] Zeidner, M. (1994). *Personal and contextual determinants of coping and anxiety in an evaluative situation: A prospective study*. Personality and

- Individual Differences*, 16 (6), 899–918.
- [6] Benson, Larry G., (1997). A Comparison of Academic Stress Experienced by Students at An Urban Community College and An Urban University. Dissertation University of North Texas in Partial.
  - [7] Pietri, Georgio D. (2012). Exam Scheduling and Student Performance. *Bulletin of Economic Research* 00: 0, 2012, 0307-3378.
  - [8] Budu, Hayford Isaac. (2014). Nursing Students' Experience of Stress During Their Education: A Study in The Central Region, Ghana. Thesis, Department of Biological Sciences, University of Cape Coast.
  - [9] Cabanez, Jeffrey. (2014). Student Stress at Cal Poly. The Faculty of the Liberal Arts and Engineering Studies of the California Department of Polytechnic State University, San Luis Obispo.
  - [10] Sarita & Sonia. (2015). Academic Stress among Students: Role and Responsibilities of Parents. *International Journal of Applied Research*, 2015; 1 (10): 385-388.
  - [11] Fanning, Golden G. (2016). Academic Stress and Academic Self-Efficacy as Predictors of Psychological Health in College Students. Dissertation, Faculty of The Patton College of Education of Ohio University.
  - [12] Khan, Ayesha. (2016). Influence of Academic Stress on Students' Self-Concept, Adjustment and Achievement Motivation. Dissertation, Department of Psychology Aligarh Muslim University Aligarh (India).
  - [13] Shaaban, Amir. (2017). Stress Factors and Psychological Well-Being Among Part-Time Students in Universities.
  - [14] Kalaivani, B., & Dhivya, R. 2018. Stress Influencing Factors; A Study oh Higher Secondary School Students of Udumalpet Tamil Nadu. *International Journal of Education & Management Studies*, 2018, 8 (2), 191-194.
  - [15] O'Neil, M. and Palmer, A. (2004). Importance-performance analysis: A useful tool for directing continuous improvement in higher education. *Quality Assurance Education*, 12 (1), pp. 39-52.
  - [16] Hocine, M. Ait-Bouziad, K., & Saporta, G. 2015. A methodological tool for work-related stress management: Importance-Performance Analysis used complementary to PLS path modeling. *Conférence Internationale Avec comité de lecture*. pp. xx, Le Pirée, Grèce.
  - [17] Marsh, AJ, & Marsh, HW (2008). Academic buoyancy: Towards an understanding of students' everyday academic resilience. *Journal of School Psychology*, 46 (1), 53–83.
  - [18] Sharmeen, F., Arentze, T., & Timmermans, H. (2013). *Incorporating Time Dynamics in Activity Travel Behavior Model*. *Transportation Research Record: Journal of the Transportation Research Board*, 2382 (1), 54–62.
  - [19] Switzer, PV, & Yoder, JI (1996). *The Academic Treasure Hunt*. *College Teaching*, 44 (3), 113-114.
  - [20] Zeidner, M. (1992). *Sources of academic stress: the case of first-year Jewish and Arabic college students in Israel*. *Higher Education*, 24 (1), 25–40.
  - [21] Martin, AJ, & Marsh, HW (2008). Academic buoyancy: Towards an understanding of students' everyday academic resilience. *Journal of School Psychology*, 46 (1), 53–83.