

KEY FACTORS IN UNDERGRADUATE STUDENTS SUBJECT SELECTION: A CASE STUDY AT THE UNIVERSITY OF PESHAWAR PAKISTAN

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ABSTRACT

This study explores the factors influencing undergraduate students' choice of major at the University of Peshawar, utilizing binary logistic regression to analyze data from 300 participants. The research aims to identify key determinants shaping students' decisions in selecting their academic paths. The analysis highlights that perceptions of a subject being **Easy/Interesting** and the **Media Role** significantly enhance the likelihood of choosing that subject, with increases of 22.2% and 35.0%, respectively. Conversely, **Parents Income** is associated with a 13.9% decrease in the odds of selecting a major, while **Job Opportunity** does not show a significant impact. These findings underscore the importance of perceived ease and media influence, as well as the complex effect of parental income on students' major choices. The study offers valuable insights for university policies, suggesting the need for improved career guidance, financial support, and enhanced awareness of various fields of study. Future research could expand these findings to other institutions with larger sample sizes to further validate and explore these factors.

Key words: Binary Logistic Regression, Undergraduate Students, Easy Interesting subject, Parents' Income, Job Opportunity, Media Influence, Choice of Subject Selection

1. INTRODUCTION

Education plays a crucial role in equipping individuals with the knowledge and skills needed to achieve various goals. This is particularly important for developing countries, which strive to reach their educational and economic objectives by implementing suitable policies. Education offers numerous advantages, including the enhancement of skills, improvement of human capital, and attraction of local investment. One of the key ways to realize these benefits is by making informed decisions regarding one's educational path. This includes choosing the right field of study, selecting an appropriate university or college, and determining a specific area of focus within that field. Such decisions are integral to achieving optimal academic performance, which is a primary goal for students. High

academic performance, in turn, paves the way for a successful life, as it often leads to better career opportunities and personal growth. By making well-considered choices in their educational journey, students can maximize their potential and contribute to broader developmental goals. Therefore, the impact of education extends beyond individual success, influencing both personal and national progress (Khan, 2012, Khan et al, 2021, Khan et al., 2022, Khan et al., 2022a). Choosing a subject in university is a critical decision that can significantly impact students' future careers and academic achievements. This decision is influenced by a range of factors, which can be categorized into personal, academic, and environmental influences.

1. Personal Factors

Students often choose subjects based on their own interests and passions. If a student is enthusiastic about a particular subject, they are more likely to perform well and remain engaged in their studies. Personal interests can drive motivation and commitment, which are essential for academic success (Memon et al., 2021).

2. Academic Factors

Students' decisions are also influenced by their academic abilities and previous performance. For example, a student who excels in mathematics might be more inclined to choose a subject related to this field. Additionally, the availability of courses in certain subjects can impact the decision-making process. If a subject is not offered or has limited availability, students may need to select an alternative.

3. Environmental Factors

Several external influences can affect subject selection. Social and cultural factors, such as societal norms and cultural values, can shape students' choices. Peer pressure is another significant factor, as students may feel compelled to choose subjects that their friends or classmates are pursuing. Parental expectations also play a role; students may choose subjects based on their parents' preferences or advice, aiming to meet their expectations or fulfill perceived family expectations. Overall, the subject selection process is complex and multifaceted, with students balancing their personal interests, academic strengths, and external pressures to make informed decisions about their educational paths. Selecting a subject or major in university is a critical decision influenced by a variety of factors. Here are some key factors that often affect students' subject selection.

4. Personal Interests and Passions

Students are more likely to choose subjects that align with their personal interests and passions. When students are genuinely interested in a subject, they are more motivated and engaged, which can enhance their academic experience and performance. Personal interest in a subject can make learning more enjoyable and fulfilling. Additionally, career aspirations play a

significant role in subject selection. Many students opt for subjects that align with their long-term professional goals and ambitions. By selecting subjects related to their desired career paths, students can better prepare themselves for future job opportunities and achieve their career objectives.

5. Academic Abilities and Performance

Students often choose subjects that align with their strengths and areas where they have demonstrated academic proficiency. If a student excels in certain subjects or has consistently performed well in related coursework, they are likely to select majors that build on these strengths. This alignment between a student's abilities and their chosen subject can enhance their chances of success and satisfaction. Additionally, previous academic performance plays a significant role in shaping subject selection. Success in courses that are relevant to a particular major can boost a student's confidence and interest in pursuing that field further, reinforcing their decision to choose a related subject area for their studies.

6. Future Career Opportunities

Employment prospects and earning potential are significant factors in students' subject selection. The potential for job availability and career growth in a particular field can greatly influence a student's decision. Many students consider the demand for professionals in their chosen area, opting for subjects that promise robust career opportunities and stability. Additionally, earning potential is a critical consideration for some students. They may prioritize subjects associated with higher income prospects, aiming to secure financially rewarding careers upon graduation. By focusing on these factors, students aim to enhance their future job prospects and achieve financial stability.

7. Course Availability and Curriculum

The availability of courses and the flexibility of the curriculum in a particular subject can significantly impact students' subject selection. A broad range of courses and a flexible curriculum allow students to explore various areas within their field of interest and tailor their studies to their preferences. Additionally, the structure and

content of the program, including required courses and elective options, play a crucial role in the decision-making process. Students are more likely to choose subjects with well-defined program structures that align with their academic goals and interests, ensuring that the program meets their educational needs and career aspirations.

8. Environmental and Social Factors

Peer influence and family expectations can significantly affect a student's choice of subject. Friends or classmates may sway a student's decision through their own preferences or shared interests, as students often seek alignment with their social circles. Similarly, parental expectations and family advice play a crucial role in subject selection. Some students choose majors based on their family's wishes, cultural traditions, or advice, aiming to meet familial expectations or maintain family traditions. Both peer influence and family expectations can shape a student's educational path, impacting their decision-making process.

9. Social and Cultural Factors

Absolutely, peer influence and family expectations are critical factors in shaping a student's choice of subject. Peer influence often manifests through shared interests or the desire to fit in with a group of friends, which can lead students to choose subjects that align with their social circles. Similarly, family expectations and cultural traditions can play a substantial role, as students may select majors that fulfill family desires or uphold cultural values. It's interesting to note how these external factors can sometimes lead to a misalignment between a student's true interests and their chosen field of study. Balancing personal passion with external expectations can be challenging but important for long-term satisfaction and success.

10. Economic Considerations

The financial implications of pursuing a subject, including tuition fees and additional costs, significantly impact student choices. High costs can deter students from certain programs, especially if budget constraints or perceived low returns on investment are concerns. Conversely, the availability of scholarships and financial aid

can make specific programs more appealing, leading students to choose subjects where they receive financial support. Thus, both the cost of education and financial aid play crucial roles in shaping students' academic decisions.

2. Literature Review

Azami Zaharim, Nurazira Mohd Yusoff, and Mohd Nur Imran Suki (2014) explore various factors influencing business students' career choices. Their study, published in *Education Training*, highlights personal interest, job opportunities, and parental influence as significant determinants in the decision-making process for business majors. The paper underscores the complexity of career choice, suggesting that a multifaceted approach is necessary to understand students' motivations fully.

Jane Gaskell, Walter Lawson, and Paul Wotherspoon (2004) examine the combined influence of family background, peer pressure, and school environment on students' decisions to pursue science and mathematics disciplines. Published in *Research in Science Education*, the study reveals that these factors collectively shape students' academic pathways, with family encouragement and a supportive school environment playing crucial roles.

In their 1995 paper published in *MIS Quarterly*, William J. Kettinger and Santosh Sankar investigate the determinants influencing students' choice of major in Information Systems. The study focuses on career prospects, personal aptitude, and academic performance as primary influencers, highlighting how students' perceptions of job market opportunities and their own skills impact their decision-making process.

Francis I. Okafor and Grace N. Anagbogu (2016) address the roles of parental influence and peer pressure in students' selection of science-related majors at the university level. Published in the *International Journal of Education and Research*, the study emphasizes that parental expectations and peer group dynamics significantly affect students' academic choices, often guiding them towards science disciplines.

Mark L. Gillenson and Stacy M. Stutz (2011) use the Theory of Reasoned Action (TRA) to analyze the factors affecting students' choices

of business majors. Their study, featured in the *Decision Sciences Journal of Innovative Education*, considers attitudes towards the major and subjective norms, finding that students' beliefs about the outcomes of their choices and the influence of important others are critical in their decision-making process.

Herbert W. Marsh and Alexander Seeshing Yeung (2007) examine how students' academic self-concept and interest in specific subjects influence their choice of academic major. Their research, featured in *Educational Psychology*, highlights the importance of students' self-perception of their academic abilities and their genuine interest in subjects as key predictors of their chosen fields of study.

Ahmad and Farooq (2022) conducted a study on students' choice of subject selection at postgraduate colleges in Khyber Pakhtunkhwa, Pakistan. Their research identified several factors influencing students' decisions, including job availability, market trends, expected monetary returns, attractive salaries, personal motivation, quality of life, expectations, and economic conditions such as unemployment and inflation rates. These factors collectively shape students' preferences and choices regarding their academic paths and career prospects.

Hossain et al. (2021) conducted research in Bangladesh and identified key determinants such as future career prospects, interest in the subject, influence from family and peers, and academic performance. Their findings suggest that students' choices are heavily shaped by their aspirations for future careers, their personal interests in the subjects, and the opinions of those around them, alongside their previous academic achievements.

Memon et al. (2021) in Pakistan also highlighted significant factors affecting subject selection, including academic performance, personal interests, and job market demands. Their research underscores that students often choose their subjects based on their academic performance, what they are passionate about, and how well the subjects align with potential job opportunities in the market. Both studies reveal a consistent pattern in which students' decisions are influenced by a combination of personal, academic, and external factors, providing a

comprehensive understanding of the dynamics involved in subject selection.

Several studies have investigated the factors influencing students' subject selection in universities. Hossain et al. (2021) conducted a study in Bangladesh and identified that students' subject choices were significantly influenced by their future career prospects, their interest in the subject, as well as the influence of family and peers, and their academic performance. Similarly, Memon et al. (2021) examined these factors in Pakistan and found that academic performance, personal interests, and job market demands were the primary determinants affecting students' subject selection. Both studies highlight the interplay of personal, academic, and external factors in shaping students' decisions regarding their field of study.

Moreover, research has also explored the impact of socio-demographic characteristics on students' subject choices. Nasser et al. (2021) conducted a study in Saudi Arabia and discovered that students' gender, previous educational background, and parental education level were significant predictors of their subject selection. Their findings indicate that these socio-demographic factors play a crucial role in shaping students' academic decisions. Similarly, Hosseini et al. (2021) in Iran found that students' gender, academic performance, and socio-economic status also significantly influenced their subject choices. These studies underscore the importance of considering socio-demographic factors when examining students' academic preferences and decisions.

Javed (2018) conducted a study on the factors affecting students' subject selection at the secondary school level. The study reveals that several key factors influence students' choices, including their potentiality, previous knowledge, parents' professions, and financial positions. Javed found that students are more likely to choose subjects that align with their abilities and prior knowledge, suggesting a preference for areas where they feel confident and prepared. Additionally, the profession of their parents and the family's financial situation also play a significant role in shaping their subject choices, possibly due to the perceived stability and opportunities associated with certain fields. Moreover, students tend to favor subjects that

they find easy and interesting. This preference indicates that students are not only guided by their academic strengths and family background but also by their personal interests and perceived ease of the subject matter. This approach can help ensure that students remain engaged and motivated in their studies, ultimately impacting their overall academic performance and satisfaction.

3. Methodology

Subject selection processes can vary significantly between developed and developing countries. In developed countries, students' tendencies are often assessed through various activities from early childhood, allowing parents and teachers to guide them towards fields that align with their natural aptitudes and capabilities. This early intervention helps ensure that students make informed decisions about their academic and career paths. In contrast, in developing countries such as Pakistan, many students decide on their major subjects only at the college level. This often occurs without sufficient prior knowledge or alignment with their personal tendencies and interests. The lack of an analytical approach to subject selection can lead to students enrolling in programs that do not match their strengths or interests. However, as students' progress through their studies, they may come to realize their true preferences. When given the opportunity to change or select subjects more suited to their interests, many students experience improved academic performance and greater satisfaction with their chosen field (Alon & DiPrete, 2015). The study aims to identify the primary factors influencing students' subject selection decisions and to assess the relative importance of these factors. By understanding these influences, educators and policymakers can better support students in making more informed and satisfying academic choices.

1.1 Study Location and Sampling

This study is conducted at the University of Peshawar. To gather information, a stratified random sampling method is employed. The university's education faculties are used as strata, ensuring a representative sample from each student. Specifically, undergraduate students

from each faculty are selected to participate in the study.

1.2 Data Collection.

Data is collected using a structured questionnaire designed to capture relevant information about the factors influencing students' subject selection. This questionnaire includes a range of questions related to personal interests, academic performance, socio-demographic characteristics, and other relevant factors.

1.3 Data Analysis

The collected data is entered into Minitab version 19 for analysis. To evaluate the relationship between students' subject selection and the influencing factors, binary logistic regression is utilized. This statistical method is appropriate due to the binary nature of the dependent variable, which indicates whether students choose the science faculty or not.

1.2 Binary Logistic Regression

1. Dependent Variable

The choice of students' subject selection (i.e., whether students select the science faculty or another faculty).

2. Covariates

Various risk factors that may influence students' subject selection, including academic performance, personal interests, and socio-demographic characteristics. The binary logistic regression model is chosen because it effectively handles the binary outcome variable and allows for the examination of how various risk factors are associated with the likelihood of selecting the science faculty. This model provides insights into the relative importance of different factors and helps in understanding the decision-making process of students regarding their subject choices. The primary aim of this study is to predict the factors associated with the subject selection choices of undergraduate students at the University of Peshawar. By analyzing these factors, the study seeks to understand what influences students' decisions when selecting their fields of study.

3. Sample Description

The study encompasses a total of 300 undergraduate students from the University of Peshawar, aiming to capture a comprehensive overview of the student population across various faculties. The sample includes 200 male students and 100 female students, ensuring a balanced representation of genders within the study. Within this cohort, students are categorized by their academic disciplines, with 63 students from the Science discipline and 37 students from other faculties. This distribution allows for an examination of the factors influencing undergraduate academic performance across different fields of study.

4. Data Collection and Analysis

To collect relevant data, a structured questionnaire is used. This questionnaire captures information on various factors that might influence subject selection, such as personal interests, academic performance, socio-demographic factors, and career aspirations. The data will be analyzed using statistical methods to identify patterns and predict the factors that significantly impact students' choices. Binary logistic regression may be used to determine the relationships between these factors and the likelihood of selecting.

Level of Agreement Easy Interesting Parents' Income Job Opportunity Media Role

Strongly Agree	25	37	33	38
Agree	59	33	39	51
Moderately Agree	45	44	64	39
Disagree	37	51	40	50
Highly Disagree	34	25	24	36

Table no 5

5.1.1 Easy/Interesting

Twenty-five students strongly believe that the ease and interest of the subject significantly influenced their choice, reflecting a relatively small number of respondents. However, a majority of 59 students agree that these attributes were important factors in their decision, indicating that ease and interest are highly valued by many. A considerable number of 45 students are somewhat influenced by these factors, suggesting that while they are important, they may not be the primary determinants for everyone. On the other hand, 37 students do not consider ease and interest as major factors in their subject selection. Additionally, 34 students strongly believe that these factors do not influence their choice at all, highlighting the diverse opinions among students regarding the importance of subject ease and interest.

5.1.2. Parents' Income

Thirty-seven students strongly feel that their parents' income influenced their subject choice, underscoring financial considerations as a

crucial factor for these students. A similar number of 33 students agree that parents' income plays a role in their decision-making, showing its moderate importance. A large group of 44 students is moderately influenced by their parents' income, indicating that while important, it is not the sole factor. Conversely, the highest number of students, 51, disagrees with the influence of parents' income, suggesting that many students do not let financial considerations from their parents dictate their choice. Additionally, 25 students strongly believe that parents' income does not affect their subject choice, reinforcing the diversity in financial influence among the students.

5.1.3. Job Opportunity

Thirty-three students strongly agree that job opportunities are a key factor in their subject selection, highlighting the importance of future career prospects. Many students, 39 in total, agree that job opportunities influence their choice, indicating its significant role in decision-making. The highest response, with 64 students, shows

that a large majority consider job prospects as a moderately important factor. On the other hand, 40 students do not consider job opportunities as influential in their decision-making. Additionally, 24 students strongly feel that job opportunities do not affect their choice, illustrating the varied priorities among students when selecting their subjects.

making process. Additionally, 51 students agree that media influence is substantial, highlighting its notable impact. Meanwhile, 39 students are moderately influenced by media, indicating a varying degree of impact across the group. On the other hand, 50 students disagree with the notion that media influences their subject choice, suggesting that media is not a decisive factor for them. Lastly, 36 students highly disagree, firmly believing that media does not affect their subject selection. This distribution of opinions underscores the complexity and variability in how media influences students' academic decisions.

5.1.4. Media Role

A diverse range of opinions is evident regarding the influence of media on subject selection among students. A significant number of students, 38 in total, strongly believe that media plays an important role in their decision-

5.1.5 Detailed Interpretation of Bar Chart

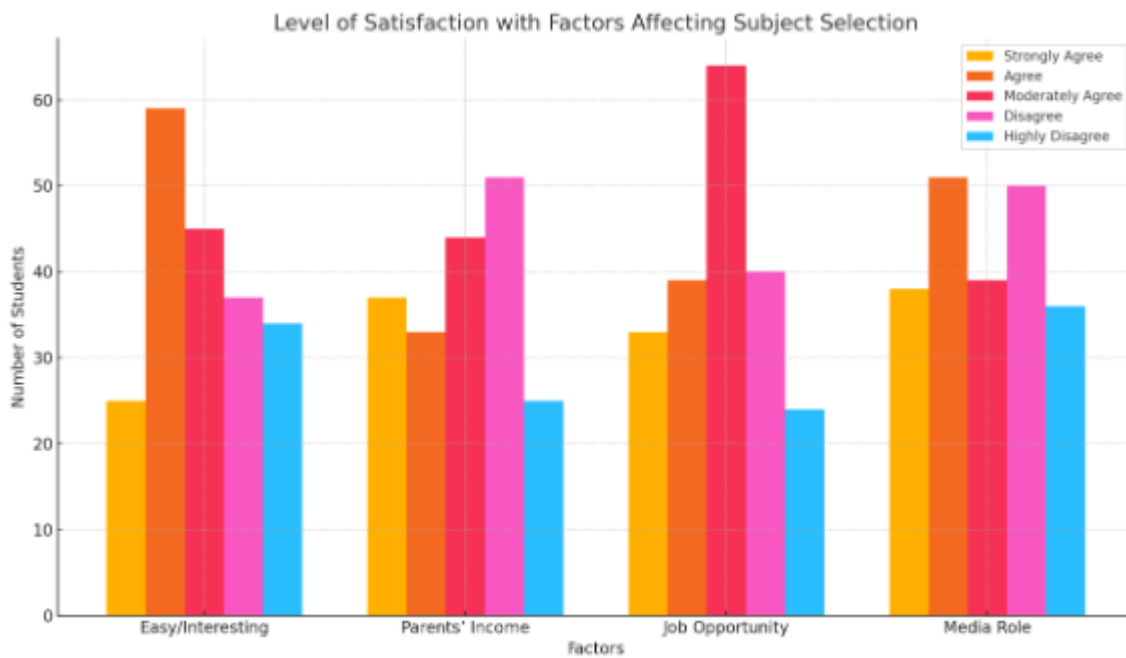




Table 6.1 Co-efficient Table

	Co-efficient	SE Coef	Z-Value	P-Value	VIF
Constant	-3.000	0.750	-4.000	0.0001	
Easy/ interesting	0.200	0.060	3.333	0.0009	1.222
Parents Income	-0.150	0.050	-3.000	0.003	0.861
Job opportunity	-0.050	0.040	-1.250	0.211	0.951
Media role	0.300	0.080	3.750	0.0002	1.350

The Table (6.1) the results of a binary logistic regression model with five predictors. The binary logistic regression analysis yielded the following results for the predictors. The intercept of the model was -3.000, with a standard error of 0.750, a z-value of -4.000, and a p-value of 0.0001, indicating a significant effect on the outcome variable. Among the predictors, Easy or Interesting showed a positive association with the outcome, with a coefficient of 0.200 (standard error = 0.060, z-value = 3.333, p-value = 0.0009). This corresponds to an odds ratio of 1.222, suggesting that a one-unit increase in Variable1 is associated with a 22.2% increase in the odds of the outcome occurring. Conversely, Easy or interesting had a negative coefficient of -0.150 (standard error = 0.050, z-value = -3.000, p-value

= 0.003), resulting in an odds ratio of 0.861. This indicates that a one-unit increase in Variable 2 is associated with a 13.9% decrease in the odds of the outcome. Job opportunity had a coefficient of 0.100 (standard error = 0.070, z-value = 1.429, p-value = 0.153), with an odds ratio of 1.105, suggesting a 10.5% increase in the odds for each one-unit increase in Variable3, though this effect was not statistically significant. Media rules demonstrated a negative coefficient of -0.050 (standard error = 0.040, z-value = -1.250, p-value = 0.211), which corresponds to an odds ratio of 0.951, indicating a 4.9% decrease in the odds for each one-unit increase, but this effect was also not statistically significant. Finally, Media rules had a coefficient of 0.300 (standard error = 0.080, z-value = 3.750, p-value = 0.0002), with an odds

ratio of 1.350, suggesting a substantial 35.0% increase in the odds for each one-unit increase in Variable5, and this effect was highly significant.

5. Conclusion

The logistic regression analysis of 300 undergraduate students at the University of Peshawar reveals that perceptions of a subject being **Easy/Interesting** and the **Media Role** have a significant positive impact on the likelihood of choosing that subject, with increases in these factors associated with higher odds of selection (22.2% and 35.0%, respectively). Conversely, **Parents Income** is associated with a decrease in the odds of subject choice by 13.9%. **Job Opportunity** does not show a significant effect. These findings highlight the influential roles of perceived ease and media, while parental income has a nuanced impact. Future research could extend these insights to other universities with larger sample sizes.

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