

This is to certify that the following six under-graduate students of the Department of Economics have completed the project work entitled “The Key Determinants of Happiness Index: A Study on University Students in India” under my direct supervision. Their submission may be accepted for the paper “Project (UG/Eco/DSE 6.2/1)” as a part of the Bachelor of Arts course in Economics (6th Semester), Jadavpur University. To the best of my knowledge, this work is original and has not been submitted for the award of any other degree/diploma.

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The Key Determinants of Happiness Index: A Study on University Students in India

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Abstract

Happiness is a much-coveted goal that positively impacts all aspects of life— from improving physical and mental health to greater productivity. Therefore, the pursuit of happiness is one that is relevant at both micro and macro levels. In the exponentially expanding nexus of today's world, the happiness of young adults is subject to a variety of constraints, different from those of the previous generations. This research project identifies the key influential aspects which determine the state of happiness of university students in Kolkata. Students' social lives—familial relations and friendships, and academic experience and satisfaction, are seen to be the most important influencers of happiness. Further, taking into account pre-determined factors like gender, socio-economic background and area of origin, the project explores how happiness or its contributing factors vary for the different categories. Considering the fact that Digital Media is a significant part of life today, especially for young adults, it also establishes a relation between happiness derived from digital media activities and the number of hours spent on various platforms, and attempts to quantify the adverse impact of the latter.

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SECTION

I

Introduction

1.1 A Brief Introduction to Our Study

Happiness has always been an enigmatic concept— an elusive and abstruse goal. The pursuit of happiness, however, is one that has always existed both at the individual level and the global level. Over the generations, Psychologists and early Economists have attempted to understand the different sources of personal happiness. Aristotle, Confucius, Plato, Bentham, Mill and Smith, are some who incorporated the pursuit of happiness in their work.

In general, Happiness is known to be the overall subjective experience of positive emotions experienced. It is this very subjective nature of happiness that makes it difficult to understand and therefore achieve. Positive Psychology approaches happiness as a global assessment of life, recollection and aggregation of multiple emotional experiences and reactions (Chu Kim-Prieto and Ed Diener, 2005). Economists, on the other hand, have always been concerned with human welfare inferred from preferences. However, such an approach often results in missing out key domains, for example, situations where the way individuals behave may not represent their real underlying preferences.

While there are many influential factors, past and ongoing research studies have revisited the concept of happiness, bringing forth Happiness Economics as a field (Easterlin, 1974). Happiness Economics seeks to identify the economic determinants of well-being, through questions on present happiness, satisfaction from life, quality of life etc. Therefore, combining Economics with other fields like Sociology, Health and Psychology, it looks at maximising such happiness-related measures instead of the usual wealth or income measures.

At the global level, different States have been realising the importance of Happiness. We see this from Bhutan's philosophy of 'Gross National Happiness' that guides the Government, to countries like Finland, Denmark and Norway which set an example by continuing to be reported as the happiest in the world (World Happiness Report, 2020). Given that policies are designed with the aim of increasing welfare, the idea of surveys on happiness acting as a guide for policy-making, has been gaining traction. Further

developments in research, with the aim of making Happiness Economics a more holistic field, could someday make it replace the quintessential 'Gross National Product'-based measurement of performance.

Since the Enlightenment of the 18th century, the pursuit of happiness has spread to all aspects of behaviour— from family life and work to political ideologies and religion. Ironically, it is this need for happiness that often becomes a source of unhappiness for individuals. In today's day and age, young people across the globe have a very different set of constraints with respect to happiness, than previous generations. The growth in technology and opportunities has been accompanied by growth in competition and inequality. This inequality is seen in differences in access to resources and opportunities, based on factors ranging from income and wealth to gender and geographic divide. For a country like India, the youth population— mostly college and university students— form an essential part of the population and the future of the country. Given the academic pressure prevalent in our country, accompanied by the encouragement of an unhealthy competitive environment, it is not surprising to note that young people report lower happiness levels than old people (Brooks, 2013).

In order to cultivate a healthy environment which incorporates students' sense of subjective well-being, it is essential to identify the facets of life which influences happiness. These factors, of course, vary between individuals, and especially between countries with distinctly differing cultures. Since very few surveys have been conducted to assess the happiness levels of students in India, our project aims to understand the key sources of said happiness for Indian university-going students. Through our findings, we hope to gather a better sense of what happiness means for the youth, keeping in mind the fact that happiness is the most coveted goal not just for individuals but the global population at large.

1.2 Literature Review

Conventional Economics does not have much to contribute to the study of happiness. Economics of Happiness or Happiness Economics is a quantitative and theoretical branch of Economics that studies happiness, well-being, life satisfaction and related concepts. In Happiness Economics, the Classical Economic approach is compounded with that of Psychology, Sociology and Health. Whereas in Classical Economics, utility is maximized, Happiness Economics tries to maximize happiness, which is a more expansive notion of utility including interdependent utility function, procedural utility, and the interaction between rational and non-rational influences in determining economic behaviour.

Throughout history, philosophers and political thinkers like Plato, Aristotle and Confucius have written about the importance of happiness in society. In recent centuries, the study of happiness was exclusively a part of the subject of Psychology, and as a result, for a long time, the economic factors have not been considered in determining happiness.

Psychologists have used the concept of subjective well-being, which is one's reported degree of satisfaction with certain aspects of life or the entirety of it. It was during the late 1990s that economists started contributing to the determination and computation of happiness. For a long time, psychologists had tried several methods to find the source of human happiness but their study remained incomplete until Economics was included in the study. Easterlin (1974) can be considered as one of the first persons to incorporate Economics into the study of happiness. It was followed by the studies of Robert Frank (1997), Yew-Kwang (1997) and Oswald (1997), that analysed with great detail the measurement and factors of well-being of people.

The most common method to collect information, that has been used by people studying happiness, is surveys. This project also uses the same method, specifically surveys with multi-item questions. While multi-item questions may lose brevity, they are much more reliable and have more validity in comparison to the single item scaled surveys. Surveys have become a tool of economic analysis quite recently, as there has been significant doubt regarding the subjective well-being of people being prone to non-sampling bias. There can

be various situational factors affecting the response of people in surveys (Bertrand and Mullainathan, 2001).

Since the bounded rationality concept was introduced, people started getting access to limited or local information which made them base their responses following certain heuristic rules instead of calculating optimizations. Simon (1978), Conlisk (1996) and Kahneman (2003) suggested that this may be the reason why preferences cannot be recovered through observation of human behaviour solely, in spite of observing them directly. Frey and Stutzer (2002) concluded that the objective approach has limitations in influencing and even understanding human well-being. These studies make it necessary to study subjective approaches to be able to directly get hold of well-being. Blanchflower and Oswald (2004) claimed that there is a well-being function:

$$r = h(u(y, z, t) + e) \quad (1)$$

where r is a self-reported happiness level, u is the person's utility— which is a function of their real income y , demographic status z and time trend t , and h is a non-differentiable function that relates actual well-being to reported well-being. But the problem with econometric models is that correlation does not always imply causation. That is why, even if a model shows positive correlation between income and happiness, it is not conclusive of the fact that income causes happiness, as it may be the case that happiness causes higher income. This is why, self-rated well-being data cannot be fully trusted. But happiness data has been found to correlate substantially with other subjective data like happiness assessed by friends and family (Diener, 1984; Pavot and Diener, 1993; Sandvik et al., 1993), information from spouses (Costa and MacCrae, 1988), information from clinical experts (Goldings, 1954) and memories of good versus bad events in one's life (Balatsky and Diener, 1993). Also, there were psychological studies which found well-being to be related to physical conditions like responses of stress measured by heart rate and blood pressure (Shedler et al., 1993), age (Palmore, 1969) and risk of getting coronary heart disease (Sales and House, 1971).

The well-being of a person also depends on cultural factors. If the cultural differences of the populations are not too large, then reported well-being can be considered to be roughly the same as the real well-being, according to Diener and Suh (2000) and Hollander (2001).

Argyle (1989) and Diener and Sun (2000) found certain correlations which are stable across populations and over time.

Happiness data contains experienced utility-welfare effect of choice, based on the person's expected utility and past experiences. They can be used to represent the person's expectation of the future (Kahneman and Thaler, 1991; Kahneman et al., 1997; Harsanyi, 1997; Rabin, 1998; Easterlin, 2001).

Easterlin (1974) found that in the countries where happiness and income are positively correlated, the people from the highest income group were more happy on an average than those from the lowest income group. However, he found that the difference in happiness between rich and poor that could be concluded from within the country data was not consistent with international data. This made him conclude that economic growth engenders ever-growing wants leading it ever onward, instead of raising a society to an ultimate state of plenty. This leads to the happiness paradox, which claims that although at a certain time, happiness and income are correlated, over time, happiness does not increase proportionally as the country's income increases. This was confirmed by Easterlin (1995) and Di Tella (et al., 2003).

Prospect of upward mobility (POUM) has been seen to increase the happiness levels of those in the lower class, but for people in the upper class, the effect seems to be negative (Jae-Wan Lee and Dae Hyun Baek, 2016). The possibility of mobility may result in positive psychological effect of making people happier (Cheng and Furnham, 2003).

Oswald (1997) claims that reported happiness is high among individuals who are married, have high income, who are women, white, well-educated, self-employed, retired, and those looking after homes. His empirical claim was that happiness is a U-shaped curve minimizing around the age of thirty. These results hold in different countries like Switzerland (Frey and Stutzer, 2000), Sweden (Gerdtham and Johannesson, 2001) and Germany (Fritjers et al., 2004). Happiness has also been linked with higher generosity (Soyoung Q. Park, 2017).

There have been other uses of subjective well-being data in Economics works, like testing the non-pecuniary effects of unemployment (Clark and Oswald, 1994; Darity and Goldsmith, 1996; Theodossiou, 1998; Winkelmann and Winkelmann, 1998), studying social norms in the labour market and past unemployment (Clark et al., 2001, Clark, 2003; Powdthavee, 2007),

understanding people's preference between unemployment and inflation (Di Tella et al., 2001), and studying the relationship between economic growth and happiness (Kenny, 1999). These kinds of findings have many uses, like Frank (1999) and Layard (2006) suggesting the collection of corrective taxes. This was done after finding that relative status matters for the well-being of individuals.

On January 12, 2013, Hindustan Times published a happiness survey in India, which was conducted by the market research agency MaRS, among 5400 people across sixteen Indian cities. This report showed that instead of metropolises, smaller cities show higher levels of happiness in terms of health, monetary possession and personal life. It also showed that the age group of 60-plus is the unhappiest in terms of money and health, and housewives are happier with their money compared to working women. Graham and Chattopadhyay's 2013 study showed that across countries, women have higher levels of well-being than men, with the exception of a few low-income countries, especially in sub-Saharan Africa where the opposite was true.

Wilks (1986) showed the relative importance of parents and friends in adolescent decision-making and concluded that late teens and young adults value family more than their friends.

The recent decades have seen a dramatic change in the way people socialize, there has been a noticeable shift from face-to-face "offline" interactions to online socialization. It has also been found that adolescents and young adults who spend more time on digital media are lower in well-being (e.g., Booker et al., 2015; Lin et al., 2016; Twenge & Campbell, 2018). Girls spending five or more hours a day on social media are three times more likely to be depressed than non-users (Kelly et al., 2019), and heavy internet users (vs. light users) are twice as likely to be unhappy (Twenge et al., 2018). In terms of the direction of causation, several studies following the same individuals found that higher digital media use predicts lower well-being later (Allen & Vella, 2018; Booker et al., 2018; Kim, 2017; Kross et al., 2013; Schmiedeberg & Schroder, 2017; Shakya & Christakis, 2017).

A measure for happiness and well-being, which represents all the dimensions of an individual's happiness, is essential for policy makers across the world and it is up to the economists to come up with an accurate measure of the same.

1.3 Objectives of the Study

Through our dissertation, we try to answer a few questions regarding the factors of life that impact the happiness of university students.

Our aim has been to answer the following questions:

- How do different aspects of a student's life— social circles and interpersonal relations, academic satisfaction and performance, and digital media consumption— affect their happiness?
- How do these facets of life impact happiness individually, and when taken in conjunction?
- What role do predetermined factors like socio-economic background, gender and one's area of origin, play in determining this happiness?
- Given that we live and thrive in the Digital Age, how does the time spent on different digital media platforms, impact our satisfaction derived from the same?

We hope to answer the above-mentioned questions using various statistical and econometric tools of analysis.

SECTION

II

Methodology

2.1 Survey Design

This project seeks to find a college/university student's (aged 18 to 24) Happiness Index, taking into consideration their social life involving family and friendships, academic performance and experience, and digital media consumption habits. Further, we consider pre-determined factors like gender, socio-economic classification (SEC), permanent and current residence, and course being pursued, to check if they have significant impact on happiness. We use the data to understand how happy students are and how happy the different aspects of their lives makes them. To get a better understanding of happiness across categories, we undertake a comparative study of it for the different genders and socio-economic classes. Additionally, we aim to establish a relation between satisfaction derived from digital media activities and the number of hours spent on different platforms. For this, we make an assumption that a higher degree of addiction to digital media lowers the respondent's happiness derived.

One of the primary requirements to achieve our goal was the collection of data on the happiness and lives of students. This required a primary sample survey. We have followed Convenience Sampling technique for this project. It is a non-probability sampling technique wherein subjects are selected because of their convenient accessibility and proximity to the researcher.

We have conducted a pilot survey as well, with a sample size of 25 students, in November 2019. It was conducted to check whether the questions were properly understood and to identify relevant influential factors from the responses. Information was collected through personal interviews with the respondents. The pilot survey helped us realise the need to alter a few questions for greater accuracy.

The questionnaire comprised different sections like general information such as gender, qualification of chief earner at home and number of gadgets owned. We used the data to determine the socio-economic classification of the respondent. Other questions were used for the evaluation of the respondent's Satisfaction from Social life, Satisfaction from Academic life and Satisfaction from Digital Media Activities. A copy of the questionnaire is attached in Section 2.4.

Online surveys were tried out and found to be more effective than the personal interview method. Additionally, response rates improved and the method proved to be less time-consuming than the conventional distribution of questionnaire.

2.2 Collection of Data

As mentioned earlier, we have followed the convenience sampling method. The sample is based on respondents from different genders, socio-economic classes, geographical backgrounds and varying fields of study. For collecting the sample data and requisite information, we have followed the Questionnaire Method. Our overall sample size is of 350 observations. The final survey was carried out in the period December-January 2020.

We have collected data from students studying in colleges/universities located in Kolkata and Salt Lake. The respondents were pursuing various courses such as:

- Arts
- Sciences
- Commerce
- Engineering
- Medical Science
- Pharmacy
- Journalism and Mass Communication
- Law
- Fashion Technology

Some of the institutions from which students responded to our survey are listed below:

- Scottish Church College
- Bethune College
- Asutosh College
- St. Xavier's College

- Presidency University
- Heritage Institute of Technology
- Techno India University
- Gurudas College
- Neel Ratan Sarkar Medical College
- Radhagobind Kar Medical College (RG Kar Medical College)
- Calcutta National Medical College
- RCC Institute of Information Technology
- Meghnad Saha Institute Of Technology
- Institute of Engineering and Management
- Maulana Azad College
- St. Paul's Cathedral Mission College
- Indian Statistical Institute, Kolkata
- St. Xavier's University
- The WB National University of Juridical Sciences
- National Institute of Fashion Technology, Kolkata
- Loreto College
- NSHM Knowledge Campus, Kolkata
- Gokhale Memorial Girls' College
- Heramba Chandra College
- Shri Shikshayatan College

Students from several other institutions responded but we are unable to include all of them. We have collected multiple responses from the institutes mentioned above.

2.3 Questionnaire Design

The questionnaire comprised of five parts:

A. General Information

In this section, we asked for the respondent's age, gender and permanent area of residence. Additionally, information on the qualification of chief earner at home and the number of electronics goods owned, was obtained. From these two questions, we determined the respondent's socio-economic classification (SEC), the standard table is attached in Appendix(A).

We have compared Happiness Index between the different SEC groups to understand if it is significantly impacted by socio-economic class. Further, Happiness Index has been compared across the genders and area of permanent residence as well.

The subsequent sections mostly consist of statements to which a student could respond by choosing any one of the answers (Likert Scale): Strongly Disagree / Disagree/ Neutral/ Agree/Strongly Agree, and accordingly we assigned values 0,1,2,3,4 to them in terms of their impact on Happiness. Some of the questions have negative connotations where higher the input, lower the addition to happiness is (marked by *).

B. Happiness Total

This section aimed at determining the level of respondent's **Happiness Index**. It comprised of statements regarding perceived emotional and physical support, levels of anxiety and worry. Data obtained gave us an overview of the respondent's general subjective well-being.

C. Social Life

This section aimed at determining the level of student's Satisfaction from their **Social Life**. There are two different parts in this section— regarding family and friends. With respect to

their family life, statements pertained to their satisfaction with living conditions and judged their relationships with family members. To assess satisfaction from friendships, statements related to interactions, quality of friendships, and support system perceived. Romantic relationships and their impacts have also been taken into consideration.

D. Academic Life

This section aimed at determining the respondent's level of satisfaction from their **Academic Life**. Statements pertained to their choice of course, performance, experience and satisfaction with future opportunities.

E. Digital Media Activities

This section consisted of questions and statements regarding the respondent's **Digital Media Activities**. Questions pertained to their usage of different gadgets, hours spent on different platforms and other usage habits. The following brackets were provided for the total number of hours spent on digital media activities:

- a. Less than 3 hours
- b. 3-6 hours
- c. 6-9 hours
- d. 9-11 hours
- e. 12 hours or above.

Further, statements were given to assess (according to the previously used Likert Scale) the respondent's degree of addiction to different applications and how their usage makes them feel.

2.4 Questionnaire

A Survey on the Happiness Index of University Students

Section A: General information

1. Age: _____
2. Gender (Female/ Male): _____
3. Where are you from? (Rural area/ Urban area/ Metropolitan area): _____
4. Choose the items you have at home. (multiple options can be selected):
 - a. Electricity Connection
 - b. Ceiling Fan
 - c. LPG Stove
 - d. Two-Wheeler (motorcycle, scooter, scooterette , moped)
 - e. Colour TV
 - f. Refrigerator
 - g. Washing Machine
 - h. Personal Computer/ Laptop
 - i. Car/ Jeep/ Van
 - j. Air Conditioner
5. Qualification of chief earner at home:
 - a. Illiterate
 - b. Literate but no formal schooling/ School- up to 4 years
 - c. School- 5 to 9 years
 - d. SSC/ HSC
 - e. Some College (including a Diploma) but not Graduate
 - f. Graduate/ Post Graduate- General
 - g. Graduate/ Post Graduate – Professional

Section B: Happiness Total

Strongly Disagree/Disagree/Neutral/Agree/Strongly Agree with the following statements:

1. My family usually provides emotional support and motivation.
2. My family members and I have aligned core beliefs.
3. I trust my friends to provide emotional support.
4. Academic life is very stressful and adversely impacts my mental and/or physical health. *
5. My social life causes anxiety and stress (for example: feeling humiliated, excluded, ragging and forms of peer pressure etc.) *
6. The next phase of my life is still uncertain and a cause of great worry. *
7. Browsing social media apps often makes me feel worse than before. *

Section C: Social Life

C.1. Satisfaction from Family Life

Strongly Disagree/Disagree/Neutral/Agree/Strongly Agree with the following statements:

1. I am happy with my living conditions/ arrangements.
2. I often go for outings, share meals with and spend quality time with family members.
3. My family is usually physically present to provide support, if needed.
4. My parents are usually busier than I am, hence we do not spend as much time together as I would like. *
5. I prefer to keep to myself when I am at home. *
6. I receive a sufficient monthly allowance for my expenses and leisure.

C.2. Satisfaction from Friendships

7. How many close friends do you have? (answer in the range of 1 to 10, where 10 indicates 10 or above): _____

Strongly Disagree/Disagree/Neutral/Agree/Strongly Agree with the following statements:

8. My romantic needs are satisfied.
9. My sexual needs are satisfied.
10. My family members approve of my relationship.
11. I envision a long-term future with my current partner.
12. I have urges to cheat on my partner. *
13. My friends and I interact very frequently.
14. My friends and I support each other in our endeavours.

C.3. Miscellaneous

15. During the academic session, I reside with my family. (Yes/ No): _____
16. Are you in a relationship? (Yes/ No/ it's complicated): _____
17. I am closer to my friend(s) than my parents.
18. I am closer to my friend(s) than my romantic partner.

Section D: Satisfaction from Academic Life

1. What kind of course are you pursuing? (Arts/ Commerce/ Science/ Engineering/ Medical Science/ Other, specify): _____

Strongly Disagree/Disagree/Neutral/Agree/Strongly Agree with the following statements:

2. I chose my discipline of my own volition.
3. I am satisfied with my academic experience in college.
4. I am satisfied with my academic performance.
5. I take initiative to go above and beyond a set syllabus.
6. I often feel pressurised by my family/ friends' expectations. *
7. I am satisfied with the future prospects of my chosen field.
8. Given an opportunity, I would like to change my field in the future. *

Section E: Digital Media Activities

E.1. Satisfaction from Digital Media Activities

1. How many hours a day do you spend (in total) on your mobile/ laptop for digital media activities?
 - a. Less than 3 hours
 - b. 3-6 hours
 - c. 6-8 hours
 - d. 9-11 hours
 - e. 12 hours or above

Strongly Disagree/Disagree/Neutral/Agree/Strongly Agree with the following statements:

2. Browsing some app or the other has become an instinct. *
3. I find myself using less of my phone when in presence of pleasant company, for example, with family and friends.
4. My friends are addicted to social media apps and that encourages me to use more of them too. *
5. I cannot be very real (like myself) online. *

E.2. Miscellaneous:

6. Which gadgets do you own? (Can select multiple)
 - a. Mobile
 - b. Laptop/ PC
 - c. Tablet
 - d. Portable music player (MP3 players etc.)
 - e. Television
7. How many hours a day do you spend on the following digital activities?
 - a. Gaming: ____
 - b. Social Media: ____

- c. Online Shopping: _____
- d. Reading: _____
- e. Videos/ Movies: _____
- f. Ordering food: _____
- g. Message Boards: _____
- h. Dating Applications: _____
- i. Photograph Editing platforms: _____
- j. Streaming Music: _____

2.5 Framework for Analysis

2.5.1 Indexation:

In Section 2.4, the responses received from the questions in each of Sections B, C.1, C.2, D and E.1 of the questionnaire are assigned values 4, 3, 2, 1 and 0 for 'Strongly Agree', 'Agree', 'Neutral', 'Disagree' and 'Strongly Disagree', respectively. Statements with negative connotations (marked with *) have been assigned values 0, 1, 2, 3 and 4 for 'Strongly Agree', 'Agree', 'Neutral', 'Disagree' and 'Strongly Disagree', respectively.

In Section B, the values obtained from the responses are summed to form the Happiness Total and that is used to calculate the **Happiness Index**. The range of Happiness Total is 0-28, which when indexed, gives us the Happiness Index, with a range of 0-1.

In Sections C.1 and C.2, the values obtained from the questions based on family life and social circles and relations, were used to calculate sub-section totals based on **Satisfaction from Family life** and **Satisfaction from Friendships**. We used these sub-section totals to calculate a section total based on **Satisfaction from Social Life**. The weights assigned to Family Life and Friends are 0.6 and 0.4 respectively, as seen in Wilks, 1986.

$$Social = 0.6(Family Life) + 0.4(Friendships) \quad (2)$$

Where *Social* is the section total Satisfaction from Social Life, *Family Life* is the sub-section total Satisfaction from Family Life and *Friends* is the sub-section total Satisfaction from Friendships.

In Section D, the values obtained from the responses are simply summed to generate the Section Total, in this case, the **Satisfaction from Academic Life**.

In Section E.1, the values obtained from the questions based on a student's digital media activities are summed up to form their **Satisfaction from Digital Media Activities**.

2.5.2 Framework for Statistical Analysis

In Section 4.1, we have calculated pair-wise correlation coefficients between Happiness Index, Satisfaction from Social Life, Satisfaction from Academic Life and Satisfaction from Digital Media Activities. These have been calculated for the whole sample, as well as separately for the categories of Gender, Socio-economic Classification and Course being pursued. In terms of course, we consider if the student pursues a Professional course (for example: Engineering, Medical Science, Pharmacy, Law etc.) or a Non-professional course (for example: Arts disciplines, Pure Sciences, Commerce etc.)

Section 4.2 comprises hypotheses testing based on the difference in mean level of Happiness Index across the categories of Gender, Socio-economic Classification, Area of Permanent Residence, Course being pursued and Current Residence Status.

2.5.3 Framework for Regression Analysis

The Models

A. Determining Influential Factors of Happiness Index:

We assume a linear, stochastic regression model:

$$HI_i = \beta_0 + \beta_1 LivingCondition_i + \beta_2 Allowance_i + \beta_3 Interaction_i + \beta_4 AcadPressure_i + \beta_5 Browsing_i + \mu_i \quad (3)$$

Where β_0 is the intercept, $\beta_1, \beta_2, \beta_3, \beta_4$ and β_5 are the slope coefficients for the independent variables *LivingCondition*, *Allowance*, *Interaction*, *AcadPressure* and *Browsing* respectively; μ_i is the error term, for the i^{th} unit.

LivingCondition: Level of contentment with one's living conditions.

Allowance: Satisfaction with personal disposable monetary allowance.

Interaction: Level of interaction with one's friends.

AcadPressure: A measurement of the lack of pressure by friends and family to achieve academic goals

Browsing: A measurement of lack of instinct to browse apps.

B. Key Determinants of Happiness Index:

We assume a linear, stochastic regression model:

$$HI_i = \beta_0 + \beta_1 Social_i + \beta_2 Academics_i + \beta_3 Digital_i + \beta_4 Gender_i + \beta_5 SEC_i + \beta_6 AreaOrigin_i + u_i \quad (4)$$

Where β_0 is the intercept, $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$ and β_6 are the slope coefficients for the independent variables *Social, Academics, Digital, Gender, SEC* and *AreaOrigin* respectively; u_i is the error term, for the i^{th} unit.

Social: Satisfaction from Social Life

Academics: Satisfaction from Academic Life

Digital : Satisfaction from Digital Media Activities

$Gender_i = 0$ if i^{th} unit is Male

$= 1$ if i^{th} unit is Female

$SEC_i = 0$ if i^{th} unit is from socio-economic classification category C or D

$= 1$ if i^{th} unit is from socio-economic classification category B

$= 2$ if i^{th} unit is from socio-economic classification category A

$AreaOrigin_i = 0$ if i^{th} unit is from Rural area

$= 1$ if i^{th} unit is from Urban area

$= 2$ if i^{th} unit is from Metropolitan area

Then we take the linear regression without Gender:

$$HI_i = \beta_0 + \beta_1 Social_i + \beta_2 Academics_i + \beta_3 Digital_i + \beta_4 SEC_i + \beta_5 AreaOrigin_i + u_i \quad (5)$$

Where β_0 is the intercept, $\beta_1, \beta_2, \beta_3, \beta_4$ and β_5 are the slope coefficients for the independent variables *Social, Academics, Digital, SEC* and *AreaOrigin* respectively; u_i is the error term, for the i^{th} unit.

Then we take the linear regression without SEC:

$$HI_i = \beta_0 + \beta_1 Social_i + \beta_2 Academics_i + \beta_3 Digital_i + \beta_4 Gender_i + \beta_5 AreaOrigin_i + u_i \quad (6)$$

Where β_0 is the intercept, $\beta_1, \beta_2, \beta_3, \beta_4$ and β_5 are the slope coefficients for the independent variables *Social*, *Academics*, *Digital*, *Gender* and *AreaOrigin* respectively; u_i is the error term, for the i^{th} unit.

C. Relative Importance of Key Determinants of Happiness Index

The multiplicative model is as follows:

$$\ln(HI_i) = \beta_0 + \beta_1 \ln(FamilyLife_i) + \beta_2 \ln(Friendships_i) + \beta_3 \ln(Academics_i) + \beta_4 \ln(Digital_i) + u_i \quad (7)$$

Where β_0 is the intercept, $\beta_1, \beta_2, \beta_3$ and β_4 show the responsiveness of *HI* to the independent variables *FamilyLife*, *Friendships*, *Academics* and *Digital* respectively; u_i is the error term, for the i^{th} unit.

FamilyLife: Satisfaction from Family Life

Friendships: Satisfaction from Friendships

Academics: Satisfaction from Academic Life

Digital : Satisfaction from Digital Media Activities

D. Influence of Interaction Terms on Happiness Index

The linear, stochastic regression model is as follows:

$$HI_i = \beta_0 + \beta_1 FamilyComfort_i + \beta_2 QualityFriends_i + \beta_3 PerformanceSecurity_i + \beta_4 DigitalComfort_i + \mu_i \quad (8)$$

Where β_0 is the intercept, $\beta_1, \beta_2, \beta_3, \beta_4$ are the slope coefficients for the independent variables *FamilyComfort*, *QualityFriends*, *PerformanceSecurity* and *DigitalComfort* respectively; u_i is the error term, for the i^{th} unit.

List of interaction variables and their meaning:

FamilyComfort: The individual is happy with their living conditions AND their family is physically present to support them.

QualityFriends: The individual has a high number of friends AND friends who support each other in their endeavours. This can be interpreted as number of quality friends.

PerformanceSecurity: The individual does not feel pressurized by family/friends to meet their expectations related to academic performance AND is satisfied with their academic performance.

DigitalComfort: The individual does not feel that browsing social media has become an instinct AND feels they can be very real (like their offline self) online.

E. Impact of the Hours Spent on Digital Platforms on Happiness Derived from Digital Media:

We propose the following linear, stochastic regression model:

$$DigitalHappiness_i = \beta_0 + \beta_1 Gaming_i + \beta_2 SocialMedia_i + \beta_3 OnlineShopping_i + \beta_4 Videos_i + u_i \quad (9)$$

Where β_0 is the intercept, $\beta_1, \beta_2, \beta_3$ and β_4 are the slope coefficients for the independent variables *Gaming*, *SocialMedia*, *OnlineShopping* and *Videos* respectively; u_i is the error term, for the i^{th} unit. The independent variables denote the number of hours spent on the respective activities.

Basic Assumptions of the Classical Linear Regression Model:

- The regression model is linear in the parameters.
- There is no perfect linear relationship among the independent variables. This is the assumption of no multicollinearity.
- $u_i \sim N(0, \sigma^2) \forall i$
The error term is identically normally distributed with mean 0 and standard deviation σ^2 . This ensures homoscedasticity.
- $Cov(u_i, u_j) = 0 \quad \forall i \neq j$
This implies there are no autocorrelation errors.
- $Cov(x_i, u_i) = 0 \quad \forall i$
where x_i is an independent variable.

All our regression models follow the above-mentioned basic assumptions of the Classical Linear Regression Model.

SECTION

III

**Field Survey
Observations**

3.1 Overview of the Sample

A total of 350 students were surveyed for the purpose of this project. We have tried to ensure that there is adequate representation of genders as well as all the 4 SEC classes in our sample. The following tables and diagrams provide a brief outlook of the sample. All labels are percentages of whole sample, unless otherwise specified.

Figure 1 : Distribution of Sample Units across Genders

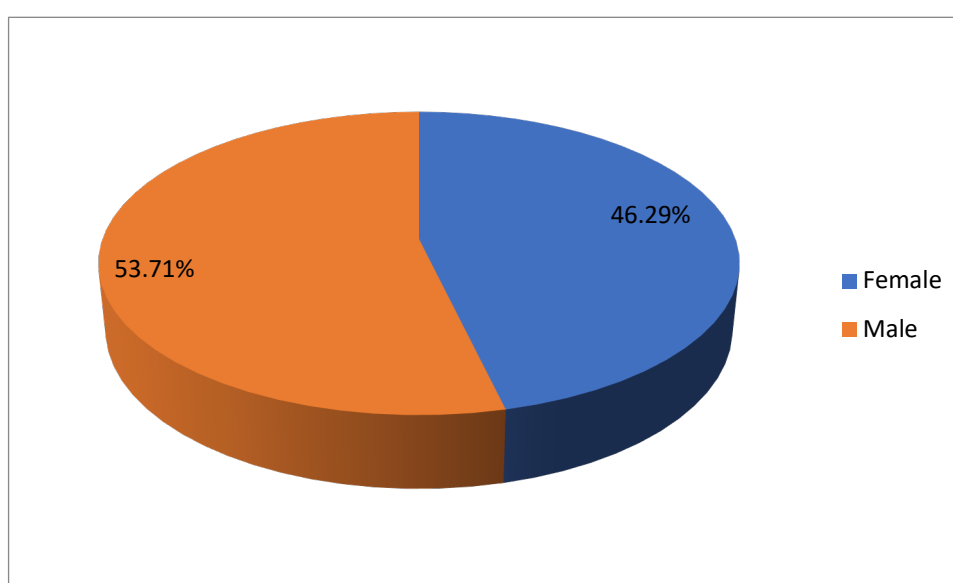


Table 1 :

Gender	Frequency	Percentage	Cumulative Percentage
Female	162	46.29	46.29
Male	188	53.71	100
Total	350	100	

The respondents to our survey comprised 188 males and 162 females.

Figure 2 : Distribution of Sample Units across SEC categories

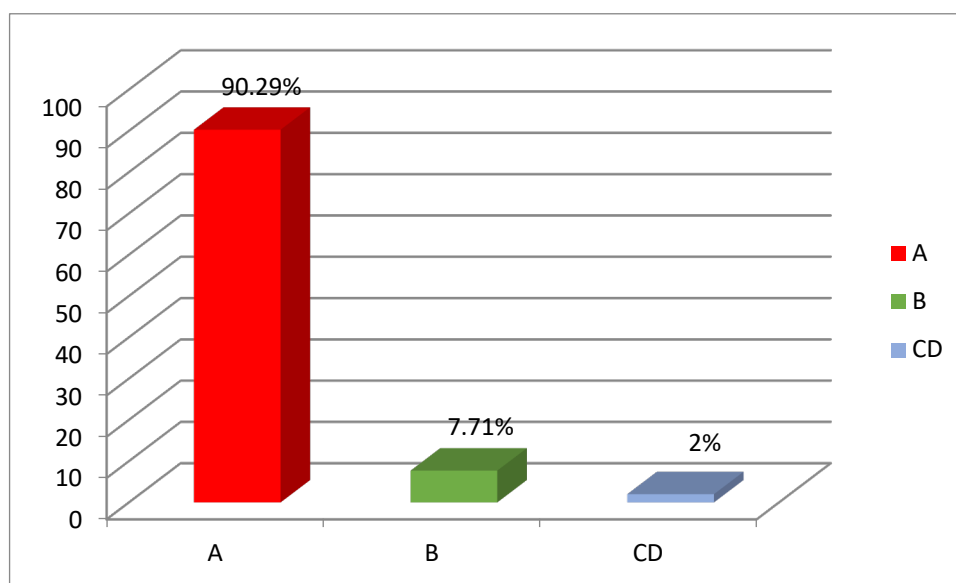


Table 2 :

SEC	Frequency	Percentage	Cumulative Percentage
A	316	90.29	90.29
B	27	7.71	98
C/D	7	2	100
Total	350	100	

The SEC categories C and D had the lowest representation in our survey, while the SEC category A had the highest. The percentage of respondents from SEC A is 90.29 and that from SEC C/D is a meagre 2%, hence does not have statistical significance in our analysis for the lack of degrees of freedom it offers.

Figure 3 : Distribution of Sample Units across Area of Permanent Residence

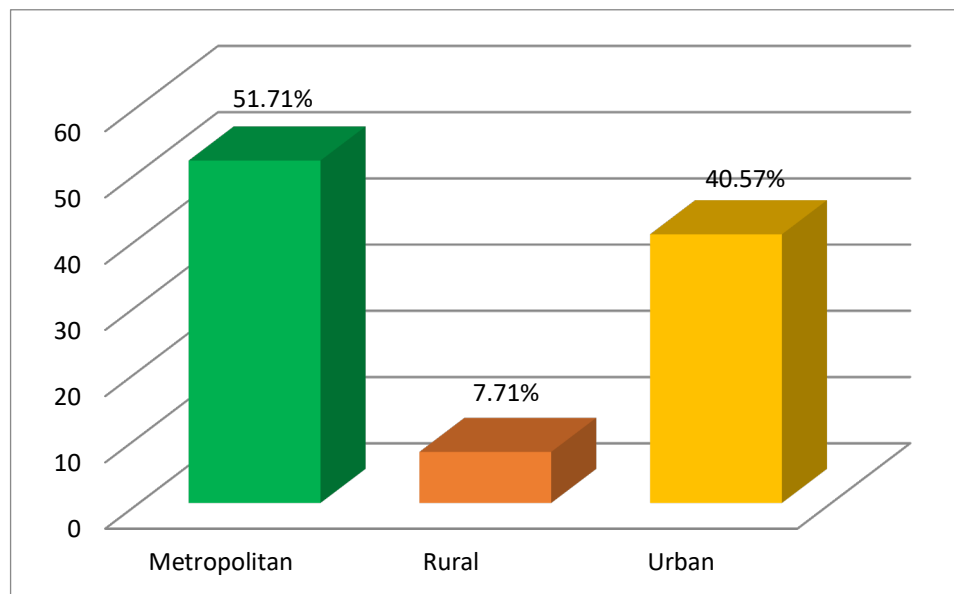


Table 3 :

Area	Frequency	Percentage	Cumulative Percentage
Metropolitan	181	51.71	51.71
Rural	27	7.71	59.43
Urban	142	40.57	100
Total	350	100	

We see that Metropolitan area has the highest representation with 181 observations, followed by Urban area with 142 observations, and Rural area with 27 observations. Due to the convenience sampling technique used for choosing our respondents, with the survey questionnaire being dispersed by the authors who are all metropolitan or urban citizens, we naturally see a higher representation of such categories in our sample.

Figure 4 : Distribution of Sample Units across Course being pursued

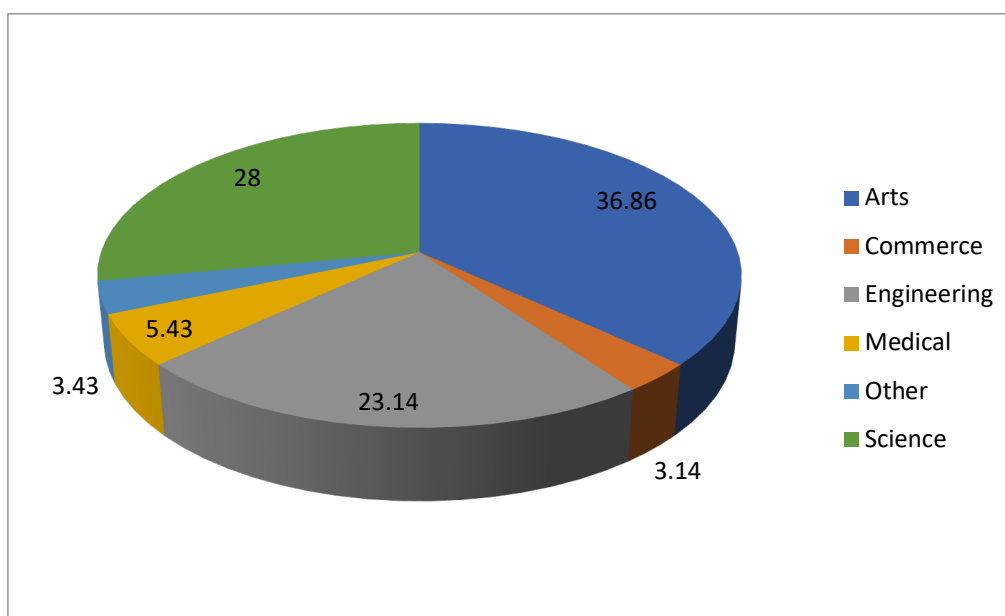


Table 4 :

Course	Frequency	Percentage	Cumulative Percentage
Arts	129	36.86	36.86
Commerce	11	3.14	40
Engineering	81	23.14	63.14
Medical	19	5.43	68.57
Other	12	3.43	72
Science	98	28	100
Total	350	100	

We see a diverse representation of respondents in terms of courses being pursued. Respondents with Arts as their major discipline of college study are the highest with 129 representations, occupying 36.86% of the sample units, followed by the Sciences with 98 representations and occupying 28% of the sample units. Commerce is least represented with 11 representations and occupying 3.14% of the sample units.

3.2 Summary Statistics

Given below are the descriptive statistics of Happiness Index across the whole sample at first, and then across different categorical variables like Gender, Socio-economic Classification and Area of Permanent Residence.

3.2.1. For the Genders:

Table 5 :

	Mean	Median	Standard Deviation	Skewness	Kurtosis
For whole sample	.5379592	.535714	.1538758	-.0718874	3.135973
For Males	.5401306	.535714	.1540982	-.1887238	3.35287
For Females	.5352679	.535714	.1548217	.0642844	2.910158

As we can see, the means for both males and females are almost equal to the whole sample mean. The slight differences between the means of males and females are inconclusive of indicating general trends of inequality of Happiness Index across genders.

The standard deviations are also seemingly unchanged across the different categories.

The distributions are negatively skewed for the whole sample and Males, while for Females it is positively skewed.

The Median is lower than the Mean for the whole sample and Males, suggesting more people have lower Happiness Index than the mean Happiness Index.

Kurtosis of the distributions are above 3, so they are leptokurtic, suggesting significant presence of outliers, with the exception of that of Females, which is slightly less than 3.

3.2.2. For the Socio-economic Classification categories:

Table 6 :

	Mean	Median	Standard Deviation	Skewness	Kurtosis
For SEC A	.5380877	.535714	.1529539	-.0474783	3.21777
For SEC B	.547619	.535714	.1758027	-.3956368	2.454287
For SEC C/D	.494898	.464286	.1118578	.1420585	1.44205

From the table above, we see the descriptive statistics of Happiness Index by SEC. The means are more or less equal to the whole sample mean. This suggests, from this preliminary analysis, though inconclusively, that Happiness Index does not vary with SEC.

For all the categories, median is less than the mean, this shows that more people have Happiness Index lower than the mean, than those who have higher than the mean.

For SEC A and SEC B, the distribution is negatively skewed, while for SEC C and D, the distribution is positively skewed.

The standard deviations vary across the categories.

SEC A has a leptokurtic distribution, while those of SEC B ,C and D are platykurtic.

3.2.3. For the different Areas of Permanent Residence/ Origin:

Table 7 :

	Mean	Median	Standard Deviation	Skewness	Kurtosis
For Rural area	.5820107	.571429	.1630071	.3758812	3.260824
For Urban area	.5357143	.535714	.1588673	-.409478	3.635291
For Metropolitan area	.5331491	.535714	.1482625	.1458854	2.4676

As we can see, the means for students from Urban and Metropolitan areas are almost equal to the whole sample mean, and that of those from Rural areas is slightly more. The slight differences between the means are inconclusive of indicating general trends of inequality of Happiness Index across area of permanent residence.

The standard deviations vary across the categories.

For students from Urban areas, the distribution is negatively skewed, while it is positively skewed for those from Rural and Metropolitan areas.

The Median is greater than the Mean for the students from Metropolitan areas, suggesting more people have higher Happiness Index than the mean Happiness Index for the area. For those from Rural and Urban areas, more people have lower Happiness Index than the mean level of the respective areas.

Kurtosis of the distributions of students from Rural and Urban areas are greater than 3, so they are leptokurtic, suggesting significant presence of outliers. The distribution of students from Metropolitan areas is platykurtic.

3.3 Graphical Analysis

Some of the interesting responses to our survey questions are graphically represented in this section. These responses have been used to answer our research questions, though not directly but have been a part of our broader calculation. This section does not attempt to suggest correlation or causation of happiness index with the responses discussed, rather it provides a pictorial overview of responses to questions which might be of significance to researchers in their work involving such parameters. All labels are percentages of whole sample, unless otherwise specified.

Figure 5 : Residence with Family

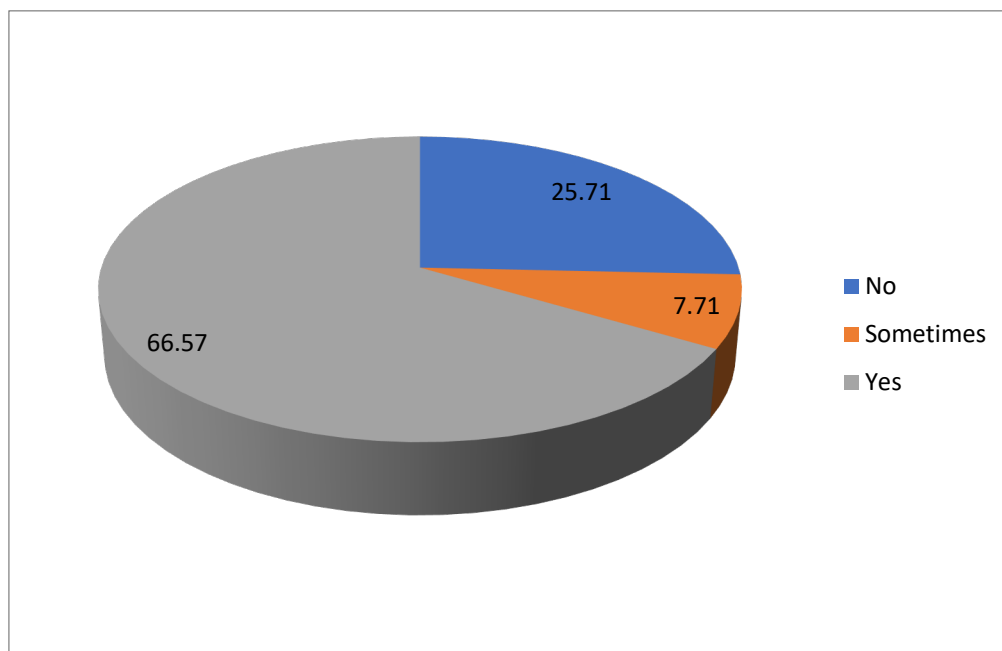


Figure 6 : Relationship Status

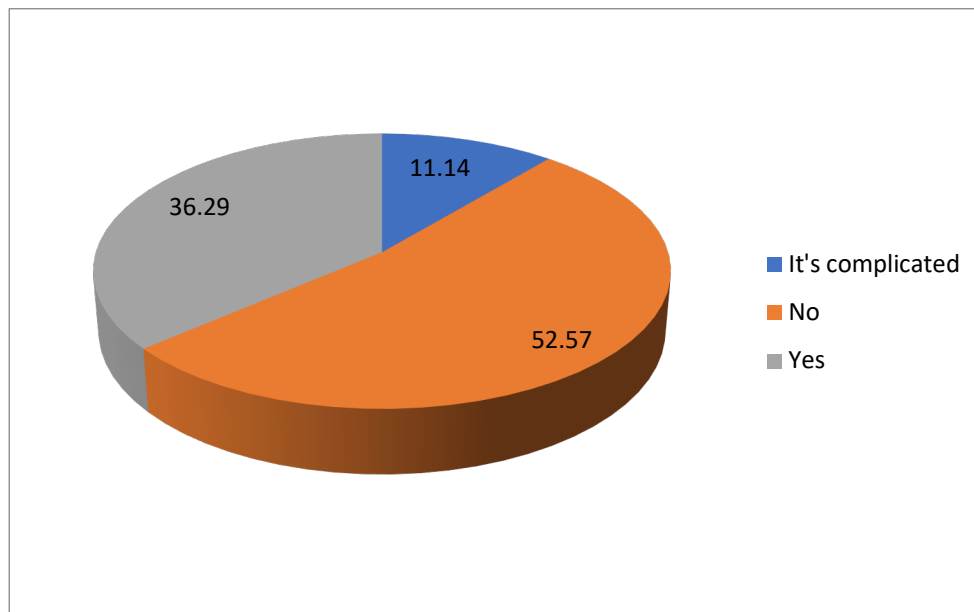


Figure 7 : Are your romantic needs satisfied?

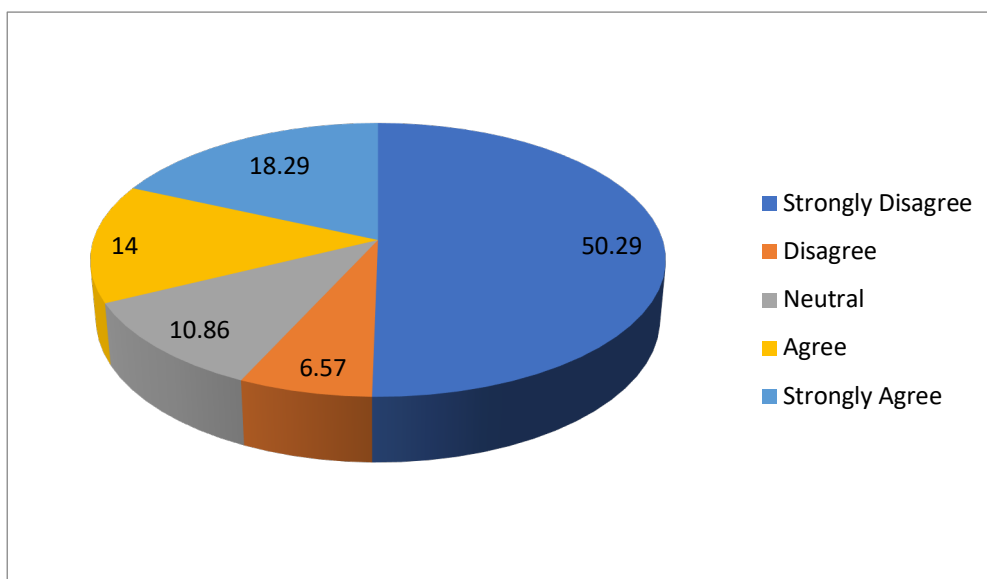


Figure 8: Are your sexual needs satisfied?

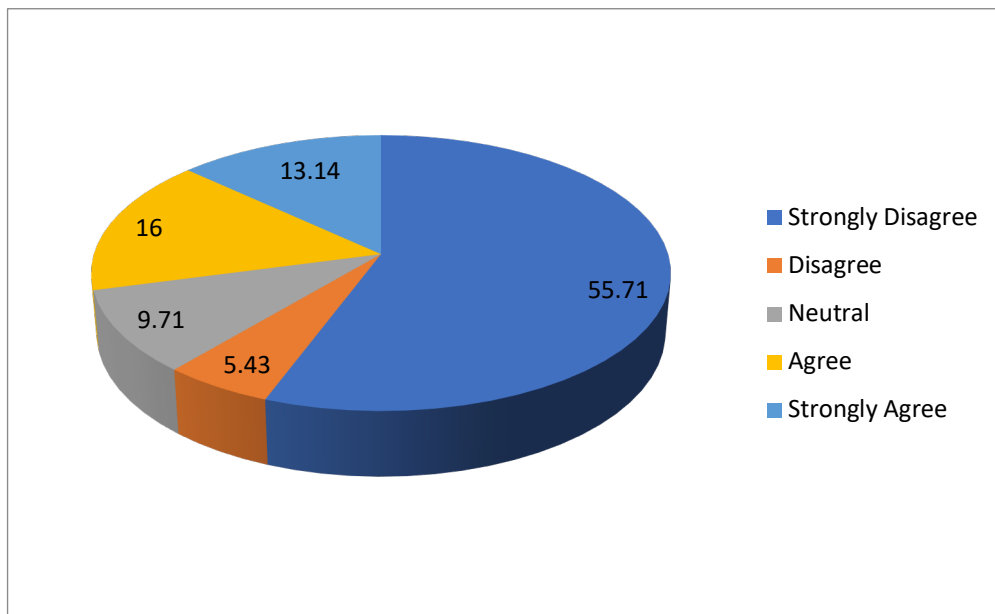


Figure 9 : My family approves of my relationship (across samples in a relationship)

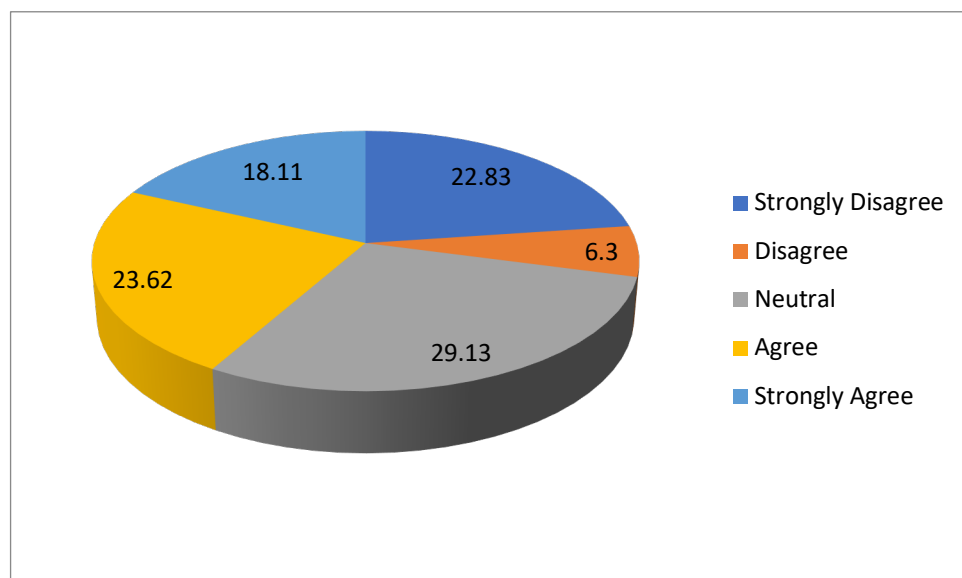


Figure 10: I envision a long term future with my current partner (across samples in a relationship)

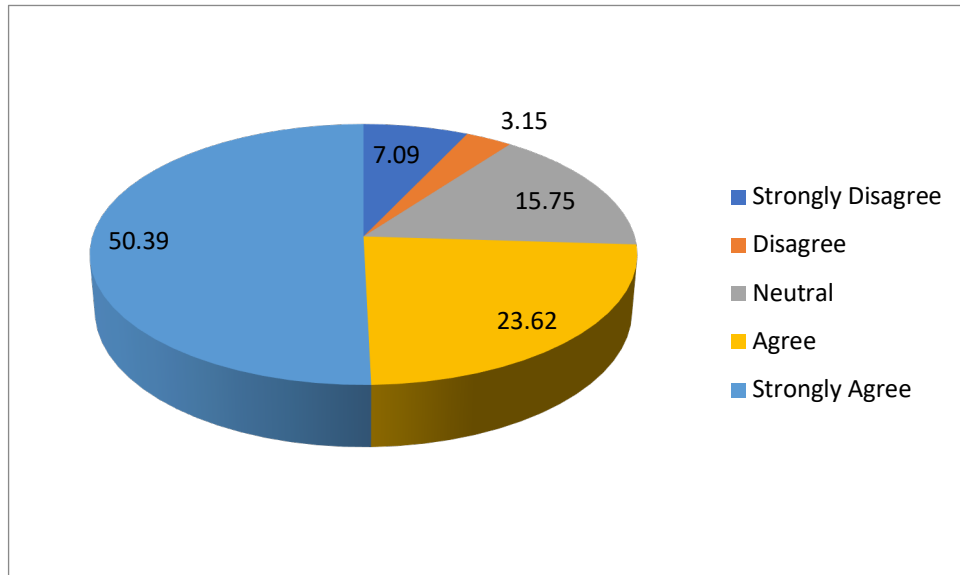


Figure 11: I have urges to cheat on my partner (across samples in a relationship)

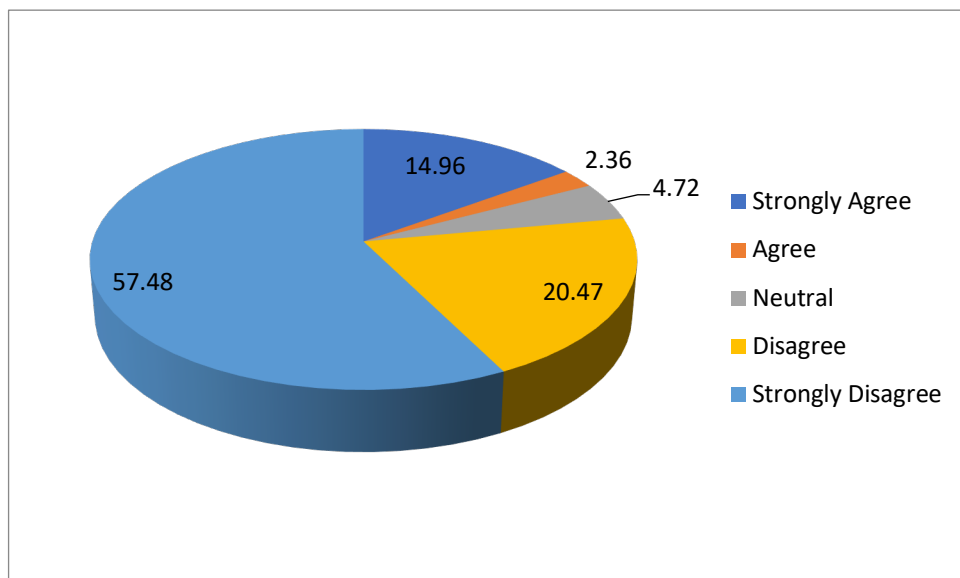


Figure 12: I am closer to my friend(s) than my family

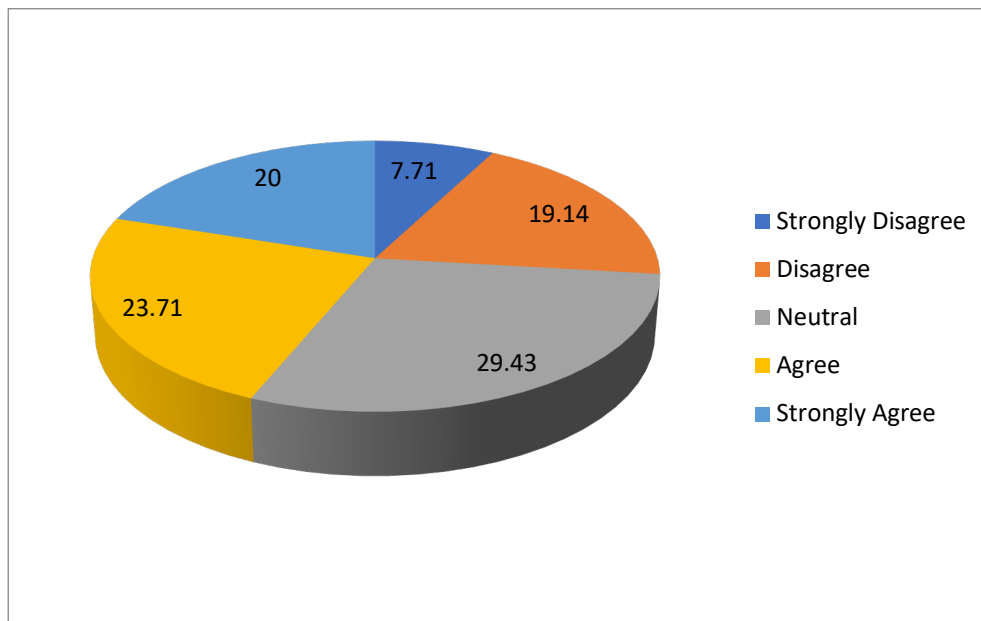


Figure 13: I am closer to my friend(s) than my romantic partner (across samples in a relationship)

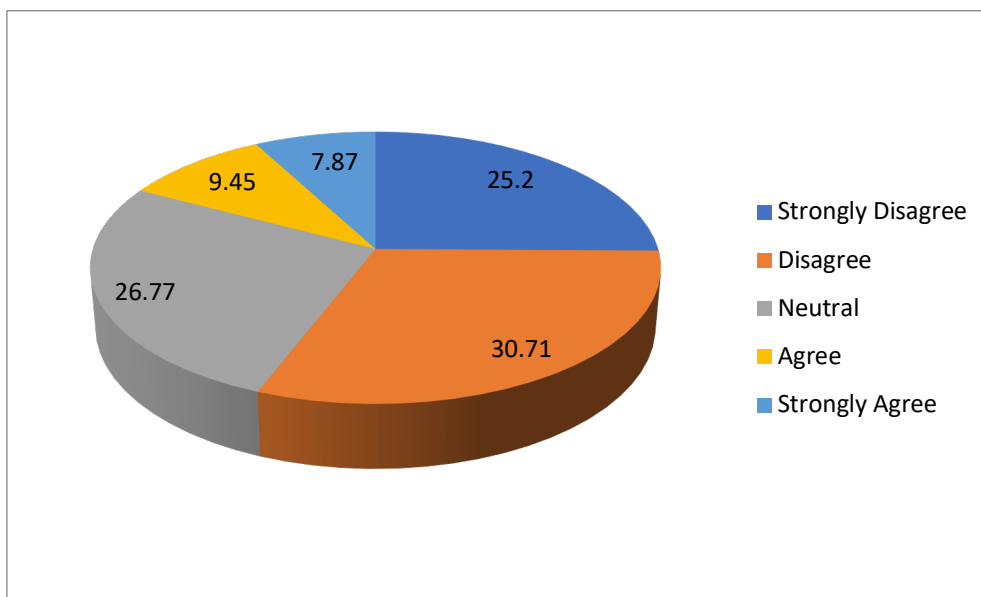


Figure 14: My family usually provides emotional support and motivation

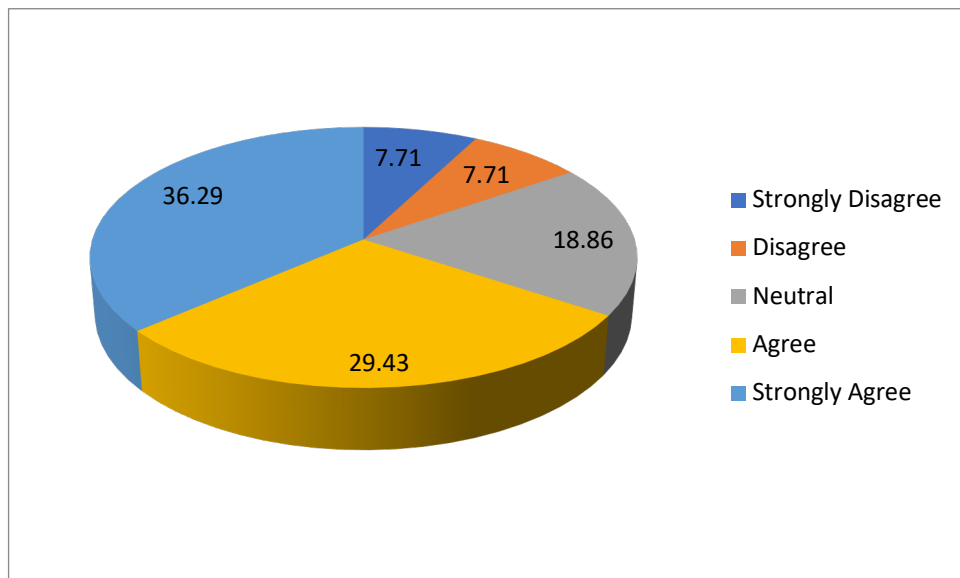


Figure 15: Academic life is very stressful and adversely affects my mental/physical health

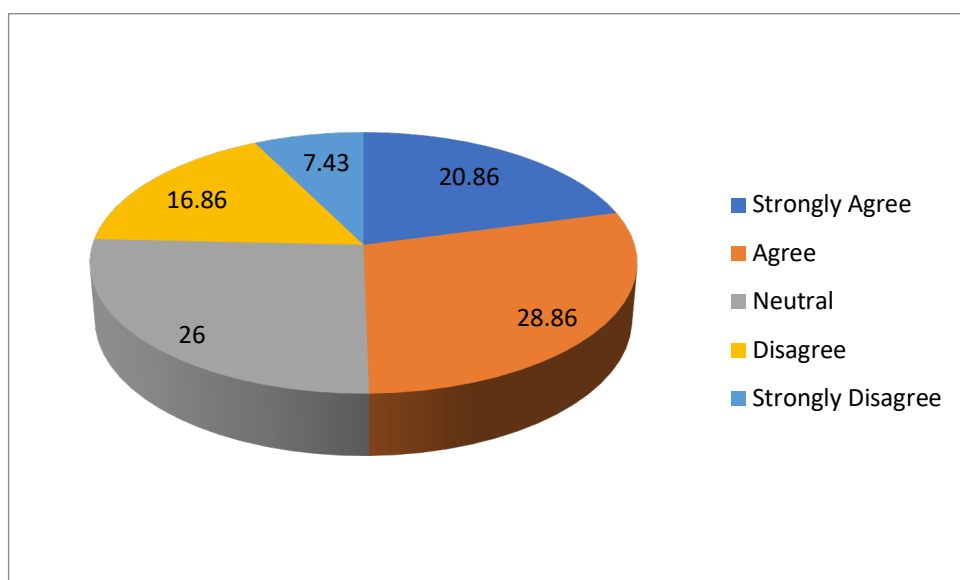


Figure 16 : My social life causes anxiety and stress

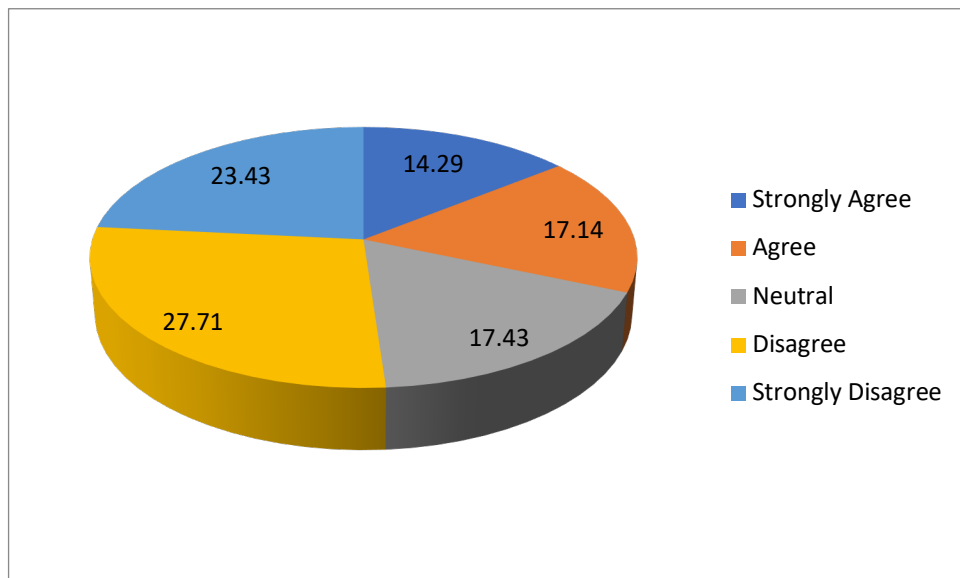


Figure 17: Browsing social media apps often makes me feel worse than before

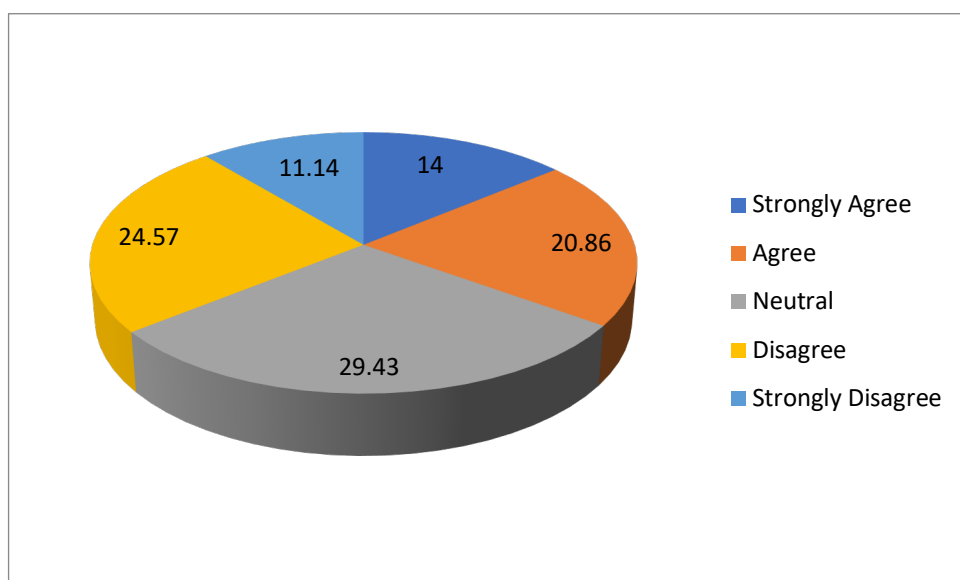


Figure 18 : Ownership of gadgets

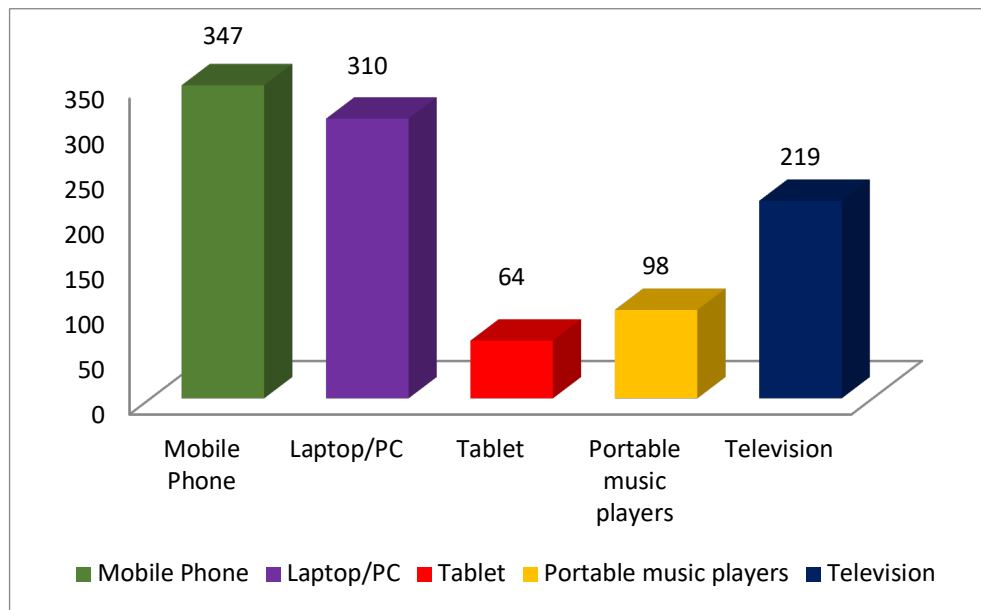
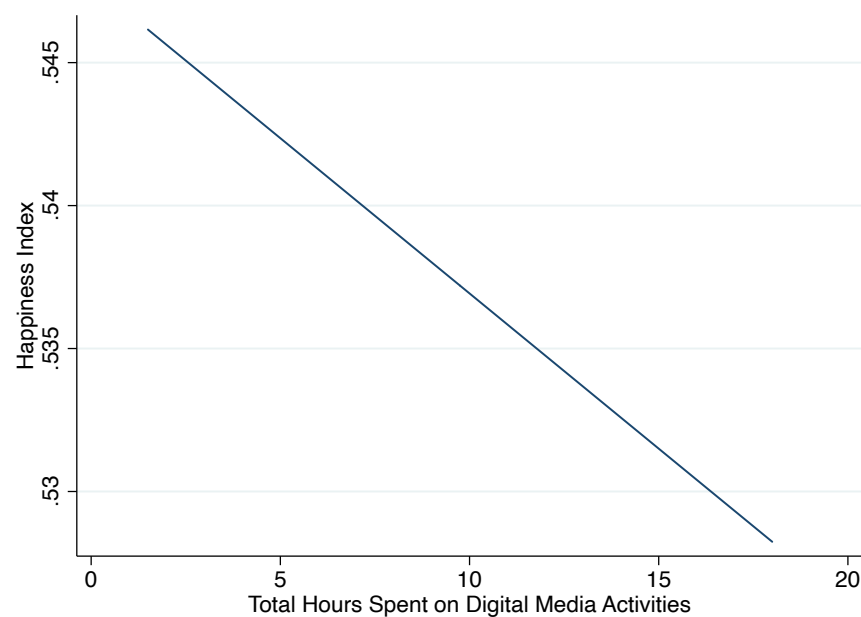


Figure 19: Relationship between proposed Happiness Index and Total Hours spent on Digital Media Activities:



Across the sample units, the majority (66.57%) reside with their family. Most of the respondents were not in a relationship (52.57%). More than 50% respondents were strongly dissatisfied with meeting their personally perceived requirements of sexual and romantic needs. 43.71% agreed or strongly agreed that they are closer to their friends than to their parents, while 26.85% were, according to their perception, closer to their parents than to their friends. 29.43% remained neutral.

Across sample units who reported unambiguously to be in a relationship, i.e., responded “Yes” to the question of “Are you in a relationship?” , more respondents perceived their family to approve of the relationship in varying degrees, than those who perceived their family to disapprove of their relationship in varying degrees. More than 50% of the respondents in this category do not feel an urge to cheat on their partners and envision a long-term future with them. 55.91% felt they were closer to their partner than their friends while 17.32% felt they were closer to their friends than their respective partners. 26.77% remained neutral.

65.72% of the respondents felt that their family provided them with emotional support and motivation.

49.72% of the respondents felt that academic life is adversely affecting their mental and/or physical health.

More of the respondents did not feel that their social life was causing them stress or anxiety.

For the question of whether browsing social media apps make the respondent feel worse than before, almost equal amounts of affirmation and negation was received. 34.86% of the respondents felt browsing makes them worse than before, while 35.71% did not feel so. 29.43% remained neutral. Among the gadgets available to the respondents, the ownership of mobile phone was highest with 347 out of 350 respondents having a mobile phone. The availability of tablets was the lowest with only 64 out of 350 respondents owning one.

The last graph uses our calculated Happiness Index and evaluation of satisfaction from Digital Media Activities. We see that the number of hours spent on digital media activities has a negative impact on Happiness Index.

SECTION

IV

**Statistical
Analysis**

4.1 Correlation Coefficients:

In the previous sections, tables and graphical methods were used to analyse the data collected. Here, we attempt to establish the interrelation between the variables using correlation parameters.

We begin our statistical analysis by looking at the pair-wise correlation coefficients between the following variables:

- Happiness Index
- Satisfaction from Social Life
- Satisfaction from Academic Life
- Satisfaction from Digital Media Activities

The pair-wise correlation coefficients have been calculated for the sample as a whole as well as across Genders, SEC and the kinds of courses being pursued (Professional or Non-Professional).

4.1.1. The following table shows the pair-wise correlation coefficients for the entire sample:

Table 8 :

	Happiness Index	Satisfaction from Social Life	Satisfaction from Academic Life	Satisfaction from Digital Activities
Happiness Index	1.0000			
Satisfaction from Social Life	0.4269	1.0000		
Satisfaction from Academic Life	0.4746	0.2951	1.0000	
Satisfaction from Digital Media Activities	0.1878	0.0441	0.1647	1.0000

The table clearly shows that all the variables are positively correlated, though with varying strengths of association. Here, it is essential to note that Happiness Index has the highest correlation with a student's Satisfaction from Academic Life, followed by Satisfaction from Social Life and then Satisfaction from Digital Media Activities.

The pair-wise correlation coefficients table can also be used to check for multicollinearity in the econometric model. Since the variables Satisfaction from Social Life, Satisfaction from Academic Life, Satisfaction from Digital Media Activities are quite weakly correlated with each other (less than $|0.5|$), we can safely assume that there exists no multicollinearity in our assumed model.

4.1.2 For Males and Females

The following table shows the pair-wise correlation coefficients for only the Male samples:

Table 9 :

	Happiness Index	Satisfaction from Social Life	Satisfaction from Academic Life	Satisfaction from Digital Media Activities
Happiness Index	1.0000			
Satisfaction from Social Life	0.5210	1.0000		
Satisfaction from Academic Life	0.5090	0.4042	1.0000	
Satisfaction from Digital Media Activities	0.1774	0.0341	0.2212	1.0000

The table clearly shows that all the variables are positively correlated, though with varying strengths of association.

Once again, it is essential to note that Happiness Index is moderately associated with a student's Satisfaction from Social Life, Satisfaction from Academic Life and Satisfaction from Digital Media Activities. In this case, Satisfaction from Social Life has the highest correlation coefficient with respect to Happiness Index. This is followed by Satisfaction from Academic Life and then Satisfaction from Digital Media Activities. Here too, Happiness Index and Satisfaction from Digital Media Activities are comparatively weakly related.

We can also see that the degree of association between Satisfaction from Social Life and Satisfaction from Academic Life is observed to be a moderate one but all the correlations are weak (less than 0.5). Therefore, we can safely assume that there exists no multicollinearity in our assumed model.

The following table shows the pair-wise correlation coefficients for only the Female samples:

Table 10 :

	Happiness Index	Satisfaction from Social Life	Satisfaction from Academic Life	Satisfaction from Digital Media Activities
Happiness Index	1.0000			
Satisfaction from Social Life	0.3173	1.0000		
Satisfaction from Academic Life	0.4351	0.1753	1.0000	
Satisfaction from Digital Media Activities	0.2035	0.0434	0.1121	1.0000

The table clearly shows that all the variables are positively correlated, though with varying strengths of association.

Here, it is essential to note that Happiness Index is moderately associated with a student's Satisfaction from Social Life, Satisfaction from Academic Life and Satisfaction from Digital Media Activities. In this case, Satisfaction from Academic Life has the highest correlation coefficient with respect to Happiness Index. This is followed by Satisfaction from Social Life and then Satisfaction from Digital Media Activities. Once again, Happiness Index and Satisfaction from Digital Media Activities are comparatively weakly related.

We can also see that the variables Satisfaction from Social Life, Satisfaction from Academic Life, Satisfaction from Digital Media Activities are quite weakly correlated with each other (less than 0.5). Therefore, we can safely assume that there exists no multicollinearity in our assumed model.

4.1.3 For the different Socio-economic Classification categories

The following table shows the pair-wise correlation coefficients for only SEC A student samples:

Table 11 :

	Happiness Index	Satisfaction from Social Life	Satisfaction from Academic Life	Satisfaction from Digital Media Activities
Happiness Index	1.0000			
Satisfaction from Social Life	0.4230	1.0000		
Satisfaction from Academic Life	0.4912	0.3017	1.0000	
Satisfaction from Digital Media Activities	0.2193	0.0708	0.1646	1.0000

The table clearly shows that all the variables are positively correlated, though with varying strengths of association.

Here, it is essential to note that Happiness Index is moderately associated with a student's Satisfaction from Social Life, Satisfaction from Academic Life and Satisfaction from Digital Media Activities. In this case, Satisfaction from Academic Life has the highest correlation coefficient with respect to Happiness Index. This is followed by Satisfaction from Social Life and then Satisfaction from Digital Media Activities. Once again, Happiness Index and Satisfaction from Digital Media Activities are comparatively weakly related.

We can also see that the variables Satisfaction from Social Life, Satisfaction from Academic Life, Satisfaction from Digital Media Activities are quite weakly correlated with each other (less than 0.5). However, the degree of association between SEC A students' Satisfaction from Academic Life and Satisfaction from Social Life is observed to be a moderate one. In spite of this, since their values are less than $|0.5|$, we can safely assume that there exists no multicollinearity in our assumed model.

The following table shows the pair-wise correlation coefficients for only the SEC B student samples:

Table 12 :

	Happiness Index	Satisfaction from Social Life	Satisfaction from Academic Life	Satisfaction from Digital Media Activities
Happiness Index	1.0000			
Satisfaction from Social Life	0.6868	1.0000		
Satisfaction from Academic Life	0.4307	0.3340	1.0000	
Satisfaction from Digital Media Activities	-0.1861	-0.0227	0.2946	1.0000

The table clearly shows that most of the variables are positively correlated with Happiness Index, though with varying strengths of association. However there is one exception, Satisfaction from Digital Media Activities is observed to be negatively correlated with Happiness Index.

Here, it is essential to note that Happiness Index is highly associated with a student's Satisfaction from Social Life, and moderately with Satisfaction from Academic Life and Satisfaction from Digital Media Activities. In this case, Satisfaction from Social Life has the highest correlation coefficient with respect to Happiness Index. This is followed by Satisfaction from Academic Life and then Satisfaction from Digital Media Activities. Once again, Happiness Index and Satisfaction from Digital Media Activities are comparatively weakly related.

We can also see that the variables Satisfaction from Social Life, Satisfaction from Academic Life, Satisfaction from Digital Media Activities are quite weakly correlated with each other (less than 0.5). However, the degree of association between SEC B students'

Satisfaction from Social Life and Satisfaction from Academic Life is observed to be a moderate one, we also see that Satisfaction from Digital Media Activities and Satisfaction from Social Life are negatively correlated. Since their values are less than $|0.5|$, we can safely assume that there exists no multicollinearity in our assumed model.

The following table shows the pair-wise correlation coefficients for only the SEC C and SEC D student samples:

Table 13 :

	Happiness Index	Satisfaction from Social Life	Satisfaction from Academic Life	Satisfaction from Digital Media Activities
Happiness Index	1.0000			
Satisfaction from Social Life	-0.1601	1.0000		
Satisfaction from Academic Life	-0.2928	0.2362	1.0000	
Satisfaction from Digital Media Activities	0.4637	-0.3932	0.1626	1.0000

The table clearly shows that Happiness Index and Satisfaction from Digital Media Activities are positively correlated. However, Satisfaction from Academic Life and Satisfaction from Social Life are observed to be negatively correlated with Happiness Index, which is unusual. These results can be attributed to the lack of observations in this category, as mentioned previously.

4.1.4 For the different kinds of courses being pursued

The following table shows the pair-wise correlation coefficients for only the students pursuing Non-professional courses:

Table 14 :

	Happiness Index	Satisfaction from Social Life	Satisfaction from Academic Life	Satisfaction from Digital Media Activities
Happiness Index	1.0000			
Satisfaction from Social Life	0.4345	1.0000		
Satisfaction from Academic Life	0.4958	0.3166	1.0000	
Satisfaction from Digital Media Activities	0.2033	0.0726	0.1559	1.0000

The table clearly shows that all the variables are positively correlated, though with varying strengths of association.

Here, it is essential to note that Happiness Index is moderately associated with a student's Satisfaction from Social Life, Satisfaction from Academic Life and Satisfaction from Digital Media Activities. In this case, Satisfaction from Academic Life has the highest correlation coefficient with respect to Happiness Index. This is followed by Satisfaction from Social Life and then Satisfaction from Digital Media Activities.

We can also see that the variables Satisfaction from Social Life, Satisfaction from Academic Life and Satisfaction from Digital Media Activities are quite weakly correlated with each other (less than 0.5). However, the degree of association between a student's Satisfaction from Social Life and Satisfaction from Academic Life is observed to be a moderate one. In

spite of this, since their values are less than 0.5, we can safely assume that there exists no multicollinearity in our assumed model.

The following table shows the pair-wise correlation coefficients for only the students pursuing Professional courses:

Table 15 :

	Happiness Index	Satisfaction from Social Life	Satisfaction from Academic Life	Satisfaction from Digital Media Activities
Happiness Index	1.0000			
Satisfaction from Social Life	0.4252	1.0000		
Satisfaction from Academic Life	0.4219	0.2602	1.0000	
Satisfaction from Digital Media Activities	0.1631	-0.0255	0.1975	1.0000

The table clearly shows that all the variables are positively correlated with Happiness Index, though with varying strengths of association.

Here, it is essential to note that Happiness Index is moderately associated with a student's Satisfaction from Social Life, Satisfaction from Academic Life and Satisfaction from Digital Media Activities. In this case, Satisfaction from Social Life has the highest association with Happiness Index, followed by Satisfaction from Academic Life. Satisfaction from Digital Media Activities is comparatively weakly related to Happiness Index.

We can also see that the variables Satisfaction from Social Life, Satisfaction from Academic Life, Satisfaction from Digital Media Activities are quite weakly correlated with each other (less than 0.5). Satisfaction from Digital Media Activities and Satisfaction from Social Life are

weakly negatively correlated. In spite of this, since their values are less than $|0.5|$, we can safely assume that there exists no multicollinearity in our assumed model.

Despite the results obtained in this section, the approach of using correlation coefficients presents several methodological challenges. It is known that correlation does not imply causation but merely indicates the existence of association. Moreover, there may be biases from unobserved personality traits and correlated measurement errors. In order to explain the significance of the explanatory variables in influencing Happiness Index, regression analysis has been performed in Section V.

4.2 Testing of Hypotheses

In this section, we check if the mean level of Happiness Index varies with factors like the student's Gender, Area of Permanent Residence/ Origin, Socio-economic Classification category, Course being pursued and Residence Status. We test the different hypotheses by using the t-test method which compares means of two groups, which may be related in certain features.

4.2.1 Happiness Index across Genders

Existing surveys conducted at the macro level reveal that in present times, there are differences in the average happiness levels between Males and Females. However by looking at summary statistics of the data collected in our survey, it appears that there is hardly much difference between the average level of Happiness Index across the two genders.

In this section, we will confirm our earlier observation with the use of a t-test.

Our null hypothesis is that the difference of the means of Happiness Index between Males and Females is zero:

$$H_0: M_m = M_f$$

Where M_m is the mean of Happiness Index of Males and M_f is that for Females.

Therefore, we take up three alternative hypotheses:

$$H_1: M_m < M_f$$

$$H_2: M_m \neq M_f$$

$$H_3: M_m > M_f$$

Table 16 :

Group	Observation	Mean	Standard Error	Standard deviation	[95% Confidence Interval]	
Male	188	.5402735	.0111992	.153556	.5181805	.5623666
Female	162	.5352734	.0121527	.1546788	.5112741	.5592726
Combined	350	.5379592	.008225	.1538758	.5217824	.554136
Difference		.0050002	.0165171		-.0274857	.0374861

Table 17:

Difference = mean(Male) - mean(Female) t = 0.3027

$H_0: \text{diff} = 0$		Degrees of freedom = 348	
$H_1: \text{diff} < 0$	$H_2: \text{diff} \neq 0$	$H_3: \text{diff} > 0$	
Pr(T < t) = 0.6189	Pr(T > t) = 0.7623	Pr(T > t) = 0.3811	

In order to understand which hypothesis holds significantly, we consider:

$$V = \Pr(T < t) \times 100 \text{ or } \Pr(T > t) \times 100$$

- If $0 \leq V \leq 1$, we can conclude that the hypothesis is significant at the 1% level
- If $1 < V \leq 5$, we can conclude that the hypothesis is significant at the 5% level
- If $5 < V \leq 10$, we can conclude that the hypothesis is significant at the 10% level

From the table, we can see that none of the alternative hypotheses hold at a statistically significant level. Therefore, we fail to reject our null hypothesis and there is no significant difference in the mean level of Happiness Index between Males and Females.

4.2.2 Happiness Index for different Areas of Origin

As mentioned in the Literature Review, a survey on happiness in India (HT-MaRS, 2013) found that instead of metropolises, smaller cities show higher levels of happiness.

In this section, we test if the above findings hold in our sample, with the use of a t-test. We check if the mean level of Happiness Index varies between students from:

- A. Rural and Urban areas
- B. Rural and Metropolitan areas
- C. Urban and Metropolitan areas

- A. Our null hypothesis is that the difference of the means of Happiness Index between those from Rural areas and those from Urban areas, is zero:

$$H_0: M_r = M_u$$

Where M_r is the mean of Happiness Index of students from Rural areas and M_u is that of students from Urban areas.

Therefore, we take up three alternative hypotheses:

$$H_1: M_r < M_u$$

$$H_2: M_r \neq M_u$$

$$H_3: M_r > M_u$$

Table 18 :

Group	Observation	Mean	Standard Error	Standard deviation	[95% Confidence Interval]	
Rural	27	.5820107	.0313707	.1630071	.5175272	.6464941
Urban	142	.5357143	.0133318	.1588673	.5093581	.5620704
Combined	350	.5431108	.0123039	.1599507	.5188206	.5674009
Difference		.0462964	.0334911		-.0198241	.1124169

Table 19:

Difference= mean(Rural) - mean(Urban) t = 1.3823

$H_0: \text{diff} = 0$		Degrees of freedom = 167
$H_1: \text{diff} < 0$	$H_2: \text{diff} \neq 0$	$H_3: \text{diff} > 0$
$\Pr(T < t) = 0.9156$	$\Pr(T > t) = 0.1687$	$\Pr(T > t) = 0.0844$

In order to understand which hypothesis holds significantly, we consider:

$$V = \Pr(T < t) \times 100 \text{ or } \Pr(T > t) \times 100$$

- If $0 \leq V \leq 1$, we can conclude that the hypothesis is significant at the 1% level
- If $1 < V \leq 5$, we can conclude that the hypothesis is significant at the 5% level
- If $5 < V \leq 10$, we can conclude that the hypothesis is significant at the 10% level

From the table, we can see that the alternative hypothesis H_3 holds at a statistically significant level of 10%. Therefore, we reject our null hypothesis and accept H_3 that the mean level of Happiness Index of students from Rural areas is significantly more than that of students from Urban areas.

- B. Our null hypothesis is that the difference of the means of Happiness Index between students from Rural areas and those from Metropolitan areas, is zero:

$$H_0: M_r = M_{me}$$

Where M_r is the mean of Happiness Index of students from Rural areas and M_{me} is that of students from Metropolitan areas.

Therefore, we take up three alternative hypotheses:

$$H_1: M_r < M_{me}$$

$$H_2: M_r \neq M_{me}$$

$$H_3: M_r > M_{me}$$

Table 20 :

Group	Observation	Mean	Standard Error	Standard deviation	[95% Confidence Interval]	
Rural	27	.5820107	.0313707	.1630071	.5175272	. 6464941
Metropolitan	181	.5331491	.0110203	.1482625	.5114036	.5548947
Combined	208	.5394917	.010452	.1507415	.5188856	.5600978
Difference		.0488615	.0309877		-.1022322	. 1099553

Table 21:

Difference = mean(Rural) -
mean(Metropolitan)

$t = 1.5768$

H_0 : diff = 0		Degrees of freedom = 206	
H_1 : diff < 0	H_2 : diff \neq 0		H_3 : diff > 0
$\Pr(T < t) = 0.9418$	$\Pr(T > t) = 0.1164$		$\Pr(T > t) = 0.0582$

In order to understand which hypothesis holds significantly, we consider:

$$V = \Pr(T < t) \times 100 \text{ or } \Pr(T > t) \times 100$$

- If $0 \leq V \leq 1$, we can conclude that the hypothesis is significant at the 1% level
- If $1 < V \leq 5$, we can conclude that the hypothesis is significant at the 5% level
- If $5 < V \leq 10$, we can conclude that the hypothesis is significant at the 10% level

From the table, we can see that the alternative hypothesis H_3 holds at a statistically significant level of 10%. Therefore, we reject our null hypothesis and accept H_3 that the mean level of Happiness Index of students from Rural areas is significantly more than that of students from Metropolitan areas.

- C. Our null hypothesis is that the difference of the means of Happiness Index between students from Urban areas and those from Metropolitan areas, is zero:

$$H_0: M_u = M_{me}$$

Where M_u is the mean of Happiness Index of students from Urban areas and M_{me} is that of students from Metropolitan areas.

Therefore, we take up three alternative hypotheses:

$$H_1: M_u < M_{me}$$

$$H_2: M_u \neq M_{me}$$

$$H_3: M_u > M_{me}$$

Table 22 :

Group	Observation	Mean	Standard Error	Standard deviation	[95% Confidence Interval]	
Urban	142	.5357143	.0133318	.1588673	.5093581	.5620704
Metropolitan	181	.5331491	.0110203	.1482625	.5114036	.5548947
Combined	323	.5342769	.0085008	.1527787	.5175527	.551001
Difference		.0025652	.017153		-.0311814	.0363117

Table 23:

Difference= mean(Urban) -
mean(Metropolitan)

t = 0.1495

H_0: diff = 0		Degrees of freedom = 321	
H_1: diff < 0	H_2: diff != 0		H_3: diff > 0
Pr(T < t) = 0.5594	Pr(T > t) = 0.8812		Pr(T > t) = 0.4406

In order to understand which hypothesis holds significantly, we consider:

$$V = \Pr(T < t) \times 100 \text{ or } \Pr(T > t) \times 100$$

- If $0 \leq V \leq 1$, we can conclude that the hypothesis is significant at the 1% level
- If $1 < V \leq 5$, we can conclude that the hypothesis is significant at the 5% level
- If $5 < V \leq 10$, we can conclude that the hypothesis is significant at the 10% level

From the table, we can see that none of the alternative hypotheses hold at a statistically significant level. Therefore, we fail to reject our null hypothesis and there is no significant difference in the mean level of Happiness Index between students from Urban areas and those from Metropolitan areas.

4.2.3 Happiness Index across Socio-economic Classification categories

The prospect of upward mobility has been seen to increase the happiness levels of those in the relatively lower class (Jae-Wan Lee and Dae Hyun Baek, 2016) and may have positive psychological effects. Therefore, while summary statistics indicates otherwise, we use the t-test to check if the mean level of Happiness Index varies between the SEC categories.

Since our sample comprises of mostly students from SEC A and B categories, we compare Happiness Index between the two.

Our null hypothesis is that the difference of the means of Happiness Index between students from SEC B category and those from SEC A category, is zero:

$$H_0: M_{secB} = M_{secA}$$

Where M_{secB} is the mean of Happiness Index of students from SEC B and M_{secA} is that of students from SEC A.

Therefore, we take up three alternative hypotheses:

$$H_1: M_{secB} < M_{secA}$$

$$H_2: M_{secB} \neq M_{secA}$$

$$H_3: M_{secB} > M_{secA}$$

Table 24 :

Group	Observation	Mean	Standard Error	Standard deviation	[95% Confidence Interval]	
SEC B	27	.547619	.0338332	.1758027	.4780738	.6171642
SEC A	316	.5380877	.0086043	.1529539	.5211585	.5550169
Combined	343	.538838	.0083481	.1546097	.5224178	.5552581
Difference		.0095313	.0310409		-.0515244	.070587

Table 25:

Difference = mean(SEC B) - mean(SEC A) t = 0.3071

H_0 : diff = 0		Degrees of freedom = 341	
H_1 : diff < 0	H_2 : diff != 0	H_3 : diff > 0	
Pr(T < t) = 0.6205	Pr(T > t) = 0.7590	Pr(T > t) = 0.3795	

In order to understand which hypothesis holds significantly, we consider:

$$V = \Pr(T < t) \times 100 \text{ or } \Pr(T > t) \times 100$$

- If $0 \leq V \leq 1$, we can conclude that the hypothesis is significant at the 1% level
- If $1 < V \leq 5$, we can conclude that the hypothesis is significant at the 5% level
- If $5 < V \leq 10$, we can conclude that the hypothesis is significant at the 10% level

From the table, we can see that none of the alternative hypotheses hold at a statistically significant level. Therefore, we fail to reject our null hypothesis and there is no significant difference in the mean level of Happiness Index between students from SEC B and SEC A.

4.2.4 Happiness Index across Professional and Non-professional courses

Since our sample comprises of students from a variety of educational fields with differing levels of academic pressure, we use the t-test to check if the mean level of Happiness Index varies with the kind of course being pursued.

Our null hypothesis is that the difference of the means of Happiness Index between students pursuing non-professional and professional courses is zero:

$$H_0: M_{np} = M_p$$

Where M_{np} is the mean of Happiness Index for students pursuing non-professional courses and M_p is that of those pursuing professional courses.

Therefore, we take up three alternative hypotheses:

$$H_1: M_{np} < M_p$$

$$H_2: M_{np} \neq M_p$$

$$H_3: M_{np} > M_p$$

Table 26 :

Group	Observation	Mean	Standard Error	Standard deviation	[95% Confidence Interval]	
Non-Professional	238	.5310624	.0099487	.1534808	.5114633	.5506615
Professional	112	.5526148	.014587	.1543748	.5237096	.58152
Combined	350	.5379592	.008225	.1538758	.5217824	.554136
Difference		-.0215524	.0176197		-.0562069	.0131021

Table 27:

Difference = mean(Non-Professional) - mean(Professional) $t = -1.2232$

H_0 : diff = 0		Degrees of freedom = 348
H_1 : diff < 0	H_2 : diff \neq 0	H_3 : diff > 0
$\Pr(T < t) = 0.1110$	$\Pr(T > t) = 0.2221$	$\Pr(T > t) = 0.8890$

In order to understand which hypothesis holds significantly, we consider:

$$V = \Pr(T < t) \times 100 \text{ or } \Pr(T > t) \times 100$$

- If $0 \leq V \leq 1$, we can conclude that the hypothesis is significant at the 1% level
- If $1 < V \leq 5$, we can conclude that the hypothesis is significant at the 5% level
- If $5 < V \leq 10$, we can conclude that the hypothesis is significant at the 10% level

From the table, we can see that none of the alternative hypotheses hold at a statistically significant level. Therefore, we fail to reject our null hypothesis and there is no significant difference in the mean level of Happiness Index between students pursuing non-professional courses and those pursuing professional courses.

4.2.5 Happiness Index across Residence Status

In a metropolitan city like Kolkata, many students enrolled in colleges and universities come from different parts of the state and the country. During the academic session they stay away from home and families. Therefore, we use the t-test to check if the mean level of Happiness Index varies with their residence status.

Our null hypothesis is that the difference of the means of Happiness Index between students who do not reside with family during the academic year and those who do, is zero:

$$H_0: M_{ResNo} = M_{ResYes}$$

Where M_{ResNo} is the mean of Happiness Index of those who do not reside with family during the academic year and M_{ResYes} is that of those who do.

Therefore, we take up three alternative hypotheses:

$$H_1: M_{ResNo} < M_{ResYes}$$

$$H_2: M_{ResNo} \neq M_{ResYes}$$

$$H_3: M_{ResNo} > M_{ResYes}$$

Table 28 :

Group	Observation	Mean	Standard Error	Standard deviation	[95% Confidence Interval]	
Reside with Family						
No	90	.5376984	.0151781	.1439924	.5075398	.567857
Yes	233	.5456775	.0101973	.1556549	.5255863	.5657686
Combined	323	.5434542	.0084751	.1523159	.5267807	.5601277
Difference		-.0079791	.0189279		-.0452175	.0292594

Table 29:

Difference = mean(No) - mean(Yes)

t = -0.4216

H_0: diff = 0		Degrees of freedom = 321	
H_1: diff < 0	H_2: diff != 0		H_3: diff > 0
Pr(T < t) = 0.3368	Pr(T > t) = 0.6736		Pr(T > t) = 0.6632

In order to understand which hypothesis holds significantly, we consider:

$$V = \text{Pr}(T < t) \times 100 \text{ or } \text{Pr}(T > t) \times 100$$

- If $0 \leq V \leq 1$, we can conclude that the hypothesis is significant at the 1% level
- If $1 < V \leq 5$, we can conclude that the hypothesis is significant at the 5% level
- If $5 < V \leq 10$, we can conclude that the hypothesis is significant at the 10% level

From the table, we can see that none of the alternative hypotheses hold at a statistically significant level. Therefore, we fail to reject our null hypothesis and there is no significant difference in the mean level of Happiness Index between students who do not reside with family during the academic year and those who do.

The above tests of hypotheses prove that the mean level of Happiness Index does not vary with Gender, Course, Socio-economic Classification or if a student resides with family during the academic year. However, we see that the mean Happiness Index of students does vary with their Area of Origin. These assertions are further proven in our regression analysis in Section V.

SECTION

V

**Regression
Analysis**

5.1 Determining the Influential Factors of Happiness Index

The results of the previous section dealt with happiness and its dependency on the broad categories of various key aspects of life, like social life, academic life, digital media activities, gender, SEC etc.. In this section we take very specific behaviour patterns/personality traits, which in-of-itself are seemingly unrelated to influencing happiness level, and build a linear, stochastic, robust regression model to see their actual significant contribution to happiness level.

We assume a linear, stochastic regression model:

$$HI_i = \beta_0 + \beta_1 LivingCondition_i + \beta_2 Allowance_i + \beta_3 Interaction_i + \beta_4 AcadPressure_i + \beta_5 Browsing_i + \mu_i \quad (3)$$

Where β_0 is the intercept, $\beta_1, \beta_2, \beta_3, \beta_4$ and β_5 are the slope coefficients for the independent variables *LivingCondition*, *Allowance*, *Interaction*, *AcadPressure* and *Browsing* respectively; μ_i is the error term, for the i^{th} unit.

LivingCondition: Level of contentment with one's living conditions.

Allowance: Satisfaction with personal disposable monetary allowance.

Interaction: Level of interaction with one's friends.

AcadPressure: A measurement of the lack of pressure by friends and family to achieve academic goals.

Browsing: A measurement of the lack of instinct to browse apps.

The purpose of this model is to understand how seemingly superficial factors impact an individual's happiness. We do this by estimating the slope coefficients of the independent variables from the regression of HI_i on the independent variables, as given in equation (3).

We first carry out the regression for the sample as a whole, and then repeat the procedure across genders and SEC categories.

5.1.1 Regression Results for the Entire Sample

Table 30 :

Number of observations	350
F(5, 344)	42.57
Prob > F	0.0000
R-squared	0.4168
Root MSE	0.11836

Table 31:

Happiness Index	Coefficient	Robust Standard Error	t	P> t 	[95% Confidence Interval]	
Satisfaction with Living Condition	.0307244	.0063823	4.81	0.000	.0181712	.0432776
Satisfaction with monetary allowance	.0161645	.0051285	3.15	0.002	.0060774	.0262516
Interaction with Friends	.0349828	.0069839	5.01	0.000	.0212462	.0487193
Lack of Academic performance pressure by others	.0512781	.0047633	10.77	0.000	.0419093	.060647
Absence of browsing instinct	.023145	.0061015	3.79	0.000	.011144	.035146
Constant	.1714871	.0343682	4.99	0.000	.1038889	.2390854

At a glance, we see that the model is overall significant at 1% level with an R-square of 41.68%, which means that 41.68% of variations in Happiness Index can be explained by the independent variables collectively. We note that the slope coefficients of all five independent variables and the constant are positive. *AcadPressure* has the highest slope coefficient followed by *Interaction*, *LivingCondition*, *Browsing* and *Allowance*.

In order to conclude if any of the independent variables have a significant impact on Happiness Index, we need to compare the t-statistics with the corresponding p-values. We consider:

$$V = (P > t) \times 100$$

- If $0 \leq V \leq 1$, we can conclude that the coefficient is significant at the 1% level
- If $1 < V \leq 5$, we can conclude that the coefficient is significant at the 5% level
- If $5 < V \leq 10$, we can conclude that the coefficient is significant at the 10% level

From this, we see that for all the variables and in the case of the constant as well, the coefficients are significant at the 1% level. Hence, we can conclude that *AcadPressure*, *Interaction*, *LivingCondition*, *Browsing* and *Allowance* are significant in their impact on Happiness Index.

5.1.2 Now, let us see if the results vary across Gender. We perform the regression as specified in equation (3) for Males and Females separately. A simultaneous estimation yields the following results:

Table 32 :

Model: Sample of Male Students only					Model: Sample of Female Students only			
Variable	Coefficient	Robust Standard Error	t-Statistic	P>t	Coefficient	Robust Standard Error	t-Statistic	P>t
Satisfaction with Living Condition	.0381545	.0078547	4.86	0.000	.0191441	.0104534	1.83	0.067
Satisfaction with monetary allowance	.0145091	.0059441	2.44	0.015	.0212718	.0102968	2.07	0.039
Interaction with Friends	.0446878	.0090459	4.94	0.000	.0232139	.0097371	2.38	0.017
Lack of Academic performance pressure by others	.0471104	.0059525	7.91	0.000	.0560243	.0073757	7.60	0.000
Absence of browsing instinct	.0204637	.0081835	2.50	0.012	.0264274	.0085418	3.09	0.002
Constant	.1366428	.0448648	3.05	0.002	.2122164	.0479155	4.43	0.000
	R-Square = 0.4361				R-Square = 0.4175			
	F(5, 182)= 22.07, Prob > F=0.0000				F(5, 156) =20.91, Prob > F=0.0000			
	Root MSE =.11689				Root MSE =.11993			
	Total Observations = 188				Total Observations = 162			

While in both cases, the models are significant at 1% level, the R-square for the Males only samples is 43.61% and that for the Females only sample is 41.75%. This means that 43.61% and 41.75% of variations in the dependent variable (Happiness Index) is explained by the independent variables collectively, for Males and Females respectively.

For the Male samples, at a glance, we can note that the slope coefficients of all five independent variables and the constant are positive. *AcadPressure* has the highest slope coefficient followed by *Interaction*, *LivingCondition*, *Browsing* and *Allowance*. For the Female samples, all the coefficients and the constant are positive too. *AcadPressure* has the highest slope coefficient followed by *Browsing*, *Interaction*, *Allowance*, and *LivingCondition*.

In order to conclude if any of the independent variables has a significant impact on Happiness Index, we need to compare the t-statistics with the corresponding p-values. We consider:

$$V = (P > t) \times 100$$

- If $0 \leq V \leq 1$, we can conclude that the coefficient is significant at the 1% level
- If $1 < V \leq 5$, we can conclude that the coefficient is significant at the 5% level
- If $5 < V \leq 10$, we can conclude that the coefficient is significant at the 10% level

We see that for both Males and Females, *AcadPressure* and the constant are significant at the 1% level, while *Allowance* is significant at 5% level in both cases. *LivingCondition* is significant at 1% level for Male samples and 10% level for Female samples. *Interaction* is significant at 1% level and 5% level for Male and Females respectively. *Browsing* is significant at 5% level for Males and 1% level for Females.

Table 33 :

Testing the difference of all coefficients together	Chi-square Statistic	Prob>Chi2
$H_0: \beta_i^m - \beta_i^f = 0$ $H_A: \beta_i^m - \beta_i^f \neq 0$ Where β_i^m is the coefficient for the Male samples, β_i^f is the coefficient for the Female samples and $i = 1, 2, 3, 4, 5$ from equation (3)	5.60	0.3466

Testing the overall equality of the regression coefficients between Males and Females, we find that difference between the two is not statistically significant. This is further proven when we test the equality of the coefficients of the explanatory variables individually between Males and Females.

Table 34 :

Variable	Model: Sample of Male Students only		Model: Sample of Female Students only		Testing if the Difference of Coefficients of Two Models is zero	
	Coefficient	P>t	Coefficient	P>t	Chi-square Statistic	Prob>Chi2
Satisfaction with Living Condition	.0381545	0.000	.0191441	0.067	2.11	0.1460
Satisfaction with monetary allowance	.0145091	0.015	.0212718	0.039	0.32	0.5695
Interaction with Friends	.0446878	0.000	.0232139	0.017	2.61	0.1062
Lack of Academic performance pressure by others	.047104	0.000	.0560243	0.000	0.89	0.3466
Absence of browsing instinct	.0204637	0.012	.0264274	0.002	0.25	0.6142
Constant	.1366428	0.002	.2122164	0.000	1.33	0.2496

Therefore, we see that none of coefficients are significantly different between Males and Females and all these factors impact Happiness Index equally across genders, in our sample.

5.1.3 Now, let us see if the results vary across Socio-economic Class. We perform the regression as specified in equation (3) for students from SEC B and SEC A separately. A simultaneous estimation yields the following results:

Table 35 :

Model: Sample of SEC B Students only					Model: Sample of SEC A Students only			
Variable	Coefficient	Robust Standard Error	t-Statistic	P>t	Coefficient	Robust Standard Error	t-Statistic	P>t
Satisfaction with Living Condition	.0761877	.0311508	2.45	0.014	.0274534	.0064781	4.24	0.000
Satisfaction with monetary allowance	-.0172521	.0161353	-1.07	0.285	.0180972	.0052651	3.44	0.001
Interaction with Friends	.0627708	.0203634	3.08	0.002	.0331879	.0072157	4.60	0.000
Lack of Academic performance pressure by others	.0310275	.0186257	1.67	0.096	.053504	.0048977	10.92	0.000
Absence of browsing instinct	-.0005623	.0267592	-0.02	0.983	.0259867	.0061896	4.20	0.000
Constant	.1544309	.0929011	1.66	0.096	.172828	.0362611	4.77	0.000
	R-Square = 0.4799				R-Square = 0.4400			
	F(5, 21) =3.65, Prob > F=0.0156				F(5, 310) =42.21, Prob > F=0.0000			
	Root MSE =.14107				Root MSE =.11538			
	Total Observations = 27				Total Observations = 316			

While the models are significant at 5% level and 1% level for SEC B and SEC A students respectively, the R-square for the SEC B only sample is 47.99% and that for the SEC A only sample is 44.00%. This means that 47.99% and 44.00% of variations in the dependent

variable (Happiness Index) is explained by the independent variables collectively, for SEC B and SEC A students respectively.

For SEC B, we note that the slope coefficients of *Allowance*, *Browsing* are negative, and that of *LivingCondition*, *Interaction*, *AcadPressure* and the constant are positive. Also, in terms of magnitude, *LivingCondition* has the highest slope coefficient followed by *Interaction*, *AcadPressure*, *Allowance* and *Browsing*.

For SEC A, the slope coefficients of all five independent variables and the constant are positive. *AcadPressure* has the highest slope coefficient followed by *Interaction*, *LivingCondition*, *Browsing* and *Allowance*.

In order to conclude if any of the independent variables has a significant impact on Happiness Index, we need to compare the t-statistics with the corresponding p-values. We consider:

$$V = (P > t) \times 100$$

- If $0 \leq V \leq 1$, we can conclude that the coefficient is significant at the 1% level
- If $1 < V \leq 5$, we can conclude that the coefficient is significant at the 5% level
- If $5 < V \leq 10$, we can conclude that the coefficient is significant at the 10% level

We see that for both cases, *Interaction* is significant at the 1% level. *LivingCondition* is significant at 5% level for SEC B students and at 1% level for SEC A students. *AcadPressure* and the constant are significant at 10% and 1% for SEC B and SEC A respectively.

Interestingly, *Allowance* and *Browsing* are significant at 1% level for SEC A students but statistically insignificant for SEC B students.

Table 36 :

Testing the difference of all coefficients together	Chi-square Statistic	Prob>Chi2
$H_0: \beta_i^B - \beta_i^A = 0$ $H_A: \beta_i^B - \beta_i^A \neq 0$ Where β_i^B is the coefficient for the SEC B samples, β_i^A is the coefficient for the SEC A samples and $i = 1,2,3,4,5$ from equation (3)	10.18	0.0703

Testing the overall equality of the regression coefficients between SEC B and SEC A, we find that difference between the two is significant at the 10% level, which implies that one or more of the regression coefficients are significantly different. Now, we test the equality of the coefficients of the explanatory variables individually to understand which are statistically unequal across the two categories.

Table 37 :

Variable	Model: Sample of SEC B Students only		Model: Sample of SEC A Students only		Testing if the Difference of Coefficients of Two Models is zero	
	Coefficient	P>t	Coefficient	P>t	Chi-square Statistic	Prob>Chi2
Satisfaction with Living Condition	.0761877	0.014	.0274534	0.000	2.35	0.1256
Satisfaction with monetary allowance	-.0172521	0.285	.0180972	0.001	4.34	0.0373
Interaction with Friends	.0627708	0.002	.0331879	0.000	1.88	0.1709
Lack of Academic performance pressure by others	.0310275	0.096	.053504	0.000	1.36	0.2432
Absence of browsing instinct	-.0005623	0.983	.0259867	0.000	0.93	0.3337
Constant	.1544309	0.096	.172828	0.000	0.03	0.8536

Therefore, we see that the coefficients of *Allowance* are significantly different at 5% level, between students from SEC B and SEC A. The coefficients of the other explanatory variables- *LivingCondition*, *Interaction*, *AcadPressure* and *Browsing* are not significantly different between the two categories, therefore, these factors affect Happiness Index equally across SEC, in our sample.

5.2 Key Determinants of Happiness Index

The previous regression analysis in Section 5.1 proved the importance of seemingly superficial indicators of happiness. Each of those factors represent key aspects of life which influence a student's happiness— Social Life, Academic Life and Digital Media Activities. In Section 4.1, we used pair-wise correlation coefficients to establish association between Happiness Index and these aspects of life. Now, we use regression analysis to understand the causality involved in the association.

We assume a linear, stochastic regression model:

$$HI_i = \beta_0 + \beta_1 Social_i + \beta_2 Academics_i + \beta_3 Digital_i + \beta_4 Gender_i + \beta_5 SEC_i + \beta_6 AreaOrigin_i + u_i \quad (4)$$

Where β_0 is the intercept, $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$ and β_6 are the slope coefficients for the independent variables *Social*, *Academics*, *Digital*, *Gender*, *SEC* and *AreaOrigin* respectively; u_i is the error term, for the i^{th} unit.

Social: Satisfaction from Social Life

Academics: Satisfaction from Academic Life

Digital : Satisfaction from Digital Media Activities

$Gender_i = 0$ if i^{th} unit is Male

$= 1$ if i^{th} unit is Female

$SEC_i = 0$ if i^{th} unit is from socio-economic classification category C or D

$= 1$ if i^{th} unit is from socio-economic classification category B

$= 2$ if i^{th} unit is from socio-economic classification category A

$AreaOrigin_i = 0$ if i^{th} unit is from Rural area

=1 if i^{th} unit is from Urban area

=2 if i^{th} unit is from Metropolitan area

In this model, we try to understand the impact of social life, academic life and digital media activities on an individual's happiness, along with factors like gender, socio-economic classification and area of origin. We do this by estimating the slope coefficients of the independent variables from the regression of HI_i on the independent variables, as given in equation (4).

5.2.1 First, we carry out the regression for the entire sample.

Table 38 :

Number of observations	350
F(8, 341)	22.16
Prob > F	0.0000
R-squared	0.3419
Root MSE	0.12629

Table 39:

Happiness Index	Coefficient	Robust Standard Error	t	P> t	[95% Confidence Interval]	
Satisfaction from Social Life	.0131527	.0017035	7.72	0.000	.0098019	.0165034
Satisfaction from Academic Life	.0108191	.0013545	7.99	0.000	.0081549	.0134833
Satisfaction from Digital Media Activities	.0064335	.0028015	2.30	0.022	.0009231	.0119439
Gender	-.0024681	.014256	-0.17	0.863	-.0305089	.0255727
SEC B	.0583969	.0602003	0.97	0.333	-.0600138	.1768076
SEC A	.032242	.0547878	0.59	0.557	-.0755226	.1400067
AreaOrigin: Urban	-.0498683	.0252469	-1.98	0.049	-.0995276	-.0002089
AreaOrigin: Metropolitan	-.0545569	.0257469	-2.12	0.035	-.1051996	-.0039141
Constant	.1171318	.0694762	1.69	0.093	-.019524	.2537877

At a glance, we see that the model is overall significant at 1% level with an R-square of 34.19%, which means that 34.19% of variations in Happiness Index can be explained by the independent variables collectively. The coefficients of Satisfaction from Social Life, Satisfaction from Academic Life, Satisfaction from Digital Media Activities, SEC and the constant are positive, while that of Gender and Areas of Origin are negative. In terms of magnitude, the coefficient of SEC B is highest, followed by Metropolitan area of origin, Urban area of origin, SEC A, Satisfaction from Social Life, Satisfaction from Academic Life, Satisfaction from Digital Media Activities and Gender.

For our categorical variables- Gender, SEC and Area of Origin, one value forms the reference category for each variable, as is the norm in regression analysis with dummy variables. For

Gender: Male is the reference category, for SEC: category C/D, and for Area of Origin: Rural area. Therefore, the coefficients of each value of the categorical variables represent the impact of the difference between the reference category and that particular category.

We see that the coefficients for both SEC A and SEC B (reference category: SEC C/D) are positive, while that of Female gender (reference category: Male) is negative. The coefficients for both Urban and Metropolitan areas of origin (reference category: Rural) are negative. A positive regression coefficient means that Happiness Index is higher for that particular value of the categorical variable than for the reference group; a negative regression coefficient means that Happiness Index is lower.

In order to conclude if any of the independent variables have a significant impact on Happiness Index, we need to compare the t-statistics with the corresponding p-values. We consider:

$$V = (P > t) \times 100$$

- If $0 \leq V \leq 1$, we can conclude that the coefficient is significant at the 1% level
- If $1 < V \leq 5$, we can conclude that the coefficient is significant at the 5% level
- If $5 < V \leq 10$, we can conclude that the coefficient is significant at the 10% level

Therefore, we see that the impact of Satisfaction from Social Life and Satisfaction from Academic Life on Happiness Index are significant at 1% level, while that of Satisfaction from Digital Media Activities is significant at 5% level. In terms of Area of Origin, both Urban and Metropolitan categories are significant at the 5% level. The constant is significant at 10% level. Gender and SEC do not impact Happiness Index at a significant level.

As Gender and SEC proved to be insignificant within the model, let us undertake further analysis to explore the results within the categories of Gender and SEC.

5.2.2 Let us take the linear regression without Gender:

$$HI_i = \beta_0 + \beta_1 Social_i + \beta_2 Academics_i + \beta_3 Digital_i + \beta_4 SEC_i + \beta_5 AreaOrigin_i + u_i \quad (5)$$

Where β_0 is the intercept, $\beta_1, \beta_2, \beta_3, \beta_4$ and β_5 are the slope coefficients for the independent variables *Social, Academics, Digital, SEC* and *AreaOrigin* respectively; u_i is the error term, for the i^{th} unit.

Social: Satisfaction from Social Life

Academics: Satisfaction from Academic Life

Digital : Satisfaction from Digital Media Activities

$SEC_i = 0$ if i^{th} unit is from socio-economic classification category C or D

= 1 if i^{th} unit is from socio-economic classification category B

=2 if i^{th} unit is from socio-economic classification category A

$AreaOrigin_i = 0$ if i^{th} unit is from Rural area

=1 if i^{th} unit is from Urban area

=2 if i^{th} unit is from Metropolitan area

We now run regressions of Happiness Index on the explanatory variables- Satisfaction from Social Life, Satisfaction from Academic Life, Satisfaction from Digital Media Activities, SEC and Area of Origin, for males and females separately.

A simultaneous estimation of the regression as specified in equation (5), for Males and Females is as follows:

Table 40 :

Model: Sample of Male Students only					Model: Sample of Female Students only			
Variable	Coefficient	Robust Standard Error	t-Statistic	P>t	Coefficient	Robust Standard Error	t-Statistic	P>t
Satisfaction from Social Life	.0141905	.0022293	6.37	0.000	.010815	.0026678	4.05	0.000
Satisfaction from Academic Life	.0108264	.0018399	5.88	0.000	.0109296	.0019324	5.66	0.000
Satisfaction from Digital Media Activities	.004987	.0035722	1.40	0.163	.0072119	.0043823	1.65	0.100
SEC B	.0484957	.0543919	0.89	0.373	.119998	.1451837	0.83	0.409
SEC A	.05112	.0462596	1.11	0.269	.0000113	.1411104	0.00	1.000
AreaOrigin: Urban	-.0623232	.0280416	-2.22	0.026	.0260229	.0376598	0.69	0.490
AreaOrigin: Metropolitan	-.0801826	.0300428	-2.67	0.008	.0352833	.0353534	1.00	0.318
Constant	.1183738	.0663399	1.78	0.074	.0865847	.1534309	0.56	0.573
	R-Square = 0.4123				R-Square = 0.2946			
	F(7, 180) =17.91, Prob > F=0.0000				F(7, 154)= 13.14, Prob > F=0.0000			
	Root MSE = .11998				Root MSE =.13283			
	Total Observations = 188				Total Observations = 162			

While in both cases, the models are significant at 1% level, the R-square for the Males only sample is 41.23% and that for the Females only sample is 29.46%. This means that 41.23% and 29.46% of variations in the dependent variable (Happiness Index) is explained by the independent variables collectively, for Males and Females respectively.

For the Male samples, we see that the coefficients of Satisfaction from Social Life, Satisfaction from Academic Life, Satisfaction from Digital Media Activities, SEC B and SEC A (reference category: SEC C/D), and the constant are positive. The negative regression coefficients of the Urban and Metropolitan areas of origin (reference category: Rural) means that Happiness Index is lower for individuals from these areas than Rural areas. In terms of magnitude, the coefficient of Metropolitan area of origin is highest, followed by Urban area of origin, SEC A, SEC B, Satisfaction from Social Life, Satisfaction from Academic Life and then Satisfaction from Digital Media Activities.

For Female samples, the coefficients of all independent variables and the constant are positive. The positive regression coefficients of the Urban and Metropolitan areas of origin (reference category: Rural) suggests that Happiness Index is higher for individuals from these areas than Rural areas. In terms of magnitude, the coefficient of SEC B is the highest, followed by Metropolitan area of origin, Urban area of origin, Satisfaction from Academic Life, Satisfaction from Social Life, Satisfaction from Digital Media Activities, and SEC A.

In order to conclude if any of the independent variables has a significant impact on Happiness Index, we need to compare the t-statistics with the corresponding p-values. We consider:

$$V = (P > t) \times 100$$

- If $0 \leq V \leq 1$, we can conclude that the coefficient is significant at the 1% level
- If $1 < V \leq 5$, we can conclude that the coefficient is significant at the 5% level
- If $5 < V \leq 10$, we can conclude that the coefficient is significant at the 10% level

We see that the coefficients of Satisfaction from Social Life and Satisfaction from Academic Life are significant at 1 % level for both Males and Females. Satisfaction from Digital Media Activities, however, is significant at 10% for Females but not statistically significant for Males, and the constant term is significant at 10% level for males but not significant for females. Both Urban and Metropolitan areas of origin (reference category: Rural) are significant at 5% and 1% respectively, for Males but insignificant for Females. SEC remains insignificant for both Males and Females.

Table 41 :

Testing the difference of all coefficients together	Chi-square Statistic	Prob>Chi2
$H_0: \beta_i^m - \beta_i^f = 0$ $H_A: \beta_i^m - \beta_i^f \neq 0$ <p>Where β_i^m is the coefficient for the Male samples, β_i^f is the coefficient for the Female samples and $i = 1,2,3,4,5$ from equation (5)</p>	11.9	0.1000

Testing the overall equality of the regression coefficients between Males and Females, we find that difference between the two is significant at the 10% level, which implies that one or more of the regression coefficients are significantly different. Now, we test the equality of the coefficients of the explanatory variables individually to understand which are statistically unequal across the two categories.

Table 42 :

Variable	Model: Sample of Male Students only		Model: Sample of Female Students only		Testing if the Difference of Coefficients of Two Models is zero	
	Coefficient	P>t	Coefficient	P>t	Chi- square Statistic	Prob>Chi2
Satisfaction from Social Life	.0141905	0.000	.010815	0.000	0.94	0.3316
Satisfaction from Academic Life	.0108264	0.000	.0109296	0.000	0.00	0.9692
Satisfaction from Digital Media Activities	.004987	0.163	.0072119	0.100	0.15	0.6939
SEC B	.0484957	0.373	.119998	0.409	0.21	0.6447
SEC A	.05112	0.269	.0000113	1.000	0.12	0.7307
AreaOrigin: Urban	-.0623232	0.026	.0260229	0.490	3.54	0.0599
AreaOrigin: Metropolitan	-.0801826	0.008	.0352833	0.318	6.19	0.0128
Constant	.1183738	0.074	.0865847	0.573	0.04	0.8492

From the results of the different hypothesis tests on the regression coefficients, we see that the difference of those of Satisfaction from Social Life, Satisfaction from Academic Life, Satisfaction from Digital Media Activities, SEC categories A and B (reference category: C/D) and the constant are not statistically significant. Therefore, the influence of these factors on Happiness Index, does not differ across Males and Females in our sample. The coefficients of Urban and Metropolitan areas of origin, however, are significantly different at 10% and 5% levels respectively. Therefore, the Area of Origin (reference category: Rural) of an individual has a different impact on Happiness Index for Males and Females.

Given that Socio-economic Classification has not been statistically significant in the previous analyses, let us adapt the model to check if the impact of other explanatory variables differ between the different categories of SEC.

5.2.3 Let us take the linear regression without SEC:

$$HI_i = \beta_0 + \beta_1 Social_i + \beta_2 Academics_i + \beta_3 Digital_i + \beta_4 Gender_i + \beta_5 AreaOrigin_i + u_i \quad (6)$$

Where β_0 is the intercept, $\beta_1, \beta_2, \beta_3, \beta_4$ and β_5 are the slope coefficients for the independent variables *Social, Academics, Digital, Gender* and *AreaOrigin* respectively; u_i is the error term, for the i^{th} unit.

Social: Satisfaction from Social Life

Academics: Satisfaction from Academic Life

Digital : Satisfaction from Digital Media Activities

$Gender_i = 0$ if i^{th} unit is Male

$= 1$ if i^{th} unit is Female

$AreaOrigin_i = 0$ if i^{th} unit is from Rural area

$= 1$ if i^{th} unit is from Urban area

$= 2$ if i^{th} unit is from Metropolitan area

Since our data sample primarily comprises individuals from SEC A and SEC B, we run regressions of Happiness Index on the explanatory variables- Satisfaction from Social Life, Satisfaction from Academic Life, Satisfaction from Digital Media Activities, Gender and Area of Origin, for these two categories only.

A simultaneous estimation of the regression as specified in equation (6), for students from SEC B and SEC A is as follows:

Table 43 :

Model: Sample of SEC B Students only					Model: Sample of SEC A Students only			
Variable	Coefficient	Robust Standard Error	t-Statistic	P>t	Coefficient	Robust Standard Error	t-Statistic	P>t
Satisfaction from Social Life	.0224955	.0031015	7.25	0.000	.0123854	.0017471	7.09	0.000
Satisfaction from Academic Life	.0065596	.0036424	1.80	0.072	.011195	.0013787	8.12	0.000
Satisfaction from Digital Media Activities	-.0201968	.0069129	-2.92	0.003	.0082428	.0028908	2.85	0.004
Gender	.1418388	.0334463	4.24	0.000	-.0098297	.0146544	-0.67	0.502
AreaOrigin: Urban	-.0075273	.033957	-0.22	0.825	-.0465374	.0273751	-1.70	0.089
AreaOrigin: Metropolitan	-.1184463	.0529871	-2.24	0.025	-.0494489	.0271561	-1.82	0.069
Constant	.3981602	.0984386	4.04	0.000	.1353668	.0481302	2.81	0.005
	R-Square = 0.7418				R-Square = 0.3500			
	F(6, 20) =19.14, Prob > F=0.0000				F(6, 309) =26.59, Prob > F=0.0000			
	Root MSE =.10186				Root MSE =.12451			
	Total Observations = 27				Total Observations = 316			

While in both cases, the models are significant at 1% level, the R-square for the SEC B only sample is 74.18% and that for the SEC A only sample is 35.00%. This means that 74.18% and

35.00% of variations in the dependent variable (Happiness Index) is explained by the independent variables collectively, for SEC B and SEC A respectively.

For the SEC B samples, the coefficients of Satisfaction from Social Life, Satisfaction from Academic Life, Female Gender (reference category: Male) and the constant are positive, while the coefficients of Satisfaction from Digital Media Activities, Urban and Metropolitan Areas of Origin (reference category: Rural area) are negative. The positive coefficient of Gender (reference category: Male) implies that Happiness Index is higher for females than males, within the category. The negative coefficient of Metropolitan area of origin implies that Happiness Index is lower for individuals in those areas than Rural areas. In terms of magnitude, the coefficient of Female gender is highest, followed by Metropolitan area of origin, Satisfaction from Social Life, Satisfaction from Digital Media Activities, Urban area of origin, Satisfaction from Academic Life.

For SEC A samples, the coefficients of Satisfaction from Social Life, Satisfaction from Academic Life, Satisfaction from Digital Media Activities and the constant term are positive, while that of Female Gender (reference category: Male) is negative. The negative coefficients of Urban and Metropolitan areas of origin imply that Happiness Index is lower for individuals in those two areas than Rural areas. In terms of magnitude, the coefficient of Metropolitan area of origin is the highest, followed by Urban area of origin, Satisfaction from Social Life, Satisfaction from Academic Life, Female gender, Satisfaction from Digital Media Activities.

In order to conclude if any of the independent variables have a significant impact on Happiness Index, we need to compare the t-statistics with the corresponding p-values. We consider:

$$V = (P > t) \times 100$$

- If $0 \leq V \leq 1$, we can conclude that the coefficient is significant at the 1% level
- If $1 < V \leq 5$, we can conclude that the coefficient is significant at the 5% level
- If $5 < V \leq 10$, we can conclude that the coefficient is significant at the 10% level

From the above simultaneous estimation, we see that the regression coefficients of Satisfaction from Social Life, Satisfaction from Digital Media Activities and the constant are significant at 1% level for both SEC B and SEC A categories. That of Satisfaction from Academic Life is significant at 10% level for SEC B students and at 1% level for SEC A students. The Female gender (reference category: Male) is significant at 1% level for SEC B category but insignificant for SEC A. In the case of Area of Origin (reference category: Rural), we see that the Urban category is significant at 10% for SEC A but insignificant for SEC B. Metropolitan category is significant at 5% and 10% for SEC B and A respectively.

Table 44 :

Testing the difference of all coefficients together	Chi-square Statistic	Prob>Chi2
$H_0: \beta_i^B - \beta_i^A = 0$ $H_A: \beta_i^B - \beta_i^A \neq 0$ Where β_i^B is the coefficient for the SEC B samples, β_i^A is the coefficient for the SEC A samples and $i = 1,2,3,4,5$ from equation (6)	56.99	0.0000

Testing the overall equality of the regression coefficients between SEC B samples and SEC A samples, we find that difference between the two is significant at the 1% level, which implies that one or more of the regression coefficients are significantly different. Now, we test the equality of the coefficients of the explanatory variables individually to understand which are statistically unequal across the two categories.

Table 45 :

	Model: Sample of SEC B Students only		Model: Sample of SEC A Students only		Testing if the Difference of Coefficients of Two Models is zero	
Variable	Coefficient	P>t	Coefficient	P>t	Chi- square Statistic	Prob>Chi2
Satisfaction from Social Life	.0224955	0.000	.0123854	0.000	8.07	0.0045
Satisfaction from Academic Life	.0065596	0.072	.011195	0.000	1.42	0.2340
Satisfaction from Digital Media Activities	-.0201968	0.003	.0082428	0.004	14.41	0.0001
Gender	.1418388	0.000	-.0098297	0.502	17.25	0.0000
AreaOrigin: Urban	-.0075273	0.825	-.0465374	0.089	0.80	0.3711
AreaOrigin: Metropolitan	-.1184463	0.025	-.0494489	0.069	1.34	0.2465
Constant	.3981602	0.000	.1353668	0.005	5.75	0.165

From the results of the hypotheses tests on the equality of regression coefficients, we see that that of Satisfaction from Academic Life, both Urban and Metropolitan areas of origin (reference category: Rural) and the constant are not significantly different between the two categories. The coefficients of Satisfaction from Social Life, Satisfaction from Digital Media Activities and the Female gender (reference category: Male) are significantly different at 1% level. Therefore, in terms of magnitude, these significant explanatory variables impact Happiness Index differently for SEC B and SEC A samples.

5.3 Relative Importance of Key Determinants of Happiness

Index

In the previous section, we see that satisfaction from social circles and relations, academic pursuits, and digital activities, play significantly important roles in determining a student's Happiness Index. Since the regression coefficients were significant in most cases, we now undertake a model to determine which aspect plays a more significant role in a student's happiness.

The multiplicative model is as follows:

$$\ln(HI_i) = \beta_0 + \beta_1 \ln(FamilyLife_i) + \beta_2 \ln(Friendships_i) + \beta_3 \ln(Academics_i) + \beta_4 \ln(Digital_i) + u_i \quad (7)$$

Where β_0 is the intercept, $\beta_1, \beta_2, \beta_3$ and β_4 show the responsiveness of HI to the independent variables *FamilyLife*, *Friendships*, *Academics* and *Digital* respectively; u_i is the error term, for the i^{th} unit.

FamilyLife: Satisfaction from Family Life

Friendships: Satisfaction from Friendships

Academics: Satisfaction from Academic Life

Digital : Satisfaction from Digital Media Activities

The advantage of this multiplicative model over the previously used linear model is that the regression coefficients show the responsiveness of HI_i to the independent variables.

In this model, we try to understand the individual importance of family, friends, academic life and digital media activities to a student's happiness. We do this by estimating the slope coefficients of the independent variables from the regression of $\ln(HI_i)$ on the independent variables, as given in equation (7).

5.3.1 First, we carry out the regression for the entire sample.

Table 46 :

Number of observations	349
F(4, 344)	22.57
Prob > F	0.0000
R-squared	0.3648
Root MSE	.27627

Table 47:

Ln(Happiness Index)	Coefficient	Robust Standard Error	t	P> t 	[95% Confidence Interval]	
Ln(Satisfaction from Family Life)	.3733434	.0573502	6.51	0.000	.2605423	.4861446
Ln(Satisfaction from Friendships)	.095513	.0273098	3.50	0.001	.0417978	.1492282
Ln(Satisfaction from Academic Life)	.3074185	.0506049	6.07	0.000	.2078846	.4069524
Ln(Satisfaction from Digital Media Activities)	.1607609	.0551691	2.91	0.004	.0522496	.2692722
Constant	-3.115657	.2744534	-11.35	0.000	-3.655475	-2.575839

At a glance, we see that the model is overall significant at 1% level with an R-square of 36.48%, which means that 36.48% of variations in dependent variable can be explained by

the independent variables collectively. The lower R-square in the previous section 5.2.1 indicates that the multiplicative model has more explanatory power.

The coefficients of all explanatory variables are positive, while the constant term is negative. In terms of magnitude, the coefficient of Satisfaction from Family Life is highest, followed by Satisfaction from Academic Life, Satisfaction from Digital Media Activities and Satisfaction from Friendships.

In order to conclude if any of the independent variables have a significant impact on the dependent variable, we need to compare the t-statistics with the corresponding p-values. We consider:

$$V = (P > t) \times 100$$

- If $0 \leq V \leq 1$, we can conclude that the coefficient is significant at the 1% level
- If $1 < V \leq 5$, we can conclude that the coefficient is significant at the 5% level
- If $5 < V \leq 10$, we can conclude that the coefficient is significant at the 10% level

We see that all the variables, including the constant term, are significant at the 1% level. Therefore, Happiness Index is most responsive to Satisfaction from Family Life, followed by Satisfaction from Academic Life, Satisfaction from Digital Media Activities and then Satisfaction from Friendships.

5.3.2 Now, let us see if the results vary across Gender. We perform the regression as specified in equation (7) for Males and Females separately. A simultaneous estimation yields the following results:

Table 48 :

Model: Sample of Male Students only					Model: Sample of Female Students only			
Variable	Coefficient	Robust Standard Error	t-Statistic	P>t	Coefficient	Robust Standard Error	t-Statistic	P>t
Ln(Satisfaction from Family Life)	.3854391	.0780551	4.94	0.000	.3699492	.0864312	4.28	0.000
Ln(Satisfaction from Friendships)	.1279038	.0365436	3.50	0.000	.0506393	.0378061	1.34	0.180
Ln(Satisfaction from Academic Life)	.3259936	.0789979	4.13	0.000	.2711578	.0551594	4.92	0.000
Ln(Satisfaction from Digital Media Activities)	.091175	.0761494	1.20	0.231	.2557119	.0796575	3.21	0.001
Constant	-3.104912	.3617525	-8.58	0.000	-3.135389	.3635189	-8.63	0.000
	R-Square = 0.4078				R-Square = 0.3306			
	F(4, 183) =13.49, Prob > F=0.0000				F(4, 156)= 14.88, Prob > F=0.0000			
	Root MSE =.28095				Root MSE =.2696			
	Total Observations = 188				Total Observations = 161			

While in both cases, the models are significant at 1% level, the R-square for the Males only sample is 40.78% and that for the Females only sample is 33.06%. This means that 40.78% and 33.06% of variations in the dependent variable (Happiness Index) is explained by the independent variables collectively, for Males and Females respectively.

In both cases, all coefficients are positive while the constant terms are negative. For Male samples, the coefficient of Satisfaction from Family Life is highest in magnitude, followed by

Satisfaction from Academic Life, Satisfaction from Friendships and then Satisfaction from Digital Media Activities. For Female samples, Satisfaction from Family Life has the highest coefficient, followed by Satisfaction from Academic Life, Satisfaction from Digital Media Activities and then Satisfaction from Friendships.

In order to conclude if any of the independent variables have a significant impact on Happiness Index, we need to compare the t-statistics with the corresponding p-values. We consider:

$$V = (P > t) \times 100$$

- If $0 \leq V \leq 1$, we can conclude that the coefficient is significant at the 1% level
- If $1 < V \leq 5$, we can conclude that the coefficient is significant at the 5% level
- If $5 < V \leq 10$, we can conclude that the coefficient is significant at the 10% level

Therefore, we see that the coefficients of Satisfaction from Family Life, Satisfaction from Academic Life and the constant term are significant at the 1% level for both Male and Female samples. While Satisfaction from Friendships is significant at 1% level for Male samples, it is insignificant for Female samples. Satisfaction from Digital Media Activities is significant at 1% level for Female samples but insignificant for Male samples, this was also seen in the previous analysis in Section 5.2.2. Taking into account significance, Happiness Index is most responsive to Satisfaction from Family Life and Satisfaction from Academic Life for both Males and Females.

Table 49 :

Testing the difference of all coefficients together	Chi-square Statistic	Prob>Chi2
$H_0: \beta_i^m - \beta_i^f = 0$ $H_A: \beta_i^m - \beta_i^f \neq 0$ Where β_i^m is the coefficient for the Male samples, β_i^f is the coefficient for the Female samples and $i = 1,2,3,4$ from equation (7)	4.71	0.3183

Testing the overall equality of the regression coefficients between Males and Females, we find that difference between the two is not significant. This is further verified when we test the equality of the coefficients of the explanatory variables individually to understand if they are statistically unequal across the two categories.

Table 50 :

Variable	Model: Sample of Male Students only		Model: Sample of Female Students only		Testing if the Difference of Coefficients of Two Models is zero	
	Coefficient	P>t	Coefficient	P>t	Chi-square Statistic	Prob>Chi2
Ln(Satisfaction from Family Life)	.3854391	0.000	.3699492	0.000	0.02	0.8942
Ln(Satisfaction from Friendships)	.1279038	0.000	.0506393	0.180	2.16	0.1417
Ln(Satisfaction from Academic Life)	.3259936	0.000	.2711578	0.000	0.32	0.5693
Ln(Satisfaction from Digital Media Activities)	.091175	0.231	.2557119	0.001	2.23	0.1354
Constant	-3.104912	0.000	-3.135389	0.000	0.00	0.9526

Testing the equality of the coefficients between Male and Female samples, we see that they do not significantly vary. Therefore, the responsiveness of Happiness Index to Satisfaction from Family Life, Satisfaction from Friendships, Satisfaction from Academic Life and Satisfaction from Digital Media Activities does not significantly differ between Males and Females, in our data sample.

5.3.3 Now, let us see if the results vary across the Socio-economic Classification categories. We perform the regression as specified in equation (7) for students from SEC B and SEC A separately. A simultaneous estimation yields the following results:

Table 51 :

Model: Sample of SEC B Students only					Model: Sample of SEC A Students only			
Variable	Coefficient	Robust Standard Error	t-Statistic	P>t	Coefficient	Robust Standard Error	t-Statistic	P>t
Ln(Satisfaction from Family Life)	.3463619	.1319805	2.62	0.009	.376534	.0619405	6.08	0.000
Ln(Satisfaction from Friendships)	.2345082	.0877471	2.67	0.008	.0879404	.0276	3.19	0.001
Ln(Satisfaction from Academic Life)	.4908955	.1921669	2.55	0.011	.3035991	.0504909	6.01	0.000
Ln(Satisfaction from Digital Media Activities)	-.4221771	.2335743	-1.81	0.071	.1914343	.0562689	3.40	0.001
Constant	-2.399294	.6512402	-3.68	0.000	-3.171069	.2958761	-10.72	0.000
	R-Square = 0.6032				R-Square = 0.3733			
	F(4, 22) =6.33, Prob > F=0.0015				F(4, 310) =19.57, Prob > F=0.0000			
	Root MSE =.27328				Root MSE =.27298			
	Total Observations = 27				Total Observations = 315			

While in both cases, the models are significant at 1% level, the R-square for the SEC B only samples is 60.32% and that for the SEC A only samples is 37.33%. This means that 60.32%

and 37.33% of variations in the dependent variable (Happiness Index) is explained by the independent variables collectively, for SEC B and SEC A respectively.

For SEC B samples, all explanatory variables, with the exception of Satisfaction from Digital Media Activities and constant term, are positive. In terms of magnitude, the coefficient of Satisfaction from Academic Life is highest, followed by Satisfaction from Digital Media Activities, Satisfaction from Family Life and then Satisfaction from Friendships. For SEC A samples, all coefficients are positive, while the constant term is negative. Satisfaction from Family Life has the highest coefficient, followed by Satisfaction from Academic Life, Satisfaction from Digital Media Activities and then Satisfaction from Friendships.

In order to conclude if any of the independent variables have a significant impact on Happiness Index, we need to compare the t-statistics with the corresponding p-values. We consider:

$$V = (P > t) \times 100$$

- If $0 \leq V \leq 1$, we can conclude that the coefficient is significant at the 1% level
- If $1 < V \leq 5$, we can conclude that the coefficient is significant at the 5% level
- If $5 < V \leq 10$, we can conclude that the coefficient is significant at the 10% level

Therefore, we see that the coefficients of Satisfaction from Family Life, Satisfaction from Friendships and the constant term are significant the 1% level for both categories.

Satisfaction from Academic Life is significant at 5% level for SEC B samples and 1% level for SEC A samples. Satisfaction from Digital Media Activities is significant at 10% level for SEC B samples and at 1% level for SEC A samples. Based on the results, we note that for students from SEC B category, Happiness Index is most responsive to Satisfaction from Academic Life, followed by Satisfaction from Digital Media Activities, Satisfaction from Family Life and then Satisfaction from Friendships. For students from SEC A category, Happiness Index is most responsive to Satisfaction from Family Life, followed by Satisfaction from Academic Life,

Satisfaction from Digital Media Activities and then Satisfaction from Friendships. This result is synonymous with that of the full sample.

Table 52 :

Testing the difference of all coefficients together	Chi-square Statistic	Prob>Chi2
$H_0: \beta_i^B - \beta_i^A = 0$ $H_A: \beta_i^B - \beta_i^A \neq 0$ Where β_i^B is the coefficient for the SEC B samples, β_i^A is the coefficient for the SEC A samples and $i = 1,2,3,4$ from equation (7)	9.29	0.0543

Testing the overall equality of the regression coefficients between SEC B sample and SEC A sample, we find that difference between the two is significant at the 10% level, which implies that one or more of the regression coefficients are significantly different. Now, we test the equality of the coefficients of the explanatory variables individually to understand which are statistically unequal across the two categories.

Table 53 :

	Model: Sample of SEC B Students only		Model: Sample of SEC A Students only		Testing if the Difference of Coefficients of Two Models is zero	
Variable	Coefficient	P>t	Coefficient	P>t	Chi- square Statistic	Prob>Chi2
Ln(Satisfaction from Family Life)	.3463619	0.009	.376534	0.000	0.04	0.8360
Ln(Satisfaction from Friendships)	.2345082	0.008	.0879404	0.001	2.54	0.1111
Ln(Satisfaction from Academic Life)	.4908955	0.011	.3035991	0.000	0.89	0.3459
Ln(Satisfaction from Digital Media Activities)	-.4221771	0.071	.1914343	0.001	6.52	0.0106
Constant	-2.399294	0.000	-3.171069	0.000	1.16	0.2806

From the results of the different hypotheses tests on the regression coefficients, we see that the coefficient of Satisfaction from Digital Media Activities is significantly different between the two categories. This is also justified by the opposite nature of impact of Satisfaction from Digital Media Activities on SEC B and SEC A students. The other explanatory variables—Satisfaction from Family Life, Satisfaction from Friendships and Satisfaction from Academic Life, do not impact students from SEC B and SEC A differently at a significant level.

5.4 Influence of Interaction Terms on Happiness Index

In our previous analyses, we had considered the different influential aspects of life by merely using a summation of different conditions for each aspect. However, given the inter-related nature of several of the conditions, we now use interaction terms to take into account the impact the simultaneous satisfaction of those conditions might have on happiness.

Interaction terms are a means of quantifying the extent of impact that simultaneous high values of more than one independent variable, may have. What is meant by that is, suppose we want to model the salary earned by an employee by their years of experience and academic qualification.

The model would be like:

$$\text{Salary} = A1(\text{years_of_experience}) + A2(\text{academic_qualification})$$

If now we want to see how high values in both the variables affect our model, i.e., high academic qualification AND years of experience, we would use their interaction term and incorporate it into our model.

For the interaction terms used in the purpose of this project, a simple arithmetic multiplication operator is used in the form of $A*B$. If a variable (A or B) is zero, then the value of the interaction term is zero. That is, there must be positive real values for each of the terms. If both the variables have high values, we would get the interaction term to have a value greater than the sum of A and B, that is for high enough values of A and B, $A*B > A+B$

The linear, stochastic regression model is as follows:

$$HI_i = \beta_0 + \beta_1 \text{FamilyComfort}_i + \beta_2 \text{QualityFriends}_i + \beta_3 \text{PerformanceSecurity}_i + \beta_4 \text{DigitalComfort}_i + \mu_i \quad (8)$$

Where β_0 is the intercept, $\beta_1, \beta_2, \beta_3, \beta_4$ are the slope coefficients for the independent variables *FamilyComfort*, *QualityFriends*, *PerformanceSecurity*, *DigitalComfort* respectively; μ_i is the error term, for the i^{th} unit.

List of interaction terms and their meaning:

FamilyComfort: The individual is happy with their living conditions AND their family is physically present to support them.

QualityFriends: The individual has a high number of friends AND friends who support each other in their endeavours. This can be interpreted as number of quality friends.

PerformanceSecurity: The individual does not feel pressurized by family/friends to meet their expectations related to academic performance AND is satisfied with their academic performance.

DigitalComfort: The individual does not feel that browsing social media has become an instinct AND feels that they can be very real (like their offline self) online.

The interaction terms are chosen by checking the pair-wise correlation coefficients between various interaction terms, and also the independent terms themselves, as seen in Appendix(B). The ones chosen are the ones which have the highest correlation coefficients with Happiness Index.

In this model, we aim to understand the impact of the simultaneous satisfaction of conditions from each aspect of life. We do this by estimating the slope coefficients of the independent variables from the regression of the dependent variable *HI* on the independent variables *FamilyComfort*, *QualityFriends*, *PerformanceSecurity* and *DigitalComfort* respectively, as given in equation (8).

Regression Results Across the Whole Sample:

Table 54 :

Source	Sum of squares	Degrees of Freedom	Mean Square
Model	3.39047252	4	.84761813
Residual	4.87306757	345	.014124834
Total	8.26354009	349	.023677765

Table 55:

Number of observations	350
F(4, 345)	60.01
Prob > F	0.0000
R-squared	0.4103
Adj R-squared	0.4035
Root MSE	0.11885

Table 56:

Happiness Index	Coefficient	Robust Standard Error	t	P> t 	[95% Confidence Interval]	
Satisfaction with comfort and physical support provided by Family	.0072817	.0012902	5.64	0.000	.004744	.0098194
Satisfaction with number of quality friends	.0075963	.0013126	5.79	0.000	.0050147	.010178
Satisfaction with Academic performance independent of others' pressure	.0158093	.0016376	9.65	0.000	.0125884	.0190302
Satisfaction with level of comfort on Digital Media platforms	.0071344	.0020608	3.46	0.001	.0030812	.0111876
Constant	.3271172	.0173555	18.85	0.000	.2929813	.3612532

At a glance, we see that the overall model is significant at 1% with an adjusted R-square of 40.35%. This means that 40.35% of variations in the dependent variable can be explained by

the independent variables collectively. We note that the slope coefficients of all four independent variables and the constant are positive. *PerformanceSecurity* has the highest slope coefficient followed by *QualityFriends*, *FamilyComfort* and *DigitalComfort*.

In order to conclude if any of the independent variables has a significant impact on Happiness Index, we need to compare the t-statistics with the corresponding p-values. We consider:

$$V = (P > t) \times 100$$

- If $0 \leq V \leq 1$, we can conclude that the coefficient is significant at the 1% level
- If $1 < V \leq 5$, we can conclude that the coefficient is significant at the 5% level
- If $5 < V \leq 10$, we can conclude that the coefficient is significant at the 10% level

From this, we see that all the coefficients and the constant term are significant at the 1% level. Hence, we can conclude that *PerformanceSecurity*, *QualityFriends*, *FamilyComfort* and *DigitalComfort* are all significant in their impact on Happiness Index.

5.5 Impact of the Hours Spent on Digital Platforms on Happiness Derived from Digital Media

Digital media activities are an integral part of life for young adults today. Usage of different platforms are both a necessity as well as a form of leisure. Therefore, the impact of digital media consumption on well-being and happiness is widely discussed. These impacts range from risk of depression due to cyberbullying (Daine et al., 2013), to the inferiority felt due to constant social comparisons (Steers et al., 2014). In the previous sections, we have seen how satisfaction from digital media activities is an important part of a student's Happiness Index. In the model proposed below, we aim to understand the relation between hours spent online and the happiness that the respondents have said to have derived from their digital media activities.

We propose the following linear, stochastic regression model:

$$DigitalHappiness_i = \beta_0 + \beta_1 Gaming_i + \beta_2 SocialMedia_i + \beta_3 OnlineShopping_i + \beta_4 Videos_i + u_i \quad (9)$$

Where β_0 is the intercept, $\beta_1, \beta_2, \beta_3$ and β_4 are the slope coefficients for the independent variables *Gaming*, *SocialMedia*, *OnlineShopping* and *Videos* respectively; u_i is the error term, for the i^{th} unit. The independent variables denote the number of hours spent on the respective activities.

In this model, we try to understand the impact number of hours spent Gaming, on Social Media, Online Shopping and watching Videos, has on an individual's sense of happiness from digital media content. We do this by estimating the slope coefficients of the independent variables from the regression of the dependent variable *DigitalHappiness* on the independent variables *Gaming*, *SocialMedia*, *OnlineShopping* and *Videos* respectively, as given in equation (9).

Regression Results Across the Whole Sample:

Table 57 :

Number of observations	350
F(4, 345)	20.64
Prob > F	0.0000
R-squared	0.1834
Root MSE	2.5022

Table 58:

Digital Happiness	Coefficient	Robust Standard Error	t	P> t 	[95% Confidence Interval]	
Gaming	-.32348	.1255733	-2.58	0.010	-.5704656	-.0764943
Social Media	-.4353294	.066956	-6.50	0.000	-.5670227	-.3036362
Online Shopping	-.7295093	.1974114	-3.70	0.000	-1.117791	-.341228
Videos	-.0732036	.0572282	-1.28	0.202	-.1857636	.0393565
Constant	12.53031	.2700555	46.40	0.000	11.99915	13.06147

At a glance, we see that the model is overall significant at the 1% level with an R-square of 18.34%, which means that 18.34% of variations in Digital Happiness can be explained by the independent variables collectively. While the constant term is positive, the coefficients of Gaming, Social Media, Online Shopping and Videos are negative— with that of Online Shopping being the highest in magnitude, followed by Social media, Gaming and then Videos. Given that happiness is adversely impacted by higher degrees of digital media consumption, the negative coefficients prove that higher number of hours spent on digital platforms, lowers the happiness derived from digital media consumption.

In order to conclude if any of the independent variables has a significant impact on Digital Happiness, we need to compare the t-statistics with the corresponding p-values. We consider:

$$V = (P > t) \times 100$$

- If $0 \leq V \leq 1$, we can conclude that the coefficient is significant at the 1% level
- If $1 < V \leq 5$, we can conclude that the coefficient is significant at the 5% level
- If $5 < V \leq 10$, we can conclude that the coefficient is significant at the 10% level

Therefore, we see that the coefficients of Gaming , Social Media, Online Shopping and the constant are significant at the 1% level. The coefficient of Videos is not statistically significant and therefore does not impact Digital Happiness significantly in our data sample.

SECTION

VI

**Summary
and
Conclusion**

6.1 Summary

In order to answer our research questions, we have reviewed existing literature on the field, defined and collected our sample, and then used graphical, statistical and econometric tools. A section-wise summary of our research project is as follows:

Section I introduces the topic of our research— The Key Determinants of Happiness Index: A Study on University Students in India. After giving a brief understanding of the concept of Happiness, we discuss the evolution of its study, thus introducing Happiness Economics. Emphasising the importance of happiness at both micro and macro levels, we discuss the motivation of our research project.

A Literature Review explores previous researches and theories in the fields relevant to our study. We consider several works like that of Easterlin (1974), the well-being function by Blanchflower and Oswald (2004), Oswald (1997) and Wilks (1986), among others.

Having discussed existing works in the field, we establish the research objectives of the project.

Section II comprises detailed descriptions of the methodology used for our study— from the survey design, data collection and formulation of the questionnaire to the proposed framework for regression and statistical analyses. The final survey was conducted on students from different colleges and universities in Kolkata, India.

Section III comprises field survey observations of our sample of 350 students. The sample is classified into categories according to Gender, Socio-economic Classification, Area of Permanent Residence/Origin and Course being pursued. Pie charts, bar diagrams and tables depict the distributions.

Next, summary statistics tables of Happiness Index is shown for the whole sample, as well as classified by Gender, SEC and Area of Permanent Residence. This is followed by a graphical analysis depicting different preferences and characteristics of students.

Section IV comprises statistical analyses of the data collected. We use pair-wise correlations between Happiness Index, Satisfaction from Social Life, Satisfaction from Academic Life and Satisfaction from Digital Media Activities, to check linearity between the dependent and independent variables, and to check the possibility of multicollinearity. These correlation coefficients have been calculated for the whole sample and also for the different categories of Gender, Socio-economic Classification and the kind of course being pursued by the students. We also undertake hypotheses testing to check if the overall mean of Happiness Index varies significantly with Gender, Area of Origin, Socio-economic Classification, Course being pursued and Residence Status of a student. This analysis is done using two-sample t-tests on the data. The analyses with respect to Gender, Area of Origin and Socio-economic Classification are very important and are related directly with one of our research objectives.

Section V consists of the regression analyses of our proposed models. First, we attempt to understand the relationship between Happiness Index and seemingly unrelated personality traits/behaviour patterns—contentment with one's living conditions, availability of personal disposable monetary allowance, interaction with friends, pressure by friends and families to achieve academic goals and the instinct to browse apps. These characteristics represent key aspects of a student's life.

Next, we try to understand how satisfaction from these important aspects of a student's life— social circles and relations, academic experience and performance, digital media activities— impact one's Happiness Index. We also take into account predetermined descriptive factors like Gender, Socio-economic Classification and one's geographic background, to understand if they affect Happiness Index or if it varies within them.

Further, we use a multiplicative model to understand the relative importance of Family Life, Friendships, Academic pursuit and Digital Media activities, in influencing Happiness Index.

Given the inter-related nature of our variables, we then analyse how different aspects of social, academic and digital activities life, impact a student's happiness, when taken in conjunction. Thus, we explore the relationship between Happiness Index and interaction terms— satisfaction with one's living conditions and availability of family members to provide physical support, number of friends and the quality of friendships, satisfaction with academic performance independent of the pressure of others' expectations and the ability to express one's "real" self online, without having a browsing addiction.

Next, we try to understand how Satisfaction from Digital Media Activities, which is a significant part of Happiness Index, varies with number of hours spent on activities like Gaming, Social Media browsing, Online Shopping and watching Videos/ Movies.

6.2 Findings and Conclusion

With the aim of identifying different aspects of a student's life which impact their level of Happiness, we first selected a few specific conditions, characteristics and preferences— the student's contentment with living conditions and monetary allowance, frequency of interaction with friends, lack of academic performance pressure exerted by family and friends, and absence of addiction to digital media. From our analysis in Section 5.1.1, we concluded that all the aforementioned factors have significant and positive impact on the student's Happiness Index, with that of the academic aspect being the largest. While these parameters might not seem to be directly related to one's happiness, they helped us in selecting the key influential aspects of a student's life—satisfaction with family life, interpersonal relations, academic satisfaction and performance, and digital media consumption.

Having identified the key determinants of Happiness Index, we then looked into answering the first question:

How do different aspects of a student's life— social circles and interpersonal relations, academic satisfaction and performance, and digital media consumption— affect their happiness?

First, in Section 4.1, we calculated and analysed the pair-wise correlation coefficients between Happiness Index, Satisfaction from Social Life, Satisfaction from Academic Life and Satisfaction from Digital Media Activities. Overall, all the relations were found to be positive. Here too, Satisfaction from Academic Life was seen to have the highest association with Happiness Index, followed by Satisfaction from Social Life and then Satisfaction from Digital Media Activities. While comparing the correlation coefficients between students pursuing different courses, it was observed that Satisfaction from Social Life has a comparatively greater relation with Happiness Index of those pursuing professional courses, and for students pursuing non-professional courses, it is Satisfaction from Academic Life. Further, our hypotheses tests in Section 4.2 revealed that the mean level of Happiness Index does

not vary significantly with the kind of course being pursued or if the student resides with family during the academic session or not. The correlation coefficients indicated that there exists a positive linear association between Happiness Index, Satisfaction from Social Life, Satisfaction from Academic Life and Satisfaction from Digital Media Activities. However, since correlation does not necessarily mean causation, we performed the regression analysis as specified in Section V. Regression results in Section 5.2.1 showed that for the sample as a whole, the social, academic and digital media facets of life impact Happiness Index significantly, and in a positive manner. Given other factors, Satisfaction from Social Life impacts Happiness Index the most, followed by Satisfaction from Academic Life and Satisfaction from Digital Media Activities. These results are consistent with what we, as university students, experience. While Satisfaction from Social Life— comprising familial relations and other friendships— are important for happiness all throughout life, Satisfaction from Academic Life is an integral component of happiness for the age group surveyed.

This brings us to our next research objective:

How do these facets of life impact happiness individually, and when taken in conjunction?

Our linear regression results in Section 5.2 showed the significance of Satisfaction from Social Life, Satisfaction from Academic Life and Satisfaction from Digital Media Activities in determining Happiness Index. Next, our multiplicative model in Section 5.3 helped determine the relative importance of these aspects by determining the responsiveness of Happiness Index to each of them. Here, to gather more detailed results, we broke down the composite Satisfaction from Social Life into the subparts- Satisfaction from Family Life and Satisfaction from Friendships. For the sample as a whole, it was observed that the influence of Satisfaction from Family Life is the highest, followed by Satisfaction from Academic Life, Satisfaction from Digital Media Activities and Satisfaction from Friendships. This result of Family garnering more influence than Friends, is congruent with the findings of Wilks in the Journal of Youth and Adolescence (1986). Further, our linear regression in Section 5.4 explores the impact of various factors on Happiness Index, when taken in conjunction. Therefore combinations such as—satisfaction with one's living conditions with the

availability of physical support from family members, number of friends and the quality of friendships, satisfaction with academic performance independent of the pressure of others' expectations, and the ability to express one's "real" self online without having a browsing addiction— were seen to have a significant positive impact on Happiness Index. The academic aspect has the highest influence, followed by the number of quality friendships, familial support and living conditions, and comfort with digital media activities. From the above-mentioned results, we conclude that for the assessment of subjective matters like social life, interaction terms yield more coherent answers. While our multiplicative model showed us the responsiveness of Happiness Index to aspects of life when the individual components were merely summations of conditions, our model on interaction terms took into account the relationship within the conditions used to evaluate each aspect of life. This is seen by the fact that while Happiness Index is relatively less responsive to Satisfaction from Friendships in our multiplicative model for the whole sample in Section 5.3.1, number of quality friendships has a greater impact on it, as seen from the regression results of the model on interaction terms in Section 5.4.

Our third research objective was:

What role do predetermined factors like socio-economic background, gender and one's area of origin, play in determining this happiness?

To understand the impact, if any, such predetermined factors have on Happiness Index, we first calculated the pair-wise correlation coefficients between Happiness Index, Satisfaction from Social Life, Satisfaction from Academic Life and Satisfaction from Digital Media Activities according to different classifications in Section 4.1. While considering Male and Female Samples separately, it was seen that all variables are positively correlated, and Happiness Index is moderately associated with a student's Satisfaction from Social Life, Satisfaction from Academic Life and Satisfaction from Digital Media Activities. In the case of Male samples, Satisfaction from Social Life has the highest association with respect to Happiness Index, while for the Female samples, Satisfaction from Academic Life has the highest association. In both cases, Satisfaction from Digital Media Activities has comparatively low association with Happiness Index. As was noted in the summary

statistics, hypothesis test on Happiness Index based on Gender in Section 4.2.1, revealed no significant difference in the mean level of Happiness Index between Males and Females, in our sample data. The linear regression model on seemingly unrelated factors in Section 5.1.2, revealed that the results for Male samples only are the same as that of whole sample— the highest influence of the absence of academic performance pressure is followed by that of interaction with friends, contentment with living conditions, absence of digital browsing addiction and satisfaction with monetary allowance. For the Female only samples, while all the factors impact Happiness Index in a significantly positive way, there are slight differences—the highest influence of the absence of academic performance pressure is followed by that of the absence of digital browsing addiction, interaction with friends, satisfaction with monetary allowance, and contentment with living conditions. However, it was seen that the coefficients of said variables do not vary significantly between Males and Females. Our model on the key determinants of Happiness Index in Section 5.2 revealed that for the whole sample, Gender and Socio-economic Classification do not play a significant role. Delving deeper and considering Male and Female samples separately in Section 5.2.2, we found some differences in terms of factors which impact Happiness Index. While Satisfaction from Social Life and Satisfaction from Academic life continued to be of significant positive importance, Satisfaction from Digital Media Activities impacts females positively but does not impact males significantly. SEC, on the other hand, continued to play an insignificant role in determining Happiness Index of the Male only and Female only samples. While testing if the impact of parameters of Happiness Index are felt unequally between Male and Female students, we found that the impact of one's geographic background or area of origin differs, which was seen by its significance for Male samples and insignificance for Female samples. In terms of responsiveness to Happiness Index, our multiplicative model in Section 5.3.2 revealed that for both Male only and Female only samples, Satisfaction from Family Life and Satisfaction from Academic Life are the most important aspects, as was seen for the whole sample. Surprisingly, Happiness Index is not significantly responsive to Satisfaction from Friendships for Female only samples, and to Satisfaction from Digital Media Activities for Male only samples—which was seen in the previous linear model in Section 5.2.2 as well. However, the responsiveness of Happiness Index to these different aspects of life does not vary significantly between Males and Females.

To understand the impact of Socio-economic Classification, we first considered the pair-wise correlation coefficients between Happiness Index, Satisfaction from Social Life, Satisfaction from Academic Life and Satisfaction from Digital Media Activities for SEC A, B, C and D categories. While most of the variables are positively correlated with varying strengths of association, Satisfaction from Digital Media Activities was observed to be negatively correlated with Happiness Index for students belonging to SEC B. In the case of SEC A students, Satisfaction from Academic Life has the highest association with respect to Happiness Index and for SEC B, it is Satisfaction from Social Life. For both SEC A and SEC B students, Satisfaction from Digital Media Activities continued to have a comparatively low association with Happiness Index. In the cases of SEC C and D, lack of observations inhibits proper analysis. Hypothesis test in Section 4.2.3 revealed that there is no significant difference in the mean level of Happiness Index between students from SEC B and SEC A, as was suggested in summary statistics. The linear regression model on seemingly unrelated factors in Section 5.1.3, revealed that the results for SEC A samples only are the same as that of whole sample—the highest influence of the absence of academic performance pressure is followed by that of interaction with friends, contentment with living conditions, absence of digital browsing addiction and satisfaction with monetary allowance. For the SEC B only samples, there are slight differences—the highest influence of contentment with living conditions is followed by that of interaction with friends, and the absence of academic performance pressure. Satisfaction with monetary allowance and the absence of digital browsing addiction are insignificant factors for the Happiness Index of students from SEC B. While the digital aspect might not play a significant role in determining Happiness Index for SEC B samples, the insignificance of monetary allowance is surprising. This difference in result for the two categories is further proven as the impact of sufficient monetary allowance on Happiness Index varies significantly between SEC A and SEC B, while the other parameters do not. Given SEC's insignificance in the linear regression of the whole sample for key determinants of Happiness Index in Section 5.2.1, we checked how the model varies within the SEC categories. For both SEC A and B, Satisfaction from Social Life and Satisfaction from Academic Life have significant positive impact on Happiness Index. While Satisfaction from Digital Media Activities has significant influence in both cases, it impacts happiness negatively for students from SEC B and positively for students from SEC A. This was also observed in the pair-wise correlation coefficients between Happiness Index and

Satisfaction from Digital Media Activities for SEC A and SEC B. Interestingly, Gender, which had been insignificant in previous results, is an important determining factor of Happiness Index of students from SEC B but not for SEC A. Within SEC B category, given other factors, a female would have a higher Happiness Index than a male. Further, hypotheses tests revealed that the impacts of Satisfaction from Social Life, Satisfaction from Digital Media Activities and Gender on Happiness Index varies significantly between SEC A and SEC B students. In terms of responsiveness of Happiness Index, our multiplicative model in Section 5.3.3 revealed that for both SEC A and SEC B students, Happiness Index is significantly and positively responsive to all factors, except for the case of SEC B, where the relation with Satisfaction from Digital Media Activities is negative, as was seen earlier. For SEC A students, Satisfaction from Family Life and Satisfaction from Academic Life continue to be the most important aspects, as was seen in the results for the whole sample. However, for SEC B students, Happiness Index is most responsive to Satisfaction from Academic Life, followed by Satisfaction from Digital Media Activities—which impacts it negatively, then Satisfaction from Family Life and Satisfaction from Friendships. As was seen earlier, even in terms of responsiveness of Happiness Index to Satisfaction from Digital Media Activities, the impact varies significantly between SEC A and SEC B students.

With respect to a student's Area of Origin, hypotheses tests on the mean level of Happiness Index revealed that that of students from Rural areas is significantly more than that of students from Urban and Metropolitan areas, and there is no significant difference in the mean level of Happiness Index between students from Urban areas and those from Metropolitan areas. Further, in our linear regression of key determinants of Happiness Index in Section 5.2.1, it was seen that one's area of origin—whether their geographic background is Rural, Urban or Metropolitan— plays an important role in terms of happiness. Holding other parameters constant, it was seen that the Happiness Index of students from Urban and Metropolitan areas is lower than that of students from Rural areas, with the index of students from Metropolitan areas being lower than that of those from Urban areas, as was mentioned in the literature review (HT-MaRS Happiness Survey, 2013). Considering Male and Female samples separately in Section 5.2.2, one's area of origin is a significant influential factor for males but not for females. Given other factors, Happiness Index of a Metropolitan male is lower than that of an Urban male, which in turn is lower than that of a

Rural male. Further, in Section 5.2.3, it was seen that for SEC A students, given other factors, Happiness Index of an individual from a Metropolitan area is lower than that of an individual from Urban area, which in turn is lower than that of an individual from a Rural area. For SEC B students, the Happiness Index of an individual from a Metropolitan area is significantly lower than that of an individual from a Rural area.

This brings us to our final research objective:

Given that we live and thrive in the Digital Age, how does the time spent on different digital media platforms, impact our satisfaction derived from the same?

In our analyses, we adopted an approach which measured the satisfaction derived from digital media activities based on the respondent's preferences, habits and usage behaviour. However, in order to understand how this satisfaction level varies with usage in terms of hours spent, we used the linear regression model in section 5.5. As expected, the number of hours spent on gaming, social media and online shopping, have significant negative impact on Satisfaction from Digital Media Activities, while that of watching videos/movies is not significant. Online Shopping appears to have the most adverse impact, followed by Social Media browsing and Gaming. The inference from these findings are congruent with that of several studies which found that individuals with higher digital media use report lower well-being later (Allen & Vella, 2018; Booker et al., 2018; Kim, 2017; Kross et al., 2013; Schmiedeberg & Schroder, 2017; Shakya & Christakis, 2017).

Therefore, our inference is that overall, Satisfaction from Family Life, Satisfaction from Friendships, Satisfaction from Academic Life and Satisfaction from Digital Media Activities, are significantly positive influencers for happiness of students. For university students, social life— especially familial relations and support, and academic performance and satisfaction, are the most influential aspects. While Happiness Index itself may not vary with factors like one's gender and socio-economic background, there are some variations in the nature of impact of the different aspects of life based on them. Moreover one's permanent area of residence or origin plays a significant role in determining happiness. Satisfaction derived from Digital Media content, which is a significant part of Happiness Index, has negative relation with the number of hours spent online.

A few limitations of our study are:

- Our sample size is restricted to 350 observations due to shortage of time.
- The convenience sampling technique has some selection biases and influences. In our sample, this is specifically seen in terms of socio-economic classification.
- Our analyses are mostly based on data using the Likert scale. Therefore, certain assumptions have been made regarding what an individual should derive happiness from. However, we are aware that given the nature of the subject, the same evaluations do not apply to all.
- Our analyses are based on one-way causality. We have explored how Happiness Index is impacted by a variety of factors—family life, friendships, academic life, digital media activities, gender, socio-economic background and area of origin. However, we have not taken into account any bi-causal relationships that may exist.
- There may be other factors, unaccounted for in the survey, which explain Happiness Index.
- Given that primary data was collected through surveys, certain factors are beyond our control, for example, the authenticity of data as reported, state of mind of responders etc.

However, despite the limitations mentioned above, this research project attempts to give insights regarding the specific topics mentioned in our objectives, which have not been explored in depth in pre-existing literature.

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Appendix

- A.** In order to classify the socio-economic backgrounds of the students, we have used the standard SEC grid as ratified by the Market Research Society of India, which is used by most media researchers and brand managers to understand the Indian consuming class. The SEC system is based on two variables: Education of Chief Earner and Number of Consumer Durables owned by the family.

Table 59 :

	ASSETS GRID (RQ1)		
	Items owned / have access at home	CIRCLE	Tick (✓)
RQ1a	Electricity Connection	01	
	Ceiling Fan	02	
	LPG Stove	03	
	Two Wheeler (motorcycle, scooter, scooterette, moped)	04	
	Colour TV	05	
	Refrigerator	06	
	Washing Machine	07	
	Personal computer/ laptop	08	
	Car/ Jeep/ Van	09	
	Air Conditioner	10	
	NUMBER OF (RQ1a) ASSETS OWNED->		

Table 60 :

No. of Assets (TRANSFER FROM RQ1)	CODE	Chief Earner- Education (RQ2)						
		Illiterate	Literate but no formal schooling / School-up to 4 years	School- 5 to 9 years	SSC/ HSC	Some College (incl. a Diploma) but not Graduate)	Graduate/ Post Graduate-General	Graduate/ Post Graduate – Professional
		1	2	3	4	5	6	7
None	01	E3	E2	E2	E2	E2	E1	D2
1	02	E2	E1	E1	E1	D2	D2	D2
2	03	E1	E1	D2	D2	D1	D1	D1
3	04	D2	D2	D1	D1	C2	C2	C2
4	05	D1	C2	C2	C1	C1	B2	B2
5	06	C2	C1	C1	B2	B1	B1	B1
6	07	C1	B2	B2	B1	A3	A3	A3
7	08	C1	B1	B1	A3	A3	A2	A2
8	09	B1	A3	A3	A3	A2	A2	A2
9 or more	10	B1	A3	A3	A2	A2	A1	A1

The grid helps determine the consumption preferences and purchasing power of households. It does not use family income levels as that data can be hard to obtain accurately.

- B. For the model on Influence of Interaction terms on Happiness Index in Section 5.4, the explanatory variables were chosen based on the association of the different components of each aspect of life, with Happiness Index and each other. The pair-wise correlation coefficients used to determine the associations, are as follows:

For the Family aspect of life:

Table 61 :

	Happiness Index	Living Condition	Quality time	Physical support	Presence	Alone time	Monthly allowance
Happiness Index	1						
Living Condition	0.3356	1					
Quality time	0.2145	0.3664	1				
Physical support	0.2805	0.3123	0.3652	1			
Presence	0.1688	0.0464	0.1302	0.1202	1		
Alone time	0.2145	0.1312	0.0969	0.0397	0.2836	1	
Monthly allowance	0.243	0.2239	0.1214	0.1449	0.0857	0.119	1

Therefore, the measures of living condition and physical support were selected.

For the Friendships aspect of life:

Table 62 :

	Happiness Index	Number of Close friends	Satisfaction of Romantic needs	Satisfaction of Sexual needs	Relationship approval	Long term future with partner	Absence of Cheating urges	Interaction with friends	Support
Happiness Index	1								
Number of Close friends	0.2523	1							
Satisfaction of Romantic needs	0.096	0.0856	1						
Satisfaction of Sexual needs	0.0053	0.0897	0.7345	1					
Relationship approval	0.0765	0.0837	0.6607	0.6429	1				
Long term future with partner	0.1343	0.0842	0.7831	0.6522	0.7032	1			
Absence of Cheating urges	0.1279	0.133	0.6228	0.569	0.5196	0.6798	1		
Interaction with friends	0.2428	0.2035	-0.0465	0.0256	-0.0179	0.0167	0.0438	1	
Support	0.3076	0.1676	0.1129	0.0922	0.1186	0.1418	0.1416	0.5277	1

Therefore, the measures for number of close friends and support were selected.

For the Academic Performance and Experience aspect of life:

Table 63 :

	Happiness Index	Freedom of choice	Satisfaction with experience	Satisfaction with performance	Interest	Lack of performance pressure by others	Satisfaction with future prospects	Continuity in field
Happiness Index	1							
Freedom of choice	0.0758	1						
Satisfaction with experience	0.289	0.2565	1					
Satisfaction with performance	0.3266	0.1856	0.5849	1				
Interest	0.1667	0.0762	0.1569	0.3319	1			
Lack of performance pressure by others	0.5271	0.1098	0.2686	0.2251	0.0315	1		
Satisfaction with future prospects	0.355	0.1179	0.3679	0.3228	0.2456	0.2851	1	
Continuity in field	0.1822	0.1889	0.2712	0.2327	0.1162	0.296	0.2927	1

Therefore, the measures for lack of performance pressure by others and satisfaction with performance were selected.

For the Digital Media Activities aspect of life:

Table 64 :

	Happiness Index	Hours spent	Absence of browsing instinct	Substitutability by pleasant company	Absence of enabler friends	Can be “real” online
Happiness Index	1					
Hours spent	-0.0317	1				
Absence of browsing instinct	0.1798	0.0587	1			
Substitutability by pleasant company	-0.0459	-0.0708	-0.097	1		
Absence of enabler friends	0.0905	0.0321	0.2537	-0.005	1	
Can be “real” online	0.186	0.0656	0.0087	-0.0569	0.3487	1

Therefore, the measures for absence of browsing instinct and ability to be “real” online were selected.