Analyzing Financial Stress and Its Impact On Mental Health Among Bangladeshi Undergraduate Students Using SPSS and SmartPLS

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B.Sc. in Computer Science and Engineering

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Declaration

It is hereby declared that

1. The thesis submitted is my/our own original work while completing degree at Brac University.
2. The thesis does not contain material previously published or written by a third party, except where this is appropriately cited through full and accurate referencing.
3. The thesis does not contain material which has been accepted, or submitted, for any other degree or diploma at a university or other institution.
4. We have acknowledged all main sources of help.

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Abstract

Undergraduate students are particularly susceptible to financial stress, which can severely undermine both mental health and academic achievement. Students were required to skillfully navigate a complex financial environment, which often included unstable personal finances, rapidly increasing tuition costs, and diminishing financial support from parents and family. This study investigated the association between financial struggles and mental health outcomes among undergraduate students, with the aim of examining how financial resources, job insecurity, and perceptions of financial instability influence stress levels among undergraduate students in Bangladesh and how these factors relate to overall well-being and academic achievement. Using a Likert scale, 448 responses from Undergraduate students to an anonymous online survey were examined in this quantitative study. The survey examined the connection between financial difficulties, job insecurity, and perceptions of financial instability with stress, well-being, and academic performance. It aimed to evaluate how these financial factors contributed to stress and their correlation with overall mental health and academic outcomes. This study utilizes SPSS and SmartPLS to analyze the results and test several hypothesis. Various statistical analysis techniques, including one-way ANOVA, two-way ANOVA, independent samples t-test were used in this research, and Cronbach's Alpha, Average Variance Extracted (AVE), Fornell-Larcker Criterion and other relevant testing were employed to validate the hypothesis. This study concluded that there is an unmet need for psychological support for university students in Bangladesh. Appropriate support services should be directed to them to help and to overcome the financial challenges they face.

Keywords: Financial Stress, Mental Health, Academic Achievement, Undergraduate Students, Financial Challenges, Likert Scale, SPSS, SmartPLS, Hypotheses Testing, ANOVA, Psychological Support

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Chapter 1

Introduction

1.1 Background

Undergraduate students in Bangladesh are increasingly vulnerable to financial stress, a pervasive issue that significantly undermines both mental health and academic achievement. The complex financial environment they navigate often includes unstable personal finances, rapidly increasing tuition costs, and diminishing financial support from parents and family. Bangladesh, with its large and growing population, faces escalating inflation rates and inadequate mental health care infrastructure. Students aged 15 to 24 encounter numerous obstacles, including family pressures, financial crises, academic stressors, and difficulties in settling into university life[26].

As of May 2024, bank loans in Bangladesh exceeded USD 174.748 billion, coinciding with a youth unemployment rate of 40%, starkly contrasting with the global youth unemployment rate of approximately 21.78%[13]. In South Asia, youth unemployment has fluctuated over the years, peaking at 16.62% in 2021 and reaching a low of 7.28% in 2006[39]. These economic pressures exacerbate the financial instability experienced by students, leading to heightened stress levels. Scholarships, which could alleviate some financial burdens, are limited and often insufficient to address the complex issues of youth unemployment and economic development in the country[15].

Stress, arising when individuals struggle to manage internal and external pressures, is a common factor that significantly undermines individual morale[25]. When chronic or excessive, stress negatively impacts mental health, potentially leading to psychological disorders like depression[25]. If it's not properly addressed, this pattern can lead to a detrimental negative effects, such as severe anxiety, erratic mood swings, and the reduction of concentration ability, which eventually leads to worsen both mental and physical health.

The startlingly high number of student suicides in Bangladesh, especially those involving to financial hardships, highlights a critical social problem. In 2021, at least 101 university students committed suicide, with 64.36% being male students[20]. With 532 student suicide instances documented in 2022, the tendency of committing suicide has continued to climb[44]. This complex relationship between financial strain, educational demands, and mental health issues highlights the urgent

need for comprehensive support systems and targeted interventions for Bangladesh's youth[10][8].

1.2 Identified Literature Gap

Few studies have particularly focused on Bangladeshi undergraduate students, although numerous studies have looked at the effects of financial stress on students' mental health and academic performance globally. The research that are currently available often addresses financial stress in developed countries, where the support networks and economic environments are very different from those in Bangladesh. Moreover, prior research has not properly explored the combined impacts of financial resources, job insecurity, and perceptions of financial instability on mental health outcomes within this demographic.

Furthermore, very few research have used advanced statistical tools like SPSS and SmartPLS to analyze the relationships between financial stressors and mental health among Bangladeshi students. There is a need for research that not only identifies the factors contributing to financial stress but also quantitatively assesses their impact on mental health and academic achievement using robust analytical methods.

1.3 Research Motivation

The motivation for this research comes from the growing financial problems and mental health issues faced by undergraduate students in Bangladesh. The worrying rise in student suicides and the high rate of youth unemployment highlights the need for immediate action. It's important to understand how much financial stress is impacting students' mental health and how it's affecting their studies, so that proper support can be created.

This study hopes to address a gap in existing research by providing real-world evidence on the link between financial difficulties and mental health among Bangladeshi undergrads. By using advanced statistics, it aims to give insights that can help policymakers, universities, and mental health workers in developing targeted support systems for students.

1.4 Research Objectives

The primary objective of this research is to examine the impact of financial stressors on the mental health conditions of undergraduate students in Bangladesh. The specific objectives are:

1. To measure the impact of financial well-being on life satisfaction among undergraduate students.
2. To assess the level of financial instability and its effect on students' mental health.

3. To determine how financial challenges influence academic performance, specifically CGPA.

4. To explore the role of financial literacy in achieving financial stability and academic success.

5. To identify the key factors influencing financial anxiety among students and explore the relationship between financial management practices and psychological well-being.

1.5 Methodological Overview

This quantitative study analyzed responses from 448 undergraduate students collected through an anonymous online survey using Likert-scale questions. The survey examined the relationships between financial struggles, job insecurity, perceptions of financial instability, stress levels, well-being, and academic performance.
Data analysis was conducted using SPSS and SmartPLS software:

- **SPSS** was utilized for descriptive statistics and hypothesis testing through one-way ANOVA, two-way ANOVA, and independent samples t-tests. This allowed for the validation of initial hypotheses and identification of significant variables affecting mental health and academic performance.

- **SmartPLS** was employed to build and validate measurement and structural models, enabling the analysis of complex relationships between latent variables such as financial anxiety, life satisfaction, and emotional well-being. This approach facilitated the testing of additional hypotheses and provided deeper insights into the interconnectedness of the variables.

By combining these statistical tools, the study was able to comprehensively analyze both observable and latent variables, enhancing the robustness of the findings.

1.6 Research Contributions and Novelty

This research brings a new perspective by looking at how financial stress impacts mental health in Bangladeshi undergraduate students. Not a lot of research has focused on this group before, so it's filling a gap. By using both SPSS and SmartPLS, it's able to give a solid analysis with both confirmatory and exploratory methods.
What's unique about this study is that it uses both of these tools together and looks at students in a developing country. Some key takeaways from the study are:

- **Real-world Data**: It gives actual numbers on how financial stress affects students' mental health and their grades in Bangladesh.

- **New Methods**: It uses advanced tools like SPSS and SmartPLS to dig deeper into how these things are related.

- **Policy Insights**: The findings could help universities and policymakers in Bangladesh understand why it's important to offer support services for students facing financial issues, which can help with their mental health too.

- **Future Studies**: This research can be a stepping stone for more work in the area, helping future researchers build interventions that are suited to the needs of students in developing countries.

By filling a gap in the research and using strong methods, this study gives important insights into the challenges faced by Bangladeshi students and adds valuable knowledge to areas like mental health, education, and financial well-being.

Chapter 2

Background and Related Works

2.1 Background

2.1.1 Two-Step Statistical Analysis Using SPSS and SmartPLS

For the analysis, SPSS and SmartPLS were used to explore relationships between key variables and their scales. Total six initial hypotheses were formulated by using ANOVA and Independent Sample T-test to identify significant variables for the target outcome. Using SPSS, all six hypotheses were tested and accepted, helping to identify key features. These features were then further analyzed with SmartPLS to gain a deeper understanding of the critical factors influencing the target variable. This two-step approach provided a comprehensive analysis, highlighting the most important predictors.

2.1.2 Research Approach

One common approach in statistics and certain experimental fields (like psychology) is to distinguish between exploratory and confirmatory research. Exploratory research is open-ended, starting with some hunches or vague questions that shape what you'll look for, but without a specific hypothesis. Confirmatory research, on the other hand, begins with a specific hypothesis and is designed to rigorously test it [11]. Here, our confirmatory research was conducted using SPSS (fixed 10 rows/features), while the exploratory research was conducted using SmartPLS (4 scale multiple combined features).

2.1.3 SPSS- Statistical Package for the Social Sciences

SPSS is a powerful tool good for various types of statistical analyses, especially when it comes to survey data. For this study, it allowed for conducting descriptive statistics, which include calculation of mean, median, mode, and standard deviation, as well as inferential statistics and reliability assessment. The descriptive statistics allowed for general overview of the dataset by presenting a summary of variables, including financial stress, CGPA, job insecurity, and mental health indicators. Infer-

ential statistics, specifically ANOVA and Independent sample T-test, are the most important SPSS features in this context [19].

(i) ANOVA Test: Analysis Of Variance (ANOVA) is a statistical test that allows you to check if there actually exists differences in the means of more than two groups — essentially comparing multiple populations. In essence, ANOVA is used to compare arithmetic means between 3 or more groups at the same time. In simplest form, a one-way ANOVA uses one independent variable. A two-way ANOVA is an analysis that involves two independent variables. ANOVA test is used by analysts to find the power of independent variables in a regression study [41].
Thus, the ANOVA formula is:

$$F = \frac{MS_{\text{between}}}{MS_{\text{within}}} = \frac{\frac{\sum_{k=1}^{k} n_k(\bar{X}_k - \bar{X})^2}{k-1}}{\frac{\sum_{i=1}^{n}(X_{ik} - \bar{X}_k)^2}{n-k}}$$

where:

$$\begin{aligned} MS_{\text{between}} &= \text{Mean Square Between Groups} \\ MS_{\text{within}} &= \text{Mean Square Within Groups} \\ n &= \text{Total number of observations} \\ k &= \text{Number of groups} \\ \bar{X}_k &= \text{Mean of group } k \\ \bar{X} &= \text{Overall mean of all groups} \\ X_{ik} &= \text{Individual observation from group } k \end{aligned}$$

(ii) T-tests: A t-test (also known as Student's t-test) is a tool for evaluating the means of one or two populations using hypothesis testing. A t-test may be used to evaluate whether a single group differs from a known value (a one-sample t-test), whether two groups differ from each other (an independent two-sample t-test), or whether there is a significant difference in paired measurements (a paired, or dependent samples t-test). It allows for comparisons between two groups (such as male vs. female students, or students with scholarships vs. without scholarships) to assess differences in mental health and financial stress [47].

The formula for the independent t-test is:

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}}$$

where:

$$\begin{aligned} \bar{X}_1, \bar{X}_2 &= \text{the sample means} \\ s_1^2, s_2^2 &= \text{the sample variances} \\ n_1, n_2 &= \text{the sample sizes of the two groups} \end{aligned}$$

2.1.4 SmartPLS- Partial Least Squares Structural Equation Modeling

SmartPLS is used for analyzing complex relationships between variables that may not be easily captured through traditional methods like ANOVA or t-tests. It allows for Structural Equation Modeling (SEM) to test the relationships between latent variables, which are not directly observable [40]. SmartPLS helps validate hypotheses by:

(i) Measurement Model: It confirms if the observed data reliably represent the underlying latent variables using metrics like Composite Reliability (CR) and Average Variance Extracted (AVE).

The formulas for these metrics are as follows:

$$\text{Composite Reliability (CR)} = \frac{(\sum_{i=1}^{n} \lambda_i)^2}{(\sum_{i=1}^{n} \lambda_i)^2 + \sum_{i=1}^{n} \epsilon_i}$$

$$\text{Average Variance Extracted (AVE)} = \frac{\sum_{i=1}^{n} \lambda_i^2}{\sum_{i=1}^{n} \lambda_i^2 + \sum_{i=1}^{n} \epsilon_i}$$

where:

$$\begin{aligned} \lambda_i &= \text{the factor loading of the } i^{th} \text{ item} \\ \epsilon_i &= \text{the error variance of the } i^{th} \text{ item} \\ n &= \text{the total number of items} \end{aligned}$$

(ii) Structural Model: A structural model evaluates the relationships between latent variables by estimating direct and indirect effects using path coefficients. It evaluates direct and indirect effects between variables using path coefficients and bootstrapping to check significance.

The structural model can be represented by the following equations:

$$\begin{aligned} \eta_1 &= \beta_{11}\xi_1 + \beta_{12}\xi_2 + \epsilon_1 \\ \eta_2 &= \beta_{21}\xi_1 + \beta_{22}\xi_2 + \epsilon_2 \end{aligned}$$

where:

$$\begin{aligned} \eta_j &= \text{Endogenous latent variable} \\ \xi_i &= \text{Exogenous latent variable} \\ \beta_{ij} &= \text{Path coefficient from } \xi_i \text{ to } \eta_j \\ \epsilon_j &= \text{Error term for endogenous variable } \eta_j \end{aligned}$$

SmartPLS also allows the use of PLS Algorithm, which estimates the parameters of the model, and Bootstrapping for significance testing [34]. SmartPLS will also offer tools like R-squared values to explain the variance in our scale variables (such as mental health, financial well-being, financial anxiety and job insecurity). This approach is ideal for understanding complex, interdependent relationships in data, providing deeper insights into how variables like financial anxiety and academic performance interact in students' lives.

2.2 Related Works

Akhter et al. (2020) [12] translated and validated the Mental Health Literacy Scale (MHLS) by using SmartPLS tool to assess mental health literacy (MHL). Following Hambleton & Zenisky's methodology, they confirmed a reliable 34-item scale through rigorous testing and expert feedback. This validated scale helps identify gaps in mental health knowledge and supports targeted interventions to reduce stigma and improve mental health outcomes specifically for young people who are in a vulnerable period related to the risk of developing mental illness.

Another research by He and Chen (2015) [7] examines the relationship between mental health status and help-seeking behavior regarding community residents in Nanchang city. This study indicates significant demographic variations, with younger adults often experiencing higher psychological distress compared to older adults, who typically demonstrate better coping mechanisms. The researchers found that individuals aged 40-49 had the best mental health status, while those aged 50-59 reported the worst and were least likely to seek help, influenced by stigma and beliefs in self-reliance. These insights highlight the importance of targeted interventions, such as stigma reduction and resource awareness, to improve help-seeking behaviors across age groups and enhance community mental health services.

Saputra (2023) [35] focuses on the impact of digital technology on education, particularly through online learning platforms. Positive Mental Health Scale is used to measure mental health which is broken down into four aspects, such as: well-being, life satisfaction, self-esteem and ability to deal with stress. PMHS is used because it has 12 indicators that are simple and easy to understand by respondents who are dominated by educators and reflect mental health conditions in a social context. Related to mental health, this article develops two hypotheses, namely whether mental health has a positive and significant effect on personal resilience as well as physical health.

Dynamic stratified grouping in physical education enhances student engagement and promotes both physical and mental health. Unlike traditional methods that often hinder motivation, this student-centered approach adapts groupings based on individual progress, fostering a competitive yet supportive environment[23]. This study by Zhu Qiao et al. (2021) [23] shows that students using dynamic grouping improved significantly in physical fitness and reported fewer psychological symptoms, such as anxiety and depression. Comparative analyses indicate that this method mitigates

issues related to static groupings, like decreased self-esteem.

This study by Zare et al. (2022) aimed to assess the validity and reliability of the mental component summary (MCS) and physical component summary (PCS) of SF-12 [24]. 140 Iranian elderly aged 60 years and older from the general population (100 male vs 40 female) of the Shiraz city were recruited by convenient sampling. The data was analyzed by using SmartPLS (version3). According to the structural equation modeling (SEM), four subscales of SF-12 (emotional role, social function, vitality and mental health) can predict mental components and four subscales of SF-12 (general health, physical function, bodily pain and physical role) can predict physical components. The goodness-of-fit indices showed that the model for predicting mental (Q2=0.29, R2=0.68) and physical components in the elderly was excellent (Q2=0.37, R2=0.77)

SPSS 17.0 and Excel were used to collate and analyze data based on 1570 valid questionnaire surveys (2000 papers distributed originally) on the problems of pre-school children of mental health cognition and children's nutritional behavior. According to Song et al. (2019) [21] poor eating habits, such as forcing children to eat disliked foods, often arise from this lack of awareness. Utilizing SPSS to the dataset, they compare the mean of each group of data in this study and to analyze correlation and regression.The results show that despite parents' concerns about their children's mental health, poor eating behavior is still prevalent in pre-school children.

A study on 206 young teachers in Shaoguan primary and secondary schools used the General Health Questionnaire (GHQ-12) and the Chinese version of the SF-36 Quality of Life Scale to assess occupational mental health and quality of life by Tan et al. (2021) [22]. The results showed that the occupational mental health of young teachers in Shaoguan primary and secondary schools is at the upper-middle level, and the occupational mental health is significantly affected by the teaching target, education background and position. The overall quality of life of young teachers in Shaoguan primary and secondary schools is above the average level, and the quality of life is significantly affected by the teaching object, education background, and position.

Prior research by Al-Shaer et al. (2024) [43] has revealed a degree of negative correlation between depression, anxiety and stress severity and subpar academic achievement, as well as a negative perception of QOL among students. The effects of depression and other psychological disorders on students' existing behavior, grades, and QOL are severe. University students who show at least one symptom similar to depression can be described as being more likely to experience a risk of academic difficulties, such as receiving a lower grade, than those who do not report symptoms. Using PLS-SEM, they found that stress, depression, and anxiety negatively affect the quality of life (QOL) of students with disabilities. Social connectedness moderates the impact of stress, while religiosity moderates anxiety, but both fail to mitigate depression.

This research by Khan et al. (2022) [27] aimed to assess whether or not there is a relationship between positive mental health, academic stress and suicidal ideation

among adolescents. This study use two separate questionaire- positive mental health questionnaire and suicide hehavior questionnaire. Data were analyzed using correlation, regression, and PLS-SEM. The results of the correlation analysis showed that academic stress leads to suicidal ideation, but positive mental health could be significant protective factor.

According to Xia et al. (2023) [37] examine the influence of perceived risk and subjective norms on their online shopping intentions, revealing that perceived risk negatively impacts these intentions, while subjective norms have a positive effect. The research utilized a descriptive design, employing a questionnaire to gather data from a sample of 88 students, analyzed using SPSS and SmartPLS-SEM software. The problem statement highlights the need to evaluate how perceived risk and subjective norms affect online purchasing decisions among young individuals. The study addresses this by formulating research questions, conducting reliability tests, and performing regression analysis to quantify the relationships between the variables, ultimately providing insights for online retailers and students regarding the factors influencing online shopping behavior.

The study by Muriana et al. (2024) [42] aimed to look at how teenagers at SMK Wijaya Kusuma in South Jakarta prevented dating violence by way of their self-concept, family roles, knowledge, and information resources. By using a cross-sectional design, data were gathered via questionnaires from 65 students, and SmartPLS software were used for data analysis. The results showed that the most important factor influencing preventative actions was self-concept, which accounted for 20.38% of the variation. 95% of the variety in the data was explained by the model, demonstrating its strong explanatory ability. In order to improve teenagers' knowledge and comprehension of healthy relationships, the researchers conducted a study in which they looked at both the direct and indirect impacts of the factors that were found. Ultimately, they recommended that schools develop instructional programs on violence prevention measures.

This study by Ayyanar (2022) [9] gives an overview of the Statistical Package for the Social Sciences (SPSS), which depicts the features of SPSS for data analysis, including descriptive and inferential statistics, data manipulation, and graphical representation. It highlights the value of SPSS across a range of disciplines, particularly in social sciences and business, because of its user-friendly interface and extensive statistical capabilities. The result proves that SPSS is an effective tool for handling big datasets and performing complex analyses, making it is crucial that researchers carefully record their analytical procedures. The paper also highlights that to maximize the benefits of SPSS, researchers should approach learning the software incrementally, using resources like Andy Field's book to get a better knowledge and practical application

Chapter 3

Methodology

3.1 Dataset Description

In this study, we prepared our dataset by conducting a survey questionnaire containing 29 questions. We utilized 4 Likert scales and a few additional questions. Based on the survey, 449 participants in private universities in Bangladesh participated in the survey. The survey responses analyze financial struggles, well-being, and personal satisfaction, focusing on financial situations, job or scholarship security, and life satisfaction. The gender distribution comprises 311 male students (69.3%) and 138 female students (30.7%). To ensure the study's findings were representative of the entire population, we calculated the required sample size using the Krejcie and Morgan formula. Given the population size of 1,233,529 (Bangladesh Education Statistics 2022) [30], a confidence level of 95%, and a standard deviation of 0.5, the required sample size was calculated to be approximately minimum of 384 for the total population. [17]

Survey Questionnaire

Section 0: Student's Basic Information

Which university are you from?

- BRAC University
- Other (Enter your university name)

Gender

- Male
- Female

Section 1: Student's Financial Struggle

How would you describe your current financial situation?

- Very comfortable
- Comfortable

- Neutral
- Managing with a tight budget
- Facing financial difficulties

How often do financial challenges affect your timely tuition fee payments?

- I pay tuition fees timely
- Late to pay fees for 1-3 semesters
- Late to pay fees for 4-6 semesters
- Late to pay fees for more than 6 semesters
- Late to pay fees for every semester

Do financial constraints affect your ability to purchase study materials? Never, Rarely, Sometimes, Often, Always.

Rate your ability to avoid unnecessary expenses or budget management: 1 (Weak), 2, 3, 4, 5 (Excellent).

How would losing your scholarship/part-time job affect your finances?

- I don't have a scholarship/part-time job
- Not at all
- Slightly
- Moderately
- Considerably
- Very Much

Section 2: Job/Scholarship Insecurity

There is a risk of losing my part-time job or merit-based scholarship in the near future: 1 (Strongly Disagree), 2, 3, 4, 5 (Strongly Agree).

I feel uneasy about losing my job or scholarship in the near future: 1 (Strongly Disagree), 2, 3, 4, 5 (Strongly Agree).

My performance is favorable for the continuity of my job or my scholarship: 1 (Strongly Disagree), 2, 3, 4, 5 (Strongly Agree).

My future career/academic opportunities in my employer/university are favorable: 1 (Strongly Disagree), 2, 3, 4, 5 (Strongly Agree).

My employer/university can offer me a job role with stimulating content in the near future: 1 (Strongly Disagree), 2, 3, 4, 5 (Strongly Agree).

I believe that my employer/university will need my ability also in the future: 1 (Strongly Disagree), 2, 3, 4, 5 (Strongly Agree).

My salary-growth/scholarship-coverage is promising: 1 (Strongly Disagree), 2, 3, 4, 5 (Strongly Agree).

Section 3: Feeling Check-In

How often have you felt the following in the past few days?

Afraid	:	Rarely	Occasionally	Sometimes	Frequently	Very Often
Distressed	:	Rarely	Occasionally	Sometimes	Frequently	Very Often
Nervous	:	Rarely	Occasionally	Sometimes	Frequently	Very Often
Scared	:	Rarely	Occasionally	Sometimes	Frequently	Very Often
Upset	:	Rarely	Occasionally	Sometimes	Frequently	Very Often

Section 4: Financial Anxiety

On a scale of 1 to 5, how strongly do you agree with the following statements? (1 = Strongly Disagree, 2, 3, 4, 5 = Strongly Agree)

- I feel anxious about my financial situation: (1 - 5)
- How much difficulty do you experience in sleeping due to concerns about your financial situation? (1 - 5)
- I have difficulty concentrating on my education/work because of my financial situation: (1 - 5)
- I am irritable because of my financial situation: (1 - 5)
- I have difficulty controlling my worry about my financial situation: (1 - 5)
- My muscles feel tense because of worries about my financial situation: (1 - 5)
- I feel fatigued or sick because I worry about my financial situation: (1 - 5)

Section 5: Dealing with Financial Struggle

In a case of a financial crisis, how confident are you in getting support from your social network (i.e., relatives, friends)?
(1 = Not Confident, 5 = Very Confident): 1, 2, 3, 4, 5.

On a scale of 1 to 5, how important is improving your personal financial knowledge and academic skills to gain financial stability?
(1 = Not Important, 5 = Very Important): 1, 2, 3, 4, 5.

How likely are you to consider obtaining a bank loan as a means of financial support for your academic or personal needs?
Very Likely, Likely, Neutral, Unlikely, Very Unlikely.

Section 6: Financial Well-Being Scale

How well do these statements describe you or your situation? (1 = Strongly Disagree, 2, 3, 4, 5 = Strongly Agree)

- I could handle a major unexpected expense. (1 - 5)
- I am securing my financial future. (1 - 5)
- Financially, I feel like I will never have the things I want in life. (1 - 5)
- I can enjoy life because of the way I am managing my money. (1 - 5)
- I am barely making ends meet. (1 - 5)
- I am concerned that the money I have or will have won't last. (1 - 5)
- Giving a gift on an occasion would put a strain on my finances for the month. (1 - 5)
- I have money left over at the end of the month. (1 - 5)
- I am struggling financially. (1 - 5)
- My finances control my life. (1 - 5)

Section 7: Personal Satisfaction

- Assess your mental satisfaction about your academic performance/CGPA. (1 = Not Satisfied, 2, 3, 4, 5 = Very Satisfied)
- Does financial struggle make you feel left out from the university community due to seeing others' luxurious lifestyles?
  - Yes
  - No
  - Maybe

Section 8: Life Satisfaction

How strongly do you agree or disagree with the following statements? (1 = Strongly Disagree, 2, 3, 4, 5, 6, 7 = Strongly Agree)

- In most ways, my life is close to my ideal. (1 - 7)
- The conditions of my life are excellent. (1 - 7)
- I am satisfied with my life. (1 - 7)
- So far, I have gotten the important things I want in life. (1 - 7)
- If I could live my life over, I would change almost nothing. (1 - 7)

3.2 Scale Review

Most of the university students are 19 to 27 years old. So our research area was analyzed based on the 19 to 27 aged people, who studied in universities. Maintaining the factors contributing to well-being, such as guilt, adaptability, and personal financial situations we select survey questionnaires with 4 scales. Where higher N values indicate items that had a less negative impact on the individual, common in healthy populations. Conversely, a score of 0 represents a low consequence. Participants almost need less than 15 minutes to fill up the survey questionnaires.

Table 3.1: Summary of Scales Used in the Study

Scale Used for Questionnaire	**Response Scale**	**Score Range**	**Categories (Score)**	**Reference**
Satisfaction With Life Scale (SWLS) for "Life Satisfaction" questionnaire	7-point Likert (1–7)	5–35	30–35: Extremely Satisfied 25–29: Satisfied 20–24: Slightly Satisfied 15–19: Neutral 10–14: Dissatisfied 5–9: Extremely Dissatisfied	SWLS
CFPB Financial Well-Being Scale for "Financial Well-being" questionnaire	5-point Likert (0–4)	0–100	0–39: Low 40–49: Medium-Low 50–59: Medium-High 60–100: High	CFPB Financial Well-Being Scale
APR Financial Stress Scale for "Financial Anxiety" questionnaire	3-point Likert (0–3)	7–35	7–14: Low Anxiety 15–21: Moderate 22–35: High	APR Financial Stress Scale
(PANAS Scale - Only Negative Affect) for "Feeling Check-in" questionnaire	5-point Likert (1–5)	5–25	Higher scores indicate more negative emotional states	PANAS Scale

The scales were chosen to assess financial, emotional, and mental aspects comprehensively, providing a well-rounded understanding of the impact of financial stress.

3.3 Outlier Removal

Outlier is a data point that stands out significantly from the rest of the data. It can be an extremely high or low value compared to the other observations in a dataset. Outliers can be caused by measurement errors, natural variations in the data, or even unexpected discoveries. Several methods can be used to solve the outlier issue depending on the nature of the outliers and the research problem that are being solved. This research utilizes the Interquartile Range (IQR) method to detect and address outliers, ensuring that the dataset remains robust for accurate analysis [38].

The IQR method identifies outliers by measuring the spread of the middle 50% of the data. First, we calculate the IQR, which is the difference between the third quartile (Q3) and the first quartile (Q1):

$$IQR = Q_3 - Q_1$$

An outlier is defined as any data point that falls outside the range of:

$$\text{Lower Bound} = Q_1 - 1.5 \times IQR$$
$$\text{Upper Bound} = Q_3 + 1.5 \times IQR$$

3.4 Scale Standardization

Scale standardization was used to get proper consistency in the scoring systems and interpretation of all scales used in the dataset. To make comparisons simpler, the scores were normalized to a 100-point scale using the Standardized Score Index (SSI). This technique ensured uniformity by transforming the raw scores into a percentage-based scale, where 0% means the minimum score and 100% means the maximum score. In order to aid in interpretation, additional categories were established, including Low (0–20%), Moderate Low (20–40%), Moderate (40–60%), Moderate High (60–80%), and High (80–100%). This standardization enabled an efficient comparison between different variables, which improved the accuracy of generalizations and hypothesis testing.

3.5 SSI- The Standardized Score Index

A scaling technique used to normalize mental health ratings is the Standardized Score Index (SSI). For standardize the mental health scores, we utilize the technique of the SSI score. Finding the dataset's minimum and maximum values for the mental health scores is the first step in this approach. It convert actual scores into

a 100-point scale using the formula:

$$SSI = 100 \times \frac{\text{max_score} - \text{min_score}}{\text{sum_score} - \text{min_score}}$$

This formula rescales the raw score to a percentage-based index, where 0% represents the minimum score and 100% represents the maximum score observed in the dataset. The range of scores is segmented into categories to facilitate interpretation: Low (0-20%), Moderate Low (20-40%), Moderate (40-60%), Moderate High (60-80%), and High (80-100%). For instance, if a sum score of 90 is assessed, it is translated into an SSI of 100%, indicating a score at the highest end of the scale [17]. In this study, dataset Likert scale varies on each scale. Therefore, the SSI help us to normalize our scale within a range which then used in analysis. This method ensures a uniform and comparative measure of mental health, enhancing the clarity and relevance of the data.

3.6 Methodology Diagram

The methodology diagram is presented to provide a visual representation of the research workflow. It illustrates the different stages, starting with the data collection through an online survey, followed by data preprocessing, including outlier removal and scale standardization. The figure also depicts subsequent statistical analysis using SPSS (ANOVA, Independent Samples T-Test) and SmartPLS for structural equation modeling, leading up to the findings and interpretation phases.

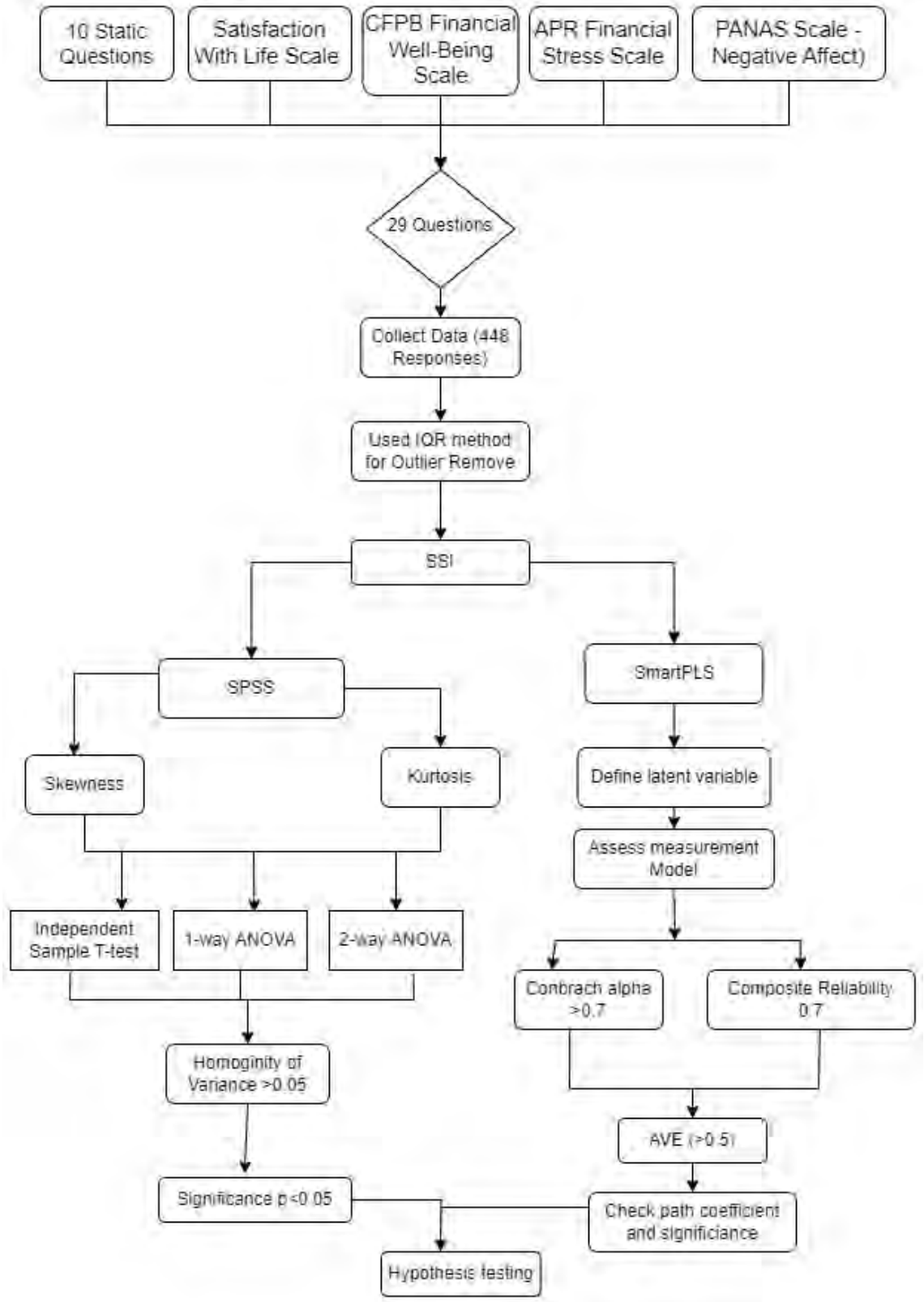


Figure 3.1: Methodology Diagram

Chapter 4

Statistical Analysis

4.1 SPSS Analysis

In this study, for validation purposes, we utilize two popular techniques of SPSS: Kurtosis and Skewness.

- **Kurtosis:** Measures the "tailedness" or "peakedness" of a distribution compared to a normal distribution. Our study's skewness and kurtosis measures align within the established validation ranges for normality testing. Specifically, our kurtosis scores range from -3 to +3, suggesting that our data exhibits characteristics consistent with a normal distribution.
- **Skewness:** Measures the asymmetry of a distribution, indicating whether a distribution is symmetric or asymmetric. Our skewness values fall between -2 and +2, ensuring that the assumptions underlying our statistical tests are satisfied [5].

These findings validate our research approach and support the reliability of our statistical analysis methods in assessing the current financial situation, thereby enhancing the robustness and credibility of our findings related to the impact of financial stress on mental health outcomes among Bangladeshi undergraduate students.

4.1.1 One-way ANOVA Test

The one-way ANOVA test was used to evaluate the following hypotheses:

Hypothesis 1

- **Null Hypothesis (H_0):** There is no difference in the assessment of mental satisfaction about academic performance/CGPA among respondents' financial constraints to purchase academic materials.
- **Alternate Hypothesis (H_1):** There is a difference in the assessment of mental satisfaction about academic performance/CGPA among respondents' financial constraints to purchase academic materials.

Table 4.1: ANOVA Results for Mental Satisfaction about Academic Performance/CGPA

Source	**Levene Statistic**	**F**	**df1**	**df2**	**Sig. (Homogeneity of variance)**	**Sum of Squares**	**Mean Square**	**Sig. (ANOVA)**
Mental satisfaction about academic performance/CGPA	2.143	3.336	4	443	**.075**	20.131	5.033	**.010**
Based on Median	2.135		4	443	**.076**			
Based on Trimmed Mean	2.595		4	443	**.036**			

Result Description: The results of the hypothesis test show a statistically significant difference in mental satisfaction regarding academic performance or CGPA based on financial constraints when purchasing academic materials. The ANOVA result (Sig. = 0.010) indicates that financial difficulties significantly impact students' mental satisfaction, leading to the rejection of the null hypothesis. The Levene's test for homogeneity of variances (Sig. = 0.075) confirms that the variances across the groups are equal, validating the ANOVA results. The graph further illustrates that as financial constraints increase, students' mental satisfaction tends to decrease, particularly at higher constraint levels.

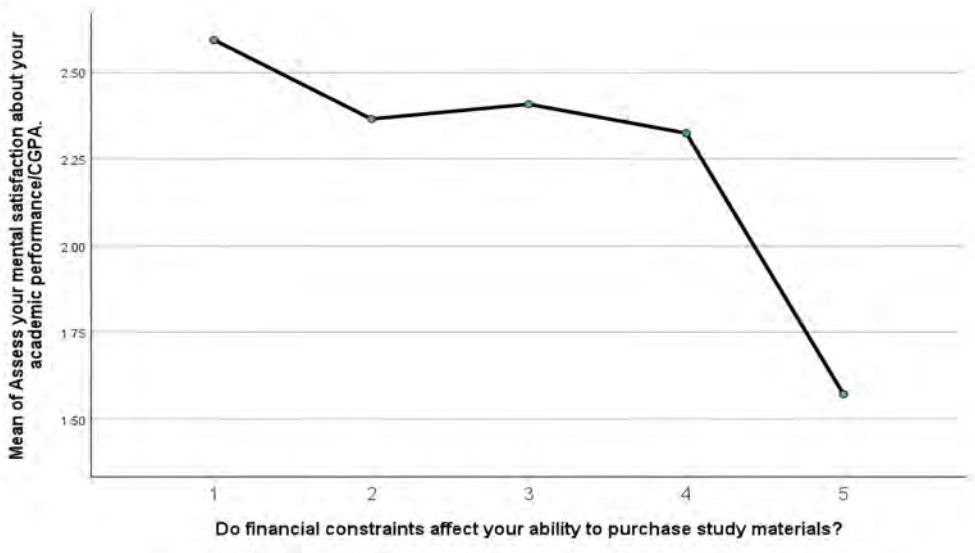


Figure 4.1: Effect of financial constraints on academic satisfaction.

Graph Description: The graph shows how financial constraints impact student's mental satisfaction regarding their academic performance or GPA. Financial constraints increase moving to the right side of the x-axis and mental satisfaction about academic performance/CGPA increase moving upward to the y-axis. Here, as financial difficulties increase (moving from 1 to 5 on the x-axis), the mean level of satisfaction steadily declines. This points out that students who experience more financial stress feel less satisfied with their academic achievements, with a particularly sharp drop in satisfaction at the highest level of financial constraint.

Hypothesis 2

- **Null Hypothesis (H_0):** There is no difference in the current financial situation among respondents losing part-time jobs or scholarships.
- **Alternate Hypothesis (H_1):** There is a difference in the current financial situation among respondents losing part-time jobs or scholarships.

Table 4.2: ANOVA Results for Current Financial Situation (Part-time Jobs/Scholarships)

Source	**Levene Statistic**	**F**	**df1**	**df2**	**Sig. (Homogeneity of variance)**	**Sum of Squares**	**Mean Square**	**Sig. (ANOVA)**
Current financial situation (Part-time jobs/scholarships)	1.235	9.358	5	442	**.291**	45.758	9.152	**< .001**
Based on Median	1.265		5	442	**.278**			
Based on Trimmed Mean	1.213		5	442	**.302**			

Result Description: The results of the hypothesis test show a statistically significant difference in the current financial situation among respondents losing part-time jobs or scholarships. The ANOVA result (Sig. < 0.001) is highly significant, allowing us to reject the null hypothesis and accept the alternative hypothesis that losing part-time jobs or scholarships impacts respondents' financial situations. The Levene's test (Sig. $= 0.291$) confirms the assumption of equal variances across groups. The graph further illustrates that the perceived financial impact increases sharply as respondents face a higher likelihood of losing their part-time jobs or scholarships.

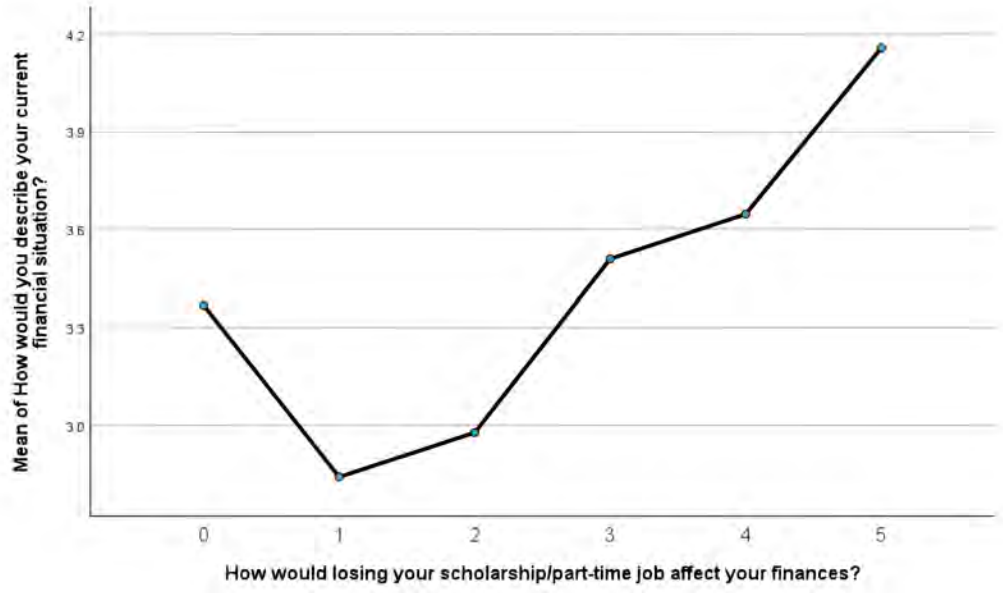


Figure 4.2: Effect of financial constraints on academic satisfaction.

Graph Description: The graph depicts the relation between students' appraisal of their present financial status (y-axis) and the possibility of losing a scholarship or part-time work (x-axis). High values on the y-axis implies a more optimistic assessment of their financial situation, and moving to the right on the x-axis, from 0 to 5, it shows a higher tendency of the impact of losing a scholarship or work on their finances. At first, the input gives a reasonably better condition of their financial status at point 0, but moving right to point 1, their assessment of their financial state significantly decreases. However, the curve of the graph gradually increases from 2 to 5, which shows increased financial hardship, indicating that students who anticipate a higher impact from losing financial help may already be managing more tightly.

4.1.2 Two-way ANOVA Test

The two-way ANOVA test was performed to examine the interaction between multiple factors, testing the following hypotheses:

Hypothesis 1

- **Null Hypothesis (H_0):** There is no significant effect of Gender, Losing a Scholarship/Part-time Job, or their interaction on students' financial situation.
- **Alternate Hypothesis (H_1):** There is a significant effect of Gender, Losing a Scholarship/Part-time Job, or their interaction on students' financial situation.

Source	F	Sig.
Levene's Test		
Based on Mean		0.558
Based on Median		0.724
Between-Subjects Effects		
Gender	0.279	0.598
Losing Scholarship/Part-time Job Impact on Finances	7.280	< 0.001
Gender * Losing Scholarship/Part-time Job Impact on Finances	1.175	0.320

Table 4.3: ANOVA Results: Effects of Gender and Losing Scholarship/Part-time Job Impact on Finances

Result Description: From the table, gender ($F = 0.279$, $p = 0.598$) can't give a significant score to accept our alternative hypothesis. Therefore, the null hypothesis is partially rejected. But losing a Scholarship/Part-time Job significantly affects students' financial situation ($F = 7.280$, $p < 0.001$). So, this ensures us that alternative hypotheses can be partially accepted. But the interaction between Gender ($F = 0.279$, $p = 0.598$) and losing Scholarship/Part-time Job Impact on Finances ($F = 1.175$, $p = 0.320$) are not significant. Only the financial loss has a significant impact. Therefore, our null hypothesis is partially rejected.

Hypothesis 2

- **Null Hypothesis (H_0):** Improving financial knowledge, considering a bank loan, or their interaction does not significantly affect students' mental satisfaction about academic performance/CGPA.
- **Alternate Hypothesis (H_1):** Improving financial knowledge, considering a bank loan, or their interaction significantly affects students' mental satisfaction about academic performance/CGPA.

Source	F	Sig.
Levene's Test		
Based on Mean		<0.001
Based on Median		0.012
Between-Subjects Effects		
Importance of Improving Personal Financial Knowledge	0.856	0.491
Likelihood of Considering Bank Loan as Financial Support	2.599	0.036
Interaction (Financial Knowledge Importance * Bank Loan Consideration)	1.700	0.048

Table 4.4: ANOVA Results: Effects of Financial Knowledge and Bank Loan Consideration

Result Description: The null hypothesis is partially rejected. Considering a bank loan ($F = 2.599$, $p = 0.036$) and its interaction with financial knowledge ($F = 1.700$, $p = 0.048$) significantly affect mental satisfaction, while improving financial knowledge alone does not ($F = 0.856$, $p = 0.491$).

4.1.3 Independent Sample T-test

The independent sample t-test was employed to compare the means between gender groups, testing the following hypotheses:

Hypothesis 1

- **Null Hypothesis (H_0):** There is no significant difference in the perceived financial situation between the two gender groups.
- **Alternate Hypothesis (H_1):** There is a significant difference in the perceived financial situation between the two gender groups.

Source	N	Mean	Std. Deviation	Mean Difference	t	df	Sig. (2-tailed)	Cohen's d	95% CI (Lower-Upper)
Gender 1	310	3.50	1.010	0.228	2.113	243.429	0.036	0.221	0.015 - 0.440
Gender 0	138	3.28	1.072						

Table 4.5: T-test results comparing Gender 1 and Gender 0.

Result Description: Since the p-value is less than 0.05, there is a statistically significant difference in mental satisfaction with academic performance/CGPA between the two gender groups. The effect size (Cohen's d = 0.295) indicates a small to moderate effect size, suggesting that while the difference is statistically significant, it has a small to moderate practical significance.

Hypothesis 2

- **Null Hypothesis (H_0):** There is no significant difference in mental satisfaction with academic performance/CGPA between the two gender groups.
- **Alternate Hypothesis (H_1):** There is a significant difference in mental satisfaction with academic performance/CGPA between the two gender groups.

Source	N	Mean	Std. Deviation	Mean Difference	t	df	Sig. (2-tailed)	Cohen's d	95% CI (Lower - Upper)
Gender 1	310	2.52	1.227	0.363	2.072	445.132	0.039	0.295	0.116 - 0.611
Gender 0	138	2.16	1.240						

Table 4.6: T-test results comparing Gender 1 and Gender 0.

Result Description: Since the p-value is less than 0.05, there is a statistically significant difference in mental satisfaction with academic performance/CGPA between the two gender groups. The effect size (Cohen's d = 0.295) indicates a small to moderate effect size, suggesting that while the difference is statistically significant, it has a small to moderate practical significance.

4.2 SmartPLS Analysis

4.2.1 Testing for Convergent Validity

First, we assessed the Cronbach's alpha for each construct, and all values were above 0.7, confirming their reliability. Additionally, the composite reliability of the factors exceeded 0.7, indicating strong internal consistency [3]. To establish convergent validity, which ensures that the latent factors are accurately represented by their observed variables, the average variance extracted (AVE) should be greater than 0.5. As shown in Table 3, all indicators of AVE were above this threshold, ensuring convergent validity [1]. Which satisfies the theoretical requirement of Henseler, Ringle, & Sarstedt (2012) and reinforcing the scale's reliability and and reinforcing the scale's reliability [6]. Therefore table 2 summarizes the key indicators of each remaining item and each latent variable in the research model.

4.2.2 Testing for Discriminant Validity

Discriminant validity was tested using the Fornell-Larcker criterion and the Heterotrait-Monotrait (HTMT) ratio. According to the Fornell-Larcker criterion, the square root of the AVE for each construct should be higher than its correlations with other constructs. In this model, all constructs met this requirement. The HTMT ratio was also employed, with values below 0.85, confirming that the constructs are distinct from one another. It has been suggested that HTMT values should be compared to a threshold of 0.85. If the HTMT value is higher than this threshold, it can be concluded that the model lacks discriminant validity. Since all indicators are below 0.85 [2], the discriminant validity of this model is confirmed.

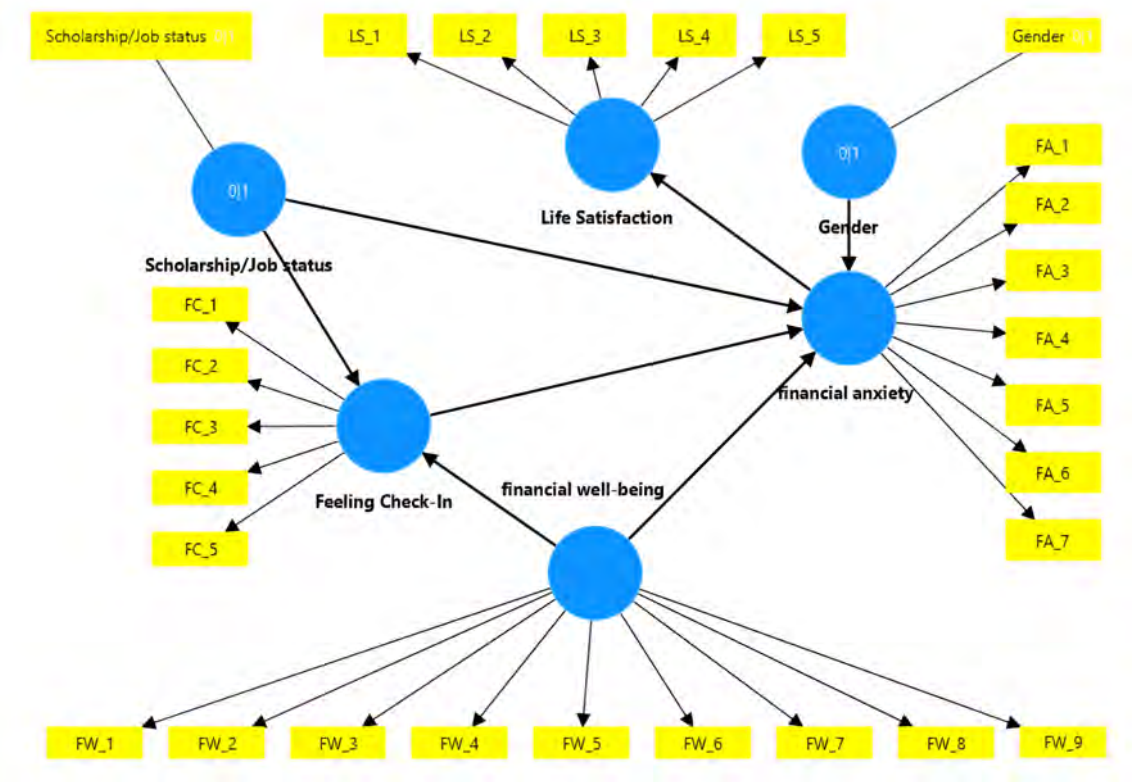


Figure 4.3: Latent Variable Measurement Model

Latent Variables	Items	Mean	SD	Loadings	Cronbach's Alpha	Rho_A	Composite Reliability	AVE
Gender	Gender	0.692	0.462	1	1	1	1	1
Feeling Check-in	FC_1	3.089	1.318	0.838	0.885	0.888	0.916	0.686
	FC_2	2.647	1.413	0.878				
	FC_3	2.763	1.385	0.860				
	FC_4	3.337	1.284	0.806				
	FC_5	3.484	1.316	0.753				
Financial Anxiety	FA_1	2.862	1.262	0.840	0.926	0.928	0.941	0.695
	FA_2	2.837	1.302	0.853				
	FA_3	3.674	1.152	0.697				
	FA_4	2.513	1.358	0.836				
	FA_5	2.830	1.290	0.865				
	FA_6	3.018	1.285	0.871				
	FA_7	2.511	1.318	0.862				
Life Satisfaction	LS_1	4.132	1.765	0.851	0.759	0.852	0.818	0.691
	LS_2	4.741	1.649	0.382				
	LS_3	4.603	1.646	0.540				
	LS_4	4.176	1.794	0.734				
	LS_5	4.509	1.674	0.870				
Financial Wellbeing	FW_1	3.174	1.221	0.718	0.694	0.774	0.745	0.628
	FW_2	2.830	1.131	0.662				
	FW_3	3.299	1.159	0.657				
	FW_4	3.141	1.102	0.292				
	FW_5	3.018	1.259	0.758				
	FW_6	3.196	1.034	0.483				
	FW_7	3.386	1.128	0.368				
	FW_8	2.650	1.203	-0.371				
	FW_9	3.266	1.251	0.635				

Table 4.7: Summary of key indicators (Table 1).

Variable	Feeling Check-In	Gender	Life Satisfaction	Scholarship/Job Status	Financial Anxiety	Financial Well-Being
Feeling Check-In						
Gender	0.303					
Life Satisfaction	0.214	0.070				
Scholarship/Job Status	0.174	0.040	0.090			
Financial Anxiety	0.450	0.049	0.366	0.211		
Financial Well-Being	0.372	0.077	0.452	0.081	0.592	

Table 4.8: Fornell–Larcker criterion (Table 2).

Correlation Matrix

The correlation matrix provides insight into the bi-variate relationships between the key constructs.

4.2.3 Summary of Correlations

- **Feeling Check-in**: Positively correlated with Financial Anxiety (0.449) and Financial Wellbeing (0.392). This suggests that individuals who check in on their emotional states regularly tend to experience less financial anxiety and report better financial well-being. The moderate correlation with Life Satisfaction (0.245) also supports the idea that emotional self-awareness can contribute to higher life satisfaction.

- **Financial Wellbeing**: Exhibits the strongest positive correlations with Financial Anxiety (0.596) and Life Satisfaction (0.532). The relationship with Financial Anxiety is notable, as individuals with better financial well-being are less likely to report financial anxiety. Similarly, financial well-being contributes positively to life satisfaction, reinforcing the notion that financial security plays a critical role in overall well-being.

- **Scholarship/Job Status**: Shows weaker correlations with other variables, particularly Financial Anxiety (0.211). However, the positive correlations with Feeling Check-in (0.175) and Financial Wellbeing (0.059) suggest that while the effect is weaker, stable financial support (scholarships or jobs) still positively impacts emotional well-being and reduces financial anxiety.

- **Gender**: Shows weak or negative correlations with most variables, supporting the rejected hypothesis regarding its impact on financial anxiety. Gender's minimal effect suggests that other factors, such as financial status or emotional regulation, may have a more pronounced influence on financial anxiety than gender alone.

- **Overall**: The correlation analysis underscores the interconnectedness of financial well-being, emotional states, and overall life satisfaction. While Gender shows weak associations, financial stability, in the form of Financial Wellbeing and Scholarship/Job Status, remains central to reducing anxiety and improving emotional health.

Chapter 5

Findings

5.1 Experimental Setup

This section outlines the experimental setup for the study, including the software installation process, registration and licensing details, and the steps involved in integrating the dataset with the tools used for analysis.

5.1.1 Software Installation

The data analysis for this study was conducted using two primary software tools: **SPSS** and **SmartPLS**.

- **SPSS** (Statistical Package for the Social Sciences): SPSS was used for conducting statistical analyses, including ANOVA and independent sample t-tests. The installation steps are as follows:
  - Download the latest version of SPSS from the IBM website.
  - Follow the installation prompts for your operating system (Windows or Mac).
  - Ensure all required libraries and dependencies are properly installed for smooth functionality.
- **SmartPLS** (Partial Least Squares Structural Equation Modeling): SmartPLS was used to perform structural equation modeling (SEM) to assess latent variables and analyze relationships between financial stress and mental health. The installation steps are:
  - Visit the official SmartPLS website and download the software.
  - Follow the installation instructions for your operating system.

5.1.2 Registration and Licensing

- **IBM SPSS License:**
  - After installing SPSS, a valid license key is required. The license was obtained through an IBM university or individual subscription.

  - Registration and licensing were completed through the IBM License Authorization Wizard by inputting the license key to activate the software.

- **SmartPLS License:**
  - SmartPLS offers both a free version with limited functionality and a full version available through subscription. The full version was used for this study.
  - After downloading, the software required registration. A license key was provided upon purchase, which was entered during the initial launch of the software to unlock all features.

5.1.3 Dataset Integration

The dataset used in this study consisted of 448 responses collected from an anonymous online survey. The survey included Likert-scale questions aimed at evaluating the relationship between financial stress, job insecurity, and mental health outcomes among undergraduate students in Bangladesh.

- **Dataset Preparation:**
  - The data was collected in CSV format from the online survey tool. Before integrating with SPSS and SmartPLS, the dataset was pre-processed to remove incomplete or invalid responses.
  - Key variables included financial stress indicators, job insecurity, mental health measures (stress and anxiety levels), and academic performance (CGPA).

- **Integration with SPSS:**
  - The cleaned dataset was imported into SPSS using the *Open Data* function. The CSV file was selected, and variables were assigned appropriate labels.
  - Data transformations were performed where necessary, such as recoding Likert scale responses into numeric values for analysis.

- **Integration with SmartPLS:**
  - The dataset was imported into SmartPLS for structural equation modeling. After importing, the variables were mapped into the software's interface, assigning observable variables to their respective latent constructs (e.g., financial stress, mental health, academic performance).
  - Data relationships were modeled using paths to represent the hypotheses being tested.

This setup ensured that both SPSS and SmartPLS were effectively utilized to analyze the dataset and test the hypotheses concerning the impact of financial stress on mental health and academic outcomes.

5.2 Results

5.2.1 SPSS Results

Category	Factors	P-Value	Accepted Hypothesis	Hypothesis
1-Way ANOVA	Financial Constraints → Mental Satisfaction with Academic Performance/CGPA	0.01	Alternative	Financial constraints affect respondents' mental satisfaction with academic performance/CGPA.
1-Way ANOVA	Loss of Part-Time Jobs/Scholarships → Students' Current Financial Situation	0.001	Alternative	Students' current financial situation differs based on loss of part-time jobs or scholarships.
2-Way ANOVA	Gender, Loss of Scholarships/Part-Time Jobs → Students' Financial Situation	0.001	Null Hypothesis (Partially Rejected)	Gender, loss of scholarship/part-time job significantly impact students' financial situation.
2-Way ANOVA	Financial Knowledge, Bank Loans → Mental Satisfaction with Academic Performance/CGPA	0.048	Null Hypothesis (Partially Rejected)	Financial knowledge, bank loans affect students' mental satisfaction with academic performance/CGPA.
Independent Sample T-Test	Current Financial Situation → Male and Female	0.036	Alternative	Perceived financial situation differs significantly between gender groups.
Independent Sample T-Test	Mental Satisfaction with Academic Performance/CGPA → Male and Female	0.039	Alternative	Mental satisfaction with academic performance/CGPA differs significantly between gender groups.

Table 5.1: SPSS Confirmatory Research Results.

5.2.2 SmartPLS Results

Factors	**Path Coefficient**	**P-Value**	**Result**	**Hypothesis**
H1: Financial Wellbeing → Feeling Check-in	0.266	0.000	Accepted	Financial well-being positively influences students' emotional well-being as measured by the "Feeling Check-in" scale.
H2: Financial Wellbeing → Financial Anxiety	0.118	0.000	Accepted	Financial well-being reduces financial anxiety among students.
H3: Financial Anxiety → Life Satisfaction	0.299	0.000	Accepted	Financial anxiety negatively impacts students' overall life satisfaction.
H4: Feeling Check-in → Financial Anxiety	0.281	0.000	Accepted	Regular emotional check-ins reduce financial anxiety.
H5: Scholarship/Job Status → Feeling Check-in	0.393	0.001	Accepted	Scholarship or job security positively influences emotional well-being, reducing financial anxiety.
H6: Scholarship/Job Status → Financial Anxiety	0.317	0.000	Accepted	Scholarship or job security negatively correlates with financial anxiety.
H7: Gender → Financial Anxiety	0.413	0.182	Rejected	Gender does not significantly affect financial anxiety.

Table 5.2: Smart PLS (Exploratory Research) Results.

Chapter 6

Discussion

This study provides a comprehensive examination of the relationship between financial stress and mental health among Bangladeshi undergraduate students. The key findings revealed major factors such as financial struggles, particularly those related to job insecurity and scholarship instability, which significantly impact students' mental well-being and academic performance. These results align with prior research, suggesting that financial stress is a critical factor in determining students' psychological health and academic success.

6.1 SPSS Discussion

The results from the one-way ANOVA indicated a significant relationship between financial constraints and mental satisfaction regarding academic performance ($p = 0.01$). Mental satisfaction with academic performance/CGPA varies by financial constraints in buying academic materials.The more it costs to buy necessary equipment and study material needs, the more students suffer. In line with previous Studies, we found that students experiencing financial stress find it challenging to navigate relationships with wealthier peers, often leading to feelings of isolation and embarrassment [18]. This is understandable, similar to studies conducted in other countries, such as the United States and the United Kingdom, Bangladeshi students face significant mental health challenges due to economic pressures. Moreover one way anova was performed in our studies, in order to find out the relations of the factors. Ultimately, given that financial stress is a critical factor in the life of a student, it is quite hard to maintain the flow of students' psychological health and academic success.

Our second finding, Students current financial situation differs based on loss of part-time jobs or scholarships. students' income loss was directly and negatively associated with both their current and future financial well-being, even after controlling for the impact of job loss [33]. Both job loss and income loss were negatively associated with young adults' well-being [4]. Similar cases are found in Bangladeshi university students also. However, this study suggests that Scholarships can significantly reduce the likelihood and intensity of part-time work, especially for girls [16]. However, in our case, there is a partially significant effect of gender, losing a scholarship, part-time job, or their interaction on students' financial situations. Therefore, a complex and robust relationship exists between students' current finan-

cial situation and their mental health whereas financial instability, compounded by the loss of income or employment opportunities, significantly impacts their psychological well-being. Subsequently, financial satisfaction greatly influences academic achievement in college students. Higher financial satisfaction is associated with improved academic performance, graduation rates, and engagement. When students feel financially secure, they can focus better on their studies [31].

The independent t-tests revealed statistically significant differences in both perceived financial situations and mental satisfaction with academic performance across gender groups ($p = 0.036$ and $p = 0.039$, respectively). Where females generally outperformed males in verbal abilities and GPA domains [29]. Recent studies show improved academic performance of females, challenging the notion that males inherently perform better in science and math subjects [36]. The results point to the need for gender-specific interventions to address the unique challenges faced by female students, particularly in the context of financial stress.

6.2 SmartPLS Discussion

Individuals with higher financial well-being tend to report better emotional states, as measured by the Feeling Check-in scale. This supports the notion that financial security contributes to overall emotional health and satisfaction [46]. Previous research has similarly demonstrated that improved financial conditions alleviate anxiety and promote emotional stability, thus supporting academic and personal success.

Higher financial well-being reduces financial anxiety, as financial control and security lower stress levels linked to financial instability [32]. Mental health is crucial for students' academic performance as it impacts their focus, motivation, and resilience against stressors. Previous research has similarly demonstrated that improved financial conditions alleviate anxiety and promote emotional stability, thus supporting academic and personal success.

Financial anxiety negatively impacts life satisfaction, with higher anxiety levels leading to decreased overall life satisfaction due to the emotional strain caused by financial stress [14]. For example, students who can effectively manage their negative emotions are less likely to let financial concerns overwhelm them, thus maintaining a stable psychological state.

Emotional regulation and stress have found that negative emotional states can exacerbate financial worries, making people more prone to financial anxiety [28]. Greater job security was significantly associated with reduced odds of experiencing serious psychological distress and anxiety among US working adults [45]. This is especially relevant for students who rely on part-time jobs to fund their studies. The findings suggest that job insecurity contributes to heightened anxiety, highlighting the importance of employment support initiatives for students.

Scholarship status significantly impacted financial anxiety among college students, with scholarships reducing financial stress and job insecurity increasing it [18]. This finding underlines the importance of scholarships in alleviating students' financial

burdens, allowing them to focus more effectively on their academic pursuits without the constant worry of financial instability.

Other studies indicated that women are more likely to report financial stress than men. Financial stress has been linked to reduced course loads or dropout and poorer academic performance. This suggests that gender-specific financial support may be necessary to address these disparities and improve educational outcomes for female students.

Chapter 7

Conclusion and Future Work

7.1 Conclusion

The study assesses the impact of financial stress on Bangladeshi students' mental health, by analyzing data through SPSS and SmartPLS. The analysis show a clear connection between financial difficulties— such as job insecurity, scholarship instability, and general financial challenges—and higher levels of stress and anxiety. Student's academic performance and their life satisfaction is also affected by these financial pressures.

The result suggests that students who face financial issues, such as difficulty paying tuition fees or purchasing study materials, are more likely to perform poorly in their academics. Improving financial awareness and providing necessary support services can lessen the negative effects of financial stress on students' mental health and academic performance.

Universities should really focus more on giving better financial and mental health support so students can manage these challenges better. If they do, it could help them be more successful in school and improve their well-being too.

In summary, the research shows that universities and policymakers in Bangladesh should really try to do more about the financial stress students deal with. If they can offer better support systems, it could probably help improve students' mental health and also how good they do in school. Future research could maybe look more into this by using machine learning to predict how financial stress impacts students, and also maybe include people from other education levels too.

7.2 Future Work

The study explored the relationship between Banlgadeshi undergraduate student's financial stress and their mental health, using powerful tools like SPSS and SmartPLS. It focused on statistical analysis to find correlations different factors and to test the validity of a set of hypotheses. For hypothesis testing, this study used ANOVA, Independent Sample T-tests, and SmartPLS hypothesis tests. While this study focused on statistical analyses, introducing machine learning models to predict students' mental health score or their life satisfaction score, could enhance predictive

capabilities regarding financial stress and mental health outcomes. By increasing the sample size and including additional pertinent scales in the questionnaire, there is be a scope for more in-depth analysis. Future studies may also look at school-going and college-going students, who also deal with financial stress and mental stress related to their scholastic pursuits. All these additions will provide a more thorough knowledge of the financial factors that students encounter in various circumstances.

Moreover, comprehensive, contextual data on students' experiences with financial stress might be gathered using qualitative methods like focus groups or in-depth interviews. This would complement the quantitative findings and help identify underlying factors contributing to mental health challenges.

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Appendix

Financial Anxiety

1. How much difficulty do you experience in sleeping due to concerns about your financial situation? (FA_1)
2. I am irritable because of my financial situation. (FA_2)
3. I feel anxious about my financial situation. (FA_3)
4. I feel fatigued or sick because I worry about my financial situation. (FA_4)
5. I have difficulty concentrating on my education/work because of my financial situation. (FA_5)
6. I have difficulty controlling my worry about my financial situation. (FA_6)
7. My muscles feel tense because of worries about my financial situation. (FA_7)

Life Satisfaction

1. I am satisfied with my life. (LS_1)
2. If I could live my life over, I would change almost nothing. (LS_2)
3. In most ways, my life is close to my ideal. (LS_3)
4. So far, I have gotten the important things I want in life. (LS_4)
5. The conditions of my life are excellent. (LS_5)
6. Financially, I feel like I will never have the things I want in life. (LS_X)

Financial Well-Being

1. Giving a gift on an occasion would put a strain on my finances for the month. (FW_1)
2. I am barely making ends meet. (FW_2)
3. I am concerned that the money I have or will have won't last. (FW_3)
4. I am securing my financial future. (FW_4)

5. I am struggling financially. (FW_5)
6. I can enjoy life because of the way I am managing my money. (FW_6)
7. I could handle a major unexpected expense. (FW_7)
8. I have money left over at the end of the month. (FW_8)
9. My finances control my life. (FW_9)

Feeling Check-in

1. Nervous (FC_1)
2. Scared (FC_2)
3. Afraid (FC_3)
4. Distressed (FC_4)
5. Upset (FC_5)

Mandatory Confirmatory Features

The following are mandatory confirmatory features in the survey:

1. Academic Performance/CGPA Satisfaction
2. Gender
3. Current Financial Situation Description
4. Frequency of Financial Challenges Impacting Timely Tuition Fee Payments
5. Influence of Financial Constraints on Study Material Purchases
6. Budget Management Skill Rating
7. Impact of Losing Scholarship/Part-Time Job on Finances
8. Confidence in Receiving Social Networking Support During Financial Crisis
9. Likelihood of Considering Bank Loan for Financial Support
10. Importance of Improving Personal Financial Knowledge and Academic Skills for Financial Stability