Middle East Technical University

Department of Statistics

STAT 365

SURVEY SAMPLING TECHNIQUES TERM PROJECT

HAPPINESS LEVEL OF METU STUDENTS

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1. INTRODUCTION

Humanity has sought to understand its own nature beginning from its existence in the world. In time, people begin to realize human nature's emotional side in addition to its intelligence. When it comes to trying to understand the actual value of life, people have begun to dig into the emotions of people more. Among these, one of the most intriguing titles is happiness. Conceptually, although the perception of happiness differs from person to person and it could be depicted by several particular meanings, in general, it can be defined as a total of feeling well, having positive relationships and satisfaction of one's life (Ruggeri et al., 2020). In this context, this research has been designed to understand whether there is a relation between university students' happiness and their department, income and social opportunities and it has been conducted with a subclass of population, university students of METU in Turkey. Since METU students are a mixture of people coming from different social, economic, and cultural backgrounds, they might be a good representation of whole population of university students in Turkey. In this research, findings obtained through the instruments of various statistical models and hypothesis tests indicate that income, academic success and socialization are among the decisive factors.

Data Description

The questionnaire which has 16 distinct questions has been answered by 387 respondents. Out of three hundred and eighty-seven (387) respondents, one hundred and seventy-two (172) were females, two hundred and twelve (212) were males, three (3) of them chose prefer not to say meaning that the survey stands for 44.4% of females, 54.8% of males, and 0.8% prefer not to say. The age of fifty-six point one percent (56.1%) of the respondents is between 18 and 21, forty-one point six percent (41.6%) of the respondents are between 22 and 25, two point three

(2.3%) of the respondents is higher than 25 years old. Ninety-two point two percent (92.2%) of the respondents who participate in the survey are undergraduate students, four point two (4.2%) of the respondents are graduate students, three point seven (3.7%) of the respondents are preparation students.
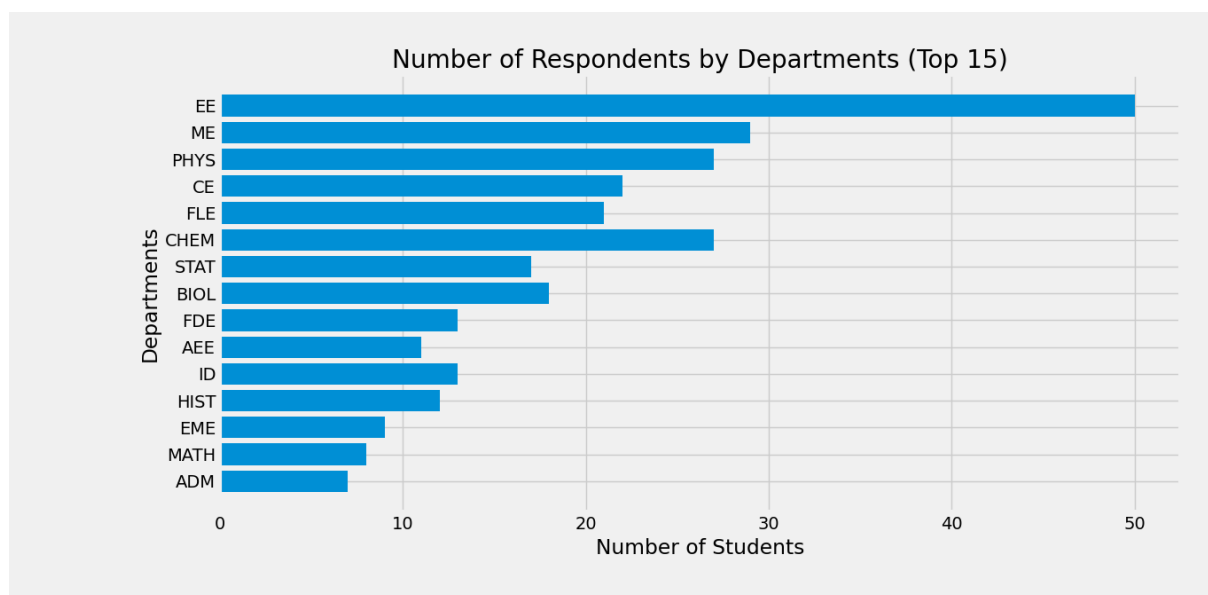
Figure 1

In addition, whereas forty-three point two percent (43.2%) of the respondents represent **Faculty of Engineering**, thirty-three point three percent (33.3%) represent **Faculty of Arts and Sciences** and twelve point eight percent (12.8%) represent **Faculty of Education**, five point five percent (5.5%) of students represent **Faculty of Architecture** and five point two percent (5.2%) of them represent **Faculty of Economic and Administrative Sciences**.

Variable	Description
Gender	Gender of the participant
Age	Age of the participant Variables: a: 18 – 21, b: 22 – 25, c: 25 +
Department	Department of the participant (STAT, METE, ME etc.)
Faculty	Faculty of the participant
Education Level	Level of Education of the Participant Variables: a: Preparation, b: Undergraduate, c: Graduate, d: Postgraduate
CGPA	Participant's Cumulative Grade Point Average
Income	Individual Monthly Income of the Participant Variables: a: 0.00 – 999, b: 1000 – 1499, c: 1500 – 1999, d: 2000 – 2499, e: 2500 +
Happiness Level	Participant's Happiness Level at the Moment
Departmental Assessment	Participant's Level of Feeling About His/Her Department
Financial Assessment	Grading Participant's Level of Happiness about His/Her Monthly Income
Assessment Regarding the Faculty Members	Rating Happiness Level Concerning the Faculty Members Working in the Participant's Department
Rating Ankara in terms of Happiness	Participant's Feeling About Living in Ankara

Rating Online Courses During Lock Down	Grading the Feelings About the Online Courses During the Pandemic Process
Assessment of the Social Environment	Feelings of the Participant About His/Her Own Social Environment
Feelings About Opportunities METU Offers	Participant's feelings regarding Sport Facilities, Spring Fest, University Clubs and the Cafeteria

Significance of the Study

This study aims to investigate the happiness level of university students in METU and refer to reasons that cause students to be unhappy such as economic, social, and academic concerns. Among several motives, economic problems are one of the significant reasons for students to feel unhappy. The majority of students live on money coming from their families, scholarships provided by the government, or money they earn from part-time jobs (Sizege, 2020). The worsening Turkish economy in recent years made it tough for students to sustain their life while studying in a university. Social phobia is another significant reason affecting the happiness level of the students. Students who entered the university are usually individuals who have come out of puberty newly. These students started to gain their independence, need to be accepted by society. Socio-phobic students having concern about being judged by others have a harder time getting through this stage and show social avoidance leading to feel unhappiness (Dereboy & Gültekin, 2011). Given various reasons causing students' unhappiness, it is important to investigate this concept thoroughly. Since there are a few scientific research conducted to determine the reasons affecting the happiness level of university students such as the income-happiness relationship (Sizege, 2020), this research tries to revive the significance of this topic

and aims to help researchers to review problems that students encounter in their academic life by different aspects.

2. REVIEW LITERATURE

Everyone in the world desire to be happy and perhaps there is no other purpose in the world on which people agree so highly. Since happiness is a value indicating the quality of people's lives and societies, it is a concept that requires to be dwelled on to achieve better life and a better society. In this respect, it is also important to investigate the happiness level of university students who make up the substantial majority of the society and in one sense, determine its future. The happiness of university students might be affected by various factors. Initially, economic concerns and worrying about unemployment after graduation are primary reasons for unhappiness among university students in Turkey. Gradually worsening Turkish economy increases university students' anxiety regarding their life after graduation. In addition, as an outstanding fact, some students borrow a remarkable amount of money throughout their education in university and they are obliged to repay this amount, but this situation directs many students to take risky credit card loans (Lyons, 2008, as cited in Xiao et al., 2008). Academic anxiety among students is another have long been researched title. Excessive amounts of assignments, competition with other students and fear of failure are leading to stress, which is seen by most of the students as suffocating and hard to keep up with (Fairbrother & Warn, 2003, as cited in Agolla & Ongori, 2009). Furthermore, tension to achieve high scores and time-limited homework make the university a very tense environment for students. Another concept leading to university students' unhappiness may be shown as having difficulty in socialization. By entering the university, students step into one of the most intense social environments. Students who cannot socialize face problems in their education, emotional relations, and even working life after graduation (Dereboy, 1993, as cited in Gültekin & Dereboy, 2011).

Mentioned points above cause decrease in their life satisfaction and happiness level. Covid-19, a pandemic people all around the world struggle with recently, is another motive for being unhappy for students. Fear of death, the possibility of infected of family members and loved ones, and lack of socialization because of quarantine leaded students to feel depressed (Xiang et al., 2020, as cited in Peker & Cengiz, 2021).

3. AIM OF RESEARCH

Primary Purpose

The major goal of this study is to analyze the relationship between the level of happiness of university students in METU and their social relationships, monthly income, and academic success.

Inferior Purpose

1. Examining whether gender plays a role in being happy among university students in METU.
2. Analyzing if faculty students enroll is a determinant of being happy.
3. Analyzing the relationship between METU students' happiness and opportunities university offers**.**
4. Examining the influence of living in Ankara on the well-being of the METU students.
5. Examining the social success of METU students and determining whether it plays a role in their happiness.
6. Investigating the effect of the online courses during the pandemic process on the happiness of METU students.

Research Philosophy

This research has been prepared based on realistic and objective scientific philosophies. By means of these philosophies, we were able to design an empirical survey, evaluate findings through an unbiased approach and accurate mathematical procedures, and analyze outcomes without any generalization or under any external influence. Questions prepared in a logical sequence but away from any particular priority were answered by the participants. In the light of this scientific culture and virtue, preparers of this research tried to clarify certain reasons that cause students' unhappiness such as lower income, lack of socialization, academic concerns, or other daily life problems.

4. SURVEY METHODOLOGY

4.1 SURVEY DESIGN

4.1.1 Sample Design

This research has been conducted with 387 respondents. Respondents answered the questions throughout google questionnaire. It is also used as a method of data collection that students were given a piece of paper including QR code by face-to-face contact in the campus of METU. After the edition and organization of the data, the number of responses was determined as 351.

4.1.2 Data Collection

Most of the data were collected by face-to-face meetings in the particular areas of the campus of METU such as the university cafeteria and library where students scatter independent from their gender, age, and department. In addition, Google questionnaire form was sent to students online through social media tools. Aforementioned data collection techniques ensured the usage of sampling techniques known as simple random sampling and snowball sampling.

R, Spss, Matplotlib and Python Pandas packages were mostly used in the stages of analysis and interpretation of the data.

4.2 METHODS OF ANALYSİS

In the data analysis stages, it was observed that data is not distributed normally arising from formatted questions according to the Likert-Type scale. Thereby, non-parametric tests were used for analyzing data. In addition to that, descriptive statistical methods are used for collecting, compiling, and analyzing numerical data along with graphs, frequency tables, histograms, and pie charts that assure comprehension and presentation of the outcomes effectively.

4.2.1   Descriptive Statistics

Frequencies

Frequency tables were utilized to demonstrate the number of observations for each lists. In this way, especially depiction of the relation between categorical variables were showed clearly.

Graphs

Pie chart and histogram, which consist of different sized and colored pieces according to given information, have been used to visualize data.

4.2.2   Statistical Tests

Mann Whitney U Test

Mann Whitney U Test is a statistical test that is known as a non-parametric alternative to T-Test. Mann Whitney U Test was used to determine whether there is a difference between the happiness level of two independent groups such as male and female.

Kruskal Wallis Test

Kruskal Wallis test is a non-parametric statistical test used as an alternative test of One-Way ANOVA. Kruskal Wallis test was used to check whether there is a difference between the level of happiness among students with respect to their departmental difference since this is a type of data including more than two independent groups.

Pearson Correlation Test

Pearson Correlation Testis a non-parametric distribution free test used to examine the relationship between two categorical variables. This statistical test is used to analyze if data consists of nominal variables like male/female and corresponding ordinal variables such as Likert Type responses from very happy to very unhappy. Results are used to determine the relation and its magnitude.

5. DATA ANALYSIS, FINDINGS AND DISCUSSIONS

5.1 Does gender play a role in being happy?

The study conducted on 351 students to inspect whether gender plays a crucial role in being happier was analyzed using Pearson Chi-Squared Test. Given the outcomes of the test (p-value > 0.627), it was concluded that there is no significant association between two groups namely

female and male towards whether gender is a determinant factor in being happy. In other words, the happiness status of the students is not dependent on gender.
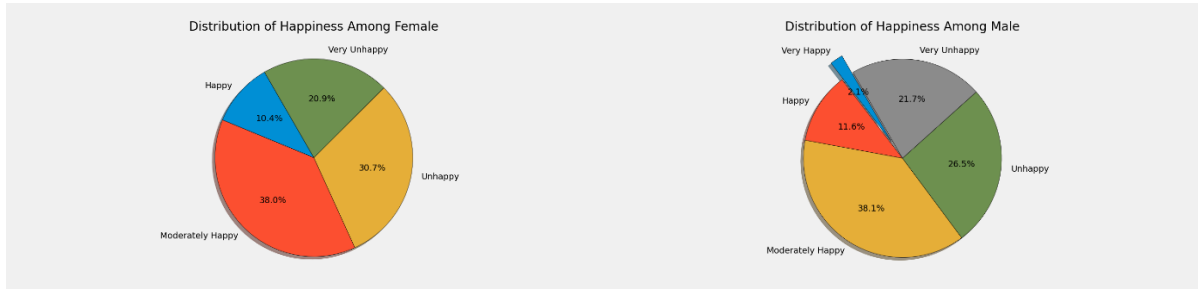

Figure 2

In addition, as it can be seen from the pie charts located above, as an outstanding fact, whereas only 2.1% of males stated that they feel very happy, there is no female for this category of happiness level. In addition, most of the women expressed that they feel very unhappy and unhappy with 51.6%. These sentiments are shared by males nearly at the rate of 50%.

5.2 Is faculty a determinant factor of being happy?

METU students were asked to range their level of happiness concerning their faculty. Students' responses about their faculty names and their corresponding choices on a five-point scale ranging from 5 (very happy) to 1 (very unhappy) were analyzed using Kruskal Wallis Test. As results display, there is enough evidence to indicate that there is a relation between the faculty students study and happiness level of students (p-value < 0.009).
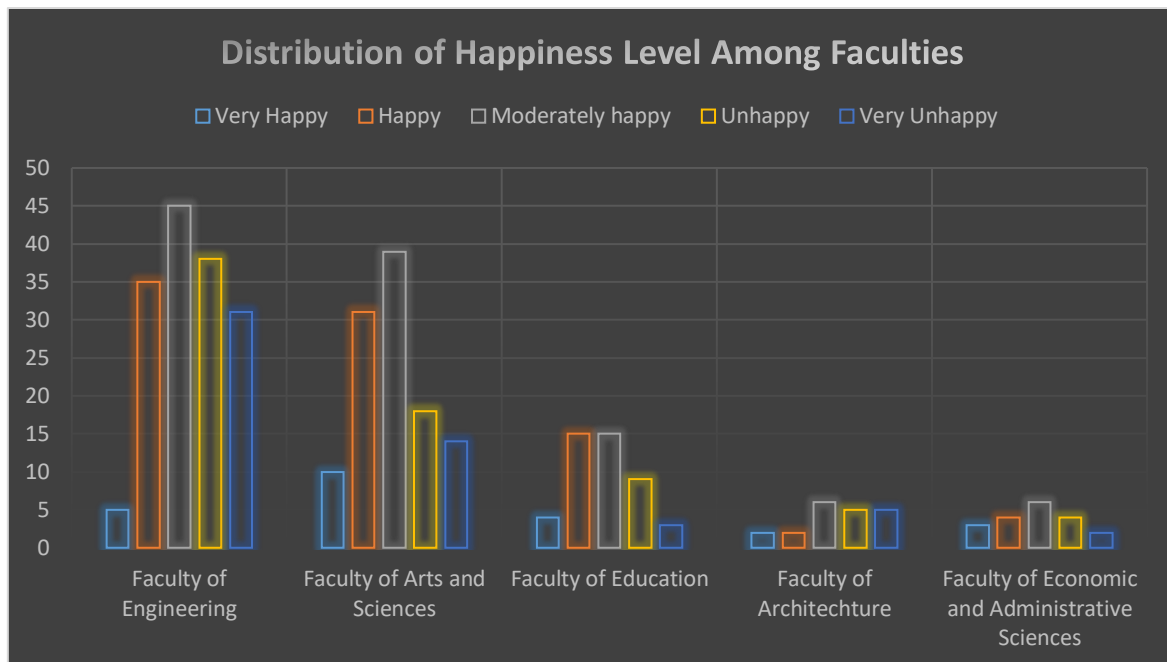
Figure 3

Given above histogram, fraction of the students who study in the Faculty of Engineering chose options "Very Unhappy" and "Unhappy" at the highest rate by 44.9%. Conversely, the options, "Very Happy" and "Happy" were voted by Faculty of Education students with 41.3%, which stands for the highest rate for these two categories among all faculties.
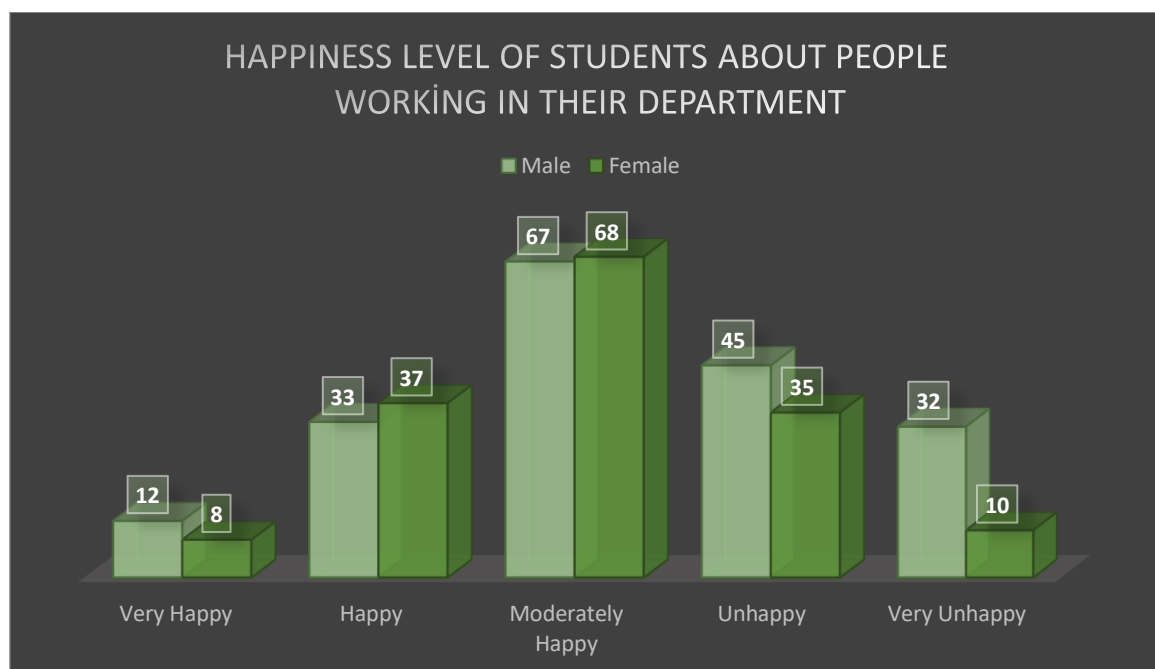

Figure 4

Figure 4 summarizes the relationship between the level of happiness of the students related to people working in their department. Seemingly, the number of male respondents selecting the "Happy" and "Very Unhappy" options is higher than number of female participants for these two categories.

5.3 Are METU students satisfied with the facilities METU offers?

METU students were requested to scale their feelings regarding the facilities they utilize within the campus of METU. Findings placed on the frequency table below demonstrate that university clubs, which was chosen by 141 students as "Very Happy" or "Happy" at the happiness scale, are the most commonly shared source of happiness among students.

Happiness Level	Sport Facilities	Spring Fest	University Clubs	University Cafeteria
Very Happy	30	65	46	11
Happy	86	58	95	39
Moderately Happy	145	96	134	88
Unhappy	50	67	43	106
Very Unhappy	40	65	33	107

Frequency of Level of Happiness About Facilities METU Offers

Figure 5

Conversely, university cafeteria seems to have the least impact on students' happiness compared to other facilities. It was voted by 213 students out of 351 as "Very Unhappy" and "Unhappy". In addition to that, analysis results demonstrate that the biggest proportion of the students feel "Moderately Happy" regarding the facilities and events, which is the most selected choice within all the categories.

5.4 Is income an effective factor to be happier?

Five levels of income variables and 351 students' corresponding responses were subjected to Kruskal Wallis Test. Results indicate that the levels of happiness of students who make a living at the two lowest categories of income (0-900 TL and 1000-1499 TL) substantially differ from those living with higher income levels (p-value < 0.001). On the other hand, further examination shows that there is no enough evidence to say that there is a significant difference between happiness levels of students who are within any one of the highest level of income groups namely 1500 – 1999, 2000 – 2499 and 2500+ (p-value > .0.08).

5.5 How students feel about living in Ankara? Is there a relationship between students' happiness level about living in Ankara and social environment?

Mann Whitney U Test results show that gender is not a determinant factor for happiness regarding living in Ankara.

Pie chart located at the right-hand side of the page indicates that most of the students feel happy about living in Ankara and the number of students who chose "Unhappy" and "Very Unhappy" is dominated on a biblical scale.
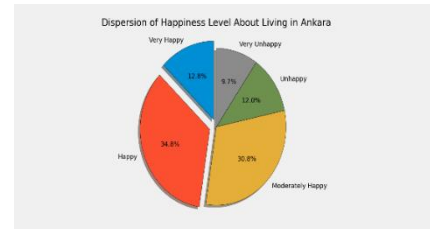
figure 6

Moreover, further examination where Kruskal Wallis Test was applied to determine if there is a relation between social environment and happiness about living in Ankara did not result in any significant outcome (p-value > 0.605).

5.6 Is there a relation between happiness level about department and high CGPA? How do students fell about online courses during Covid-19?

After assessment of Kruskal Wallis Test results, it was determined that there is no relationship between satisfaction of department and CGPA. It was observed that the rate of those who stated that they are satisfied with their department is lower than the rate of those showing discontent.
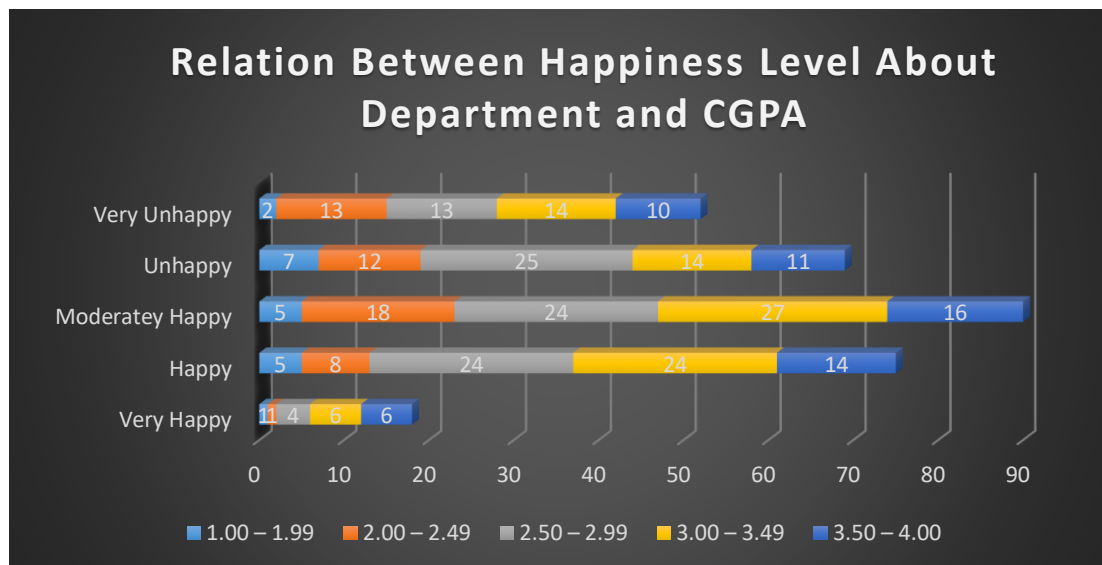

Figure 7

Above figure shows that very happy and happy options were chosen, with the highest rate of 29.4%, by students having CGPA between 3.00 – 3.49. Moreover, very unhappy and unhappy options were chosen, with the highest rate of 31.4%, by students having CGPA between 2.50 – 2.99.
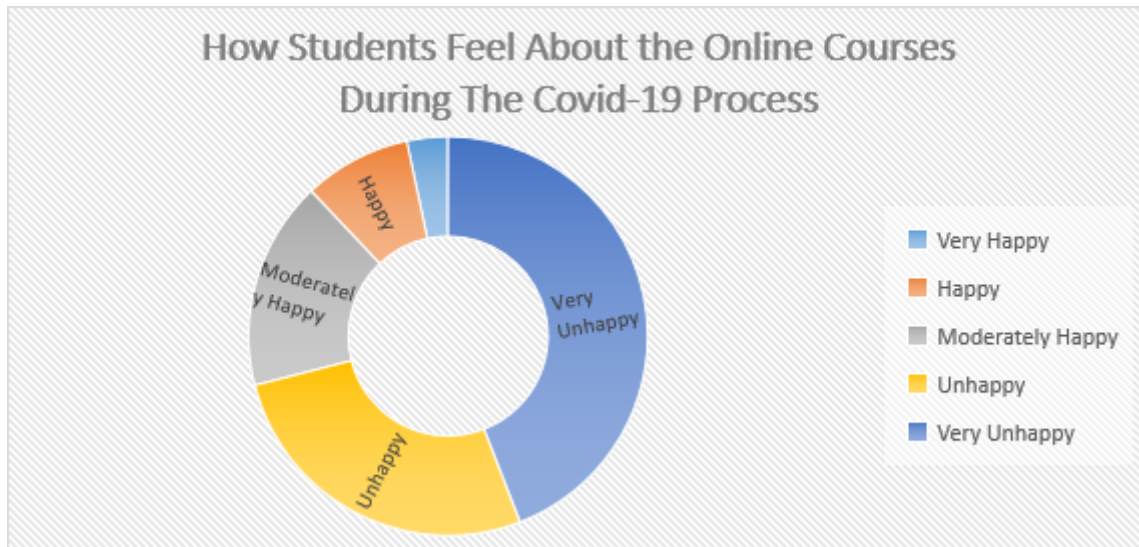
Figure 8

When students were asked about their feelings on online education process, the unhappiness was very obvious. While dissatisfied segment of the students concerning online courses comprises 70.7% of the total sample size (Unhappy: 26.8% and Very Unhappy: 43.9%), number of those satisfied remains at 12% (Very Happy: 3.3% and Happy: 8.7%).

6. CONCLUSION AND RECOMMENDATIONS

Like the rest of the society, the happiness of the university students depends on certain determinants. Whereas some research conducted on this topic points out that being healthy mentally and physically is more important to feel happy, some show that happiness is more about having a pleasant family environment and good friendships (Alavi, 2007). In this study, we focused on several variables that might have an influence on the well-being of university students. As results of our study indicate, especially for ones living with lower income levels, economic factors have an effect on students' happiness. This outcome is in the same direction as the results of similar research. Additionally, socialization in education life is of utmost

importance and a determinant on the well-being of the students. According to Alavi (2007), social students may have more social networks leading to less possibility of being unemployed, earning more money, progressing quickly in business life, and hence becoming happier individuals. Besides, Throughout the Covid-19 pandemic, students had to follow their lessons in an unfamiliar system for more than a year. This situation caused many students to have difficulty in adapting to their lessons and led to decrease in academic success. Many of them suffered from depression and anxiety during the lockdown. Add to that the lack of socialization, many students felt unhappy. In conclusion, it is a clear fact that many other various reasons can be shown as factors affecting university students' happiness. For instance, the education system in Turkey has been discussed by researchers and society for many years in terms of its quality and sufficiency. Turkish education system improved with studies conducted with the collaboration of government and educators may have huge effects on the happiness of students. Besides, it cannot be ignored that some of the Turkish people live compatible with religious values. The effects of being religious individuals on the student's happiness is another important concept that needs to be examined deeply. Therefore, to make more precise judgements about the happiness level of university students, these two and many other factors should be taken into consideration.

7. REFERENCES

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8. APPENDİX

1. What is your gender?

a) Male
b) Female
c) Prefer not to say

2. What is your age?
a) 18 – 21
b) 22 – 25
c) 25 +

3. Please enter your department? (STAT, METE, ME etc.)

4. What is your faculty?
a) Faculty of Architecture
b) Faculty of Arts and Sciences
c) Faculty of Economic and Administrative Sciences
d) Faculty of Education
e) Faculty of Engineering

5. What is your educational level?
a) Preparation
b) Undergraduate
c) Graduate
d) Postgraduate

6. What is your CGPA? (Please CHOOSE "pass the question" if you are a PREPARATION student.)
a) 1.00 - 1.99
b) 2.00 – 2.49
c) 2.50 – 2.99
d) 3.00 – 3.49
e) 3.50 – 4.00
f) Pass the question

7. What is your individual monthly income? (TL.)
a) – 999
b) 1000 – 1499
c) 1500 – 1999
d) 2000 – 2499
e) 2500 +

8. How happy do you feel right now?
a) Very Unhappy
b) Unhappy
c) Moderately Happy
d) Happy
e) Very Happy

9. How do you feel about the department you are in?

a) Very Unhappy
b) Unhappy
c) Moderately Happy
d) Happy
e) Very Happy

10. How happy are you with your monthly income?
a) Very Unhappy
b) Unhappy
c) Moderately Happy
d) Happy
e) Very Happy

11. How happy are you with the faculty members working in your department?
a) Very Unhappy
b) Unhappy
c) Moderately Happy
d) Happy
e) Very Happy

12. How do you feel about living in Ankara?
a) Very Unhappy
b) Unhappy
c) Moderately Happy
d) Happy
e) Very Happy

13. How do you feel about the online courses during the pandemic process?
a) Very Unhappy
b) Unhappy
c) Moderately Happy
d) Happy
e) Very Happy

14. How do you feel about your social environment?
a) Very Unhappy
b) Unhappy
c) Moderately Happy
d) Happy
e) Very Happy

15. How do you feel about activities that your university offers you? (Likert Scale Type Question From Very Unhappy to Very Happy)
a) Sport Facilities   d) Spring Fest
b) University Clubs
c) University Cafeteria

```python
import csv; import numpy as np; import pandas as pd; from collections import Counter; from matplotlib import pyplot as plt; plt.style.use("fivethirtyeight"); ages_x = ["Engineering", "Arts and Sciences", "Education", "Architecture", "Economics"]; x_indexes = np.arange(len(ages_x)); width = 0.25; dev_y = [40, 41, 19, 4, 7]; plt.bar(x_indexes - width, dev_y, width = width, color="#444444", label="Happy"); py_dev_y = [45, 39, 15, 6, 6]; plt.bar(x_indexes, py_dev_y, width = width, color="#008fd5", label="Moderately Happy"); js_dev_y = [69, 32, 12, 10, 6]; plt.bar(x_indexes + width, js_dev_y, width = width, color="#e5ae38", label="Unhappy"); plt.legend(); plt.xticks(ticks=x_indexes, labels=ages_x); plt.title("Distribution of Happiness Level Among Faculties"); plt.xlabel("Faculties"); plt.ylabel("Number of Students"); plt.tight_layout(); plt.show(); plt.style.use("fivethirtyeight"); slices = [17, 62, 50, 34]; labels = ["Happy", "Moderately Happy", "Unhappy", "Very Unhappy"]; explode = [0, 0, 0, 0]; plt.pie(slices, labels=labels, explode=explode, shadow=True, startangle=120, autopct="%1.1f%%", wedgeprops={"edgecolor" : "black"}; plt.title("Distribution of Happiness Among Female"); plt.tight_layout(); plt.show(); plt.style.use("fivethirtyeight"); slices = [4, 22, 72, 50, 41]; labels = ["Very Happy", "Happy", "Moderately Happy", "Unhappy", "Very Unhappy"]; explode = [0.2, 0, 0, 0, 0]; plt.pie(slices, labels=labels, explode=explode, shadow=True, startangle=120, autopct="%1.1f%%", wedgeprops={"edgecolor" : "black"}); plt.title("Distribution of Happiness Among Male"); plt.tight_layout(); plt.show(); plt.style.use("fivethirtyeight"); languages = ["EE", "ME", "PHYS", "CE", "FLE", "CHEM", "STAT", "BIOL", "FDE", "AEE", "ID", "HIST", "EME", "MATH", "ADM"]; popularity = [50, 29, 27, 22, 21, 27, 17, 18, 13, 11, 13, 12, 9, 8, 7]; languages.reverse(); popularity.reverse(); plt.barh(languages, popularity); plt.title("Number of Respondents by Departments (Top 15)"); plt.ylabel("Departments"); plt.xlabel("Number of Students"); plt.tight_layout(); plt.show(); plt.style.use("fivethirtyeight"); slices = [45, 122, 108, 42, 34]; labels = ["Very Happy", "Happy", "Moderately Happy", "Unhappy", "Very Unhappy"]; explode = [0.1, 0.1, 0, 0, 0]; plt.pie(slices, labels=labels, explode=explode, shadow=True, startangle=90, autopct="%1.1f%%", wedgeprops={"edgecolor" : "black"}); plt.title("Dispersion of Happiness Level About Living in Ankara"); plt.tight_layout(); plt.show()
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