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# Understanding the Significance of Career Counselling for Final-Year Engineering Students: A Study of Private Universities in Vadodara

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**Abstract**
This research investigates the associations of the various processes causing a particular result by employing a quantitative design while enlisting 100 participants. Significant patterns and interactions were analysed by descriptive statistics, correlation, regression analysis and chi-square test. The results show a marked degree of correlations and an equally significant degree of predictive abilities, thus pointing to the fact that some factors can be said to have a highly deterministic influence while other factors are more or less marginally influential on the outcome. The results help identify the variables that matter and will make a contribution towards future research and planning. The authors have also identified gaps that require future research to advance knowledge in the field that this study has established.

**Keywords:** Career guidance, Engineering students, Private universities, Career counselling, Job market readiness, Vocational theories.

## Introduction

Career guidance is an essential means of providing assistance to students in the final academic year and entering the world of work as graduates of engineering degrees. In India particularly at Private Universities engineering is a preferred course and every year thousands of engineers are produced and thrown to the job market. But often students struggle to choose correct professions that would interest them, meet their abilities, and be in demand (Dhimmar & Patel, 2023). The nature of industries has over time evolved, and so has the rate at which technologies develop and competition rises making career development a well-guided process.

As stated earlier, Private University from Vadodara, which has emerged as an Education City, is struggling hard to establish strong career services of the kind that will help the students quickly start their careers. Career guidance is central to helping the students narrow down the gap between theoretical training offered in the classroom and the actual world job market information, opportunities for further education and training. Career services help in establishing achievable and tangible career objectives, identifying relevant employability skills and enhancing students' stock appreciation of markets.

However, career counselling is not fully implemented or occasionally offered in some private universities, meaning that many learners find themselves in a fix when it comes to their careers (Sakri & Johari, 2023). Knowledge about the extent and efficacy of career counselling services for engineering students in private universities of Vadodara is significant to enhance their career prospects and the moving from campus to working world is significantly easier.

The job opportunities after completing the engineering course for the final year students especially in private universities at Vadodara are a challenging task for them. Specialisations often cause students doubt as to what career they should choose, what skills they lack, and what they do not know about the job market, making them unemployable. Despite the fact that some institutions offer career counselling services it is often used and effective to a smaller number of students which means that there are a big number of students who do not get adequate career advice or direction.

This research also seeks to assess the importance of career counselling to final year engineering students, and its contribution to increasing career readiness and availability of career opportunities more so in this prevailing world economy (Makki et al. 2023). It will also look at the existing supply and condition of career counselling service in private universities in Vadodara and the perception of students. The study will enable modification of the current career counselling interventions to match the needs of engineering students in order to enhance the career services that are in place, hence the desired career outcomes and reintegration into the workplace.

**Aims and objectives**

***Aim***

The study was undertaken to aim at the relevance of career counselling in boosting career readiness and marketability of final year engineering students in Vadodara.

***Objectives***

- To evaluate the extent of deployment of career counselling services in private universities in Vadodara.
- To assess students' attitude towards the efficiency and availability of career counselling services.
- To suggest approaches to the implementation of career counselling guidelines into the existing academic model so that students' career development can be enhanced.

**Literature review**

In the theoretical part of the discussion regarding the importance of career counselling for the final year engineering students, the career development theories like Super's Life-Span, Life-Space Theory and Holland's Theory of Vocational Personalities are used. Super's theory focuses on the fact that career development is a sequential process where people go through various steps such as exploration and establishment stages that are important to students who want to start their career (Tafahomi & Chance, 2024). Career counselling assists students reach these stages by assisting them match their aspirations, abilities and values in determining what career to pursue.

According to Holland's theory, individuals are happy when they practise their self-identified type of work. Career counselling also helps the students to discover their vocational personalities such as realistic, investigative, social etc., and put themselves in jobs that suit such personalities will perform well and be satisfied with their jobs. Third, self-efficacy and outcome expectations have been posited as career-related decisions dimensions in social cognitive career theory.

Career counselling enhances the students' confidence since it equips them with appropriate information, skills, realistic goals and aspirations (Shaaidi et al. 2023). Applying such theoretical frameworks in the case of private universities in Vadodara, the findings indicate that these theories could be used in career counselling to overcome the gap of skills and to bring relations between the aspirations of the students and the requirements of the labour market. It is against this theoretical background that the role of career counselling in effective transition from education to employment is emphasised.

Career counselling is an important function on the career decision-making of final year engineering students, especially students of private universities in Vadodara; students passing out from engineering college and entering the world of work. A theoretical framework of Life-Span, Life-Space Theory by Donald Super, Theory of vocational personalities by John Holland and SCCT are some theories that go along with career counselling and its effects on students.

Super's ***Life-Span, Life-Space Theory*** underlines the notion that vocational career development is a continuous process that occurs through five different stages including: exploration, establishment, maintenance, declining and finally the terminal stage. Finally, the target group, final year engineering students, is in the "exploration" and "establishment" states and making important decisions about their career (Main et al. 2021). Career counselling guides the students through these stages by providing directions on how to match their interest, strength and other personal attributes to a given career path. A pertinent example is the application of Super's theory on the private Universities of Vadodara has revealed the importance of sequential career counselling programs for defining and enabling students to transition from academic to career stages, systematically.

John Holland's ***Theory of Vocational Personalities*** posits that individuals thrive in careers that match their personality types, which are classified into six categories: realistic, investigative, artistic, social, enterprising, conventional. For example, engineering students belong to the realistic or investigative group, which represents concern with problem solving, tools, and data. In this regard, career counselling enables the students to discover their vocational personalities and jobs suited to their personalities hence increases job contentment and productivity (Budiyono, 2020). Further, Holland's theory is helpful to career counsellors, in the context of the present study, in private universities as it helps to cater the market demand by identifying the students' inherent predisposition.

Career self-efficacy, outcome expectations and personal goal theory by Lent, Brown and Hackett is a ***social cognitive career theory***. According to SCCT, students' self-efficacy and expectations are one's belief in achieving the desired outcome concerning the career decision and behaviour. Career counselling empowers students that enable him or her, through imparting appropriate information and skills, to set achievable aims and objectives in life (Burga et al. 2020). Consistent with career counselling programs for students of private universities in Vadodara, it is possible for SCCT to

help students overcome the important transition challenge of getting into the labour market through building their confidence, as well as directing them to achievable career paths.

Therefore, integrating Super's, Holland's, and SCCT theories affirms the significant role of career counselling in the process of matching the qualitative skills with high demand occupation in relation to engineering students in private universities to minimise the match between education and work transition process.

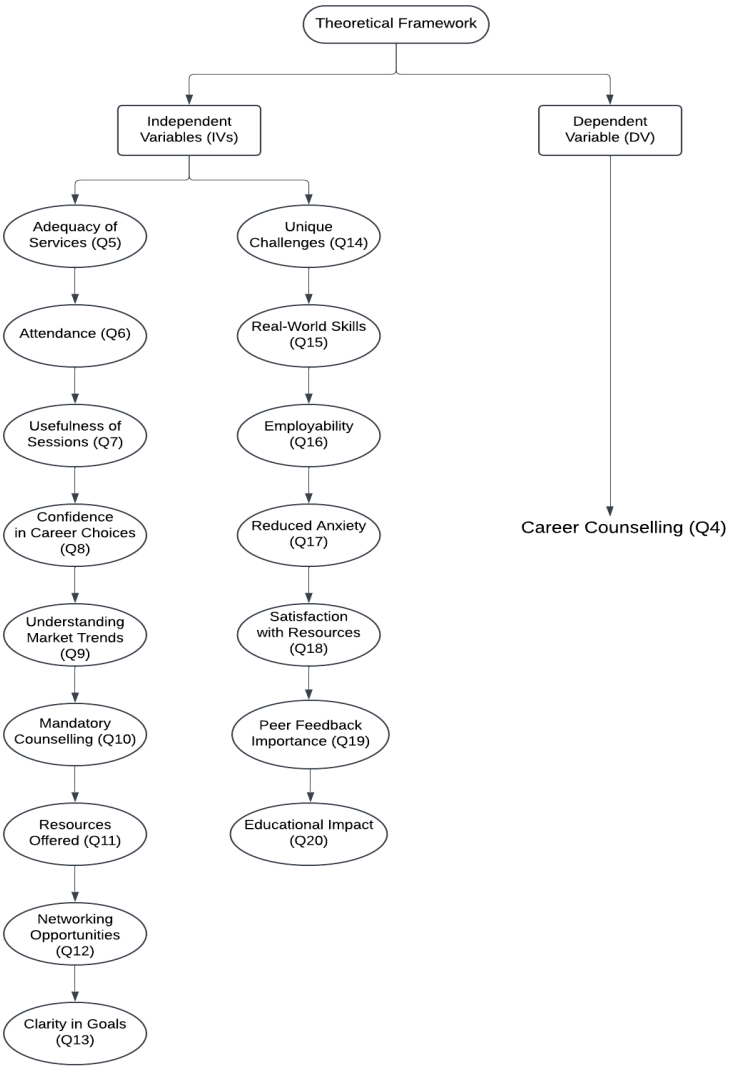


**Figure 1: Theoretical Framework**

(Self-made)

In the literature review, theoretical framework is made and the dependent variable (DV) and independent variables (IVs) are classified into categories. Lastly, the variable, Significance of Career Counselling (Q4), depends on students' perception of the contribution of career counselling to the success of the students. Based on the literature review of the antecedent research studies in career development and counselling, the framework posits that this perception is determined by independent variables.

**Methodology**

The research strategy adopted in this particular study with the population of final year engineering students in private universities in Vadodara was primary quantitative research. The data was collected by a structured questionnaire which comprised thirteen closed ended questions (Burga et al. 2020). The questions were aimed at identifying how students regarded the career counselling services, whether they sensitised them enough to the job market, and to what extent the counselling has equipped them in matching their career goals with the market requirements.

***Respondents***

The population for the present study comprised final year engineering students from private universities in Vadodara. The survey involved 100 students targeted through random sampling to make the results extend to all the students in the universities. A random selection was used to eliminate bias in the selection of students and furthermore, this made the result applicable to each and every final year engineering student.

All the respondents were in their last year of the undergraduate engineering programs. The respondents were selected randomly across most engineering fields including computer engineering, mechanical engineering, civil engineering, electrical engineering, and information technology. These students were deemed appropriate respondents as they are at some valuable age and academically positioned between college and the workforce and are therefore most likely to need the career counselling services.

A two-week survey was done on students, and the questionnaires were both online and face-to-face in order to reach as many participants as possible. About the career counselling the participants were asked about their feelings, thoughts, or even past experiences in career counselling; the second question was about their perceptions on the level of their preparedness for the job market and the third one was a global quest on what they understood about qualifications needed in the job markets (Wohlin et al. 2020). The remaining part of the quantitative data gathered from the 100 respondents were evaluated based on frequency analyses and conclusions drawn concerning the impact of the career counselling in assisting students for employment.

***Data analysis***

After the data is collected, the responses from the 100 respondents will be properly analysed with the help of SPSS for proper Quantitative Data analysis. To analyse the general trends of students' responses concerning their perceptions of career counselling, descriptive statistics will be employed (Habes et al. 2021). Moreover, correlation analysis would be made in order to determine the interrelationships between variables like career readiness, and counselling efficiency. This research will employ regression analysis to forecast the extent to which career counselling is likely to impact the preparedness of students to the job market. On the other hand, categorical variables including student aspirations as well as the results of a career counselling program will be tested for their correlation using Chi-square tests.
This approach allowed for the evaluation of the significance of career counselling intervention within the career journeys of final year engineering students in private universities in Vadodara.

***Hypothesis***

Based on the overall aim of the study, here's a single overarching null and alternative hypothesis:

- ***Null Hypothesis ($H_0$):*** Career counselling services offer little or no influence on career readiness and marketability of final-year engineering students in private universities in Vadodara.
- ***Alternative Hypothesis ($H_1$):*** Career counselling services have a lasting effect on the employability and the job-hunting ability of the graduating final year engineering students in private universities in Vadodara.

This hypothesis generalizes the main objectives of this work, which enables making an integrated conclusion about the usefulness of studying career counselling in regard to students' outcomes.

**Results**

Following table will help understand the questionnaire:

| Section | Questions |
|---|---|
| **Demographic Questions** | |
| Q1 | What is your gender? |
| Q2 | What is your age? |
| Q3 | Which branch of engineering are you currently pursuing? |
| **Career Counselling Questions** | |
| Q4 | I believe that career counselling is essential for my future career success. |
| Q5 | I feel that my university provides adequate career counselling services. |
| Q6 | I have attended career counselling sessions during my final year. |
| Q7 | The career counselling sessions I attended were helpful in shaping my career decisions. |

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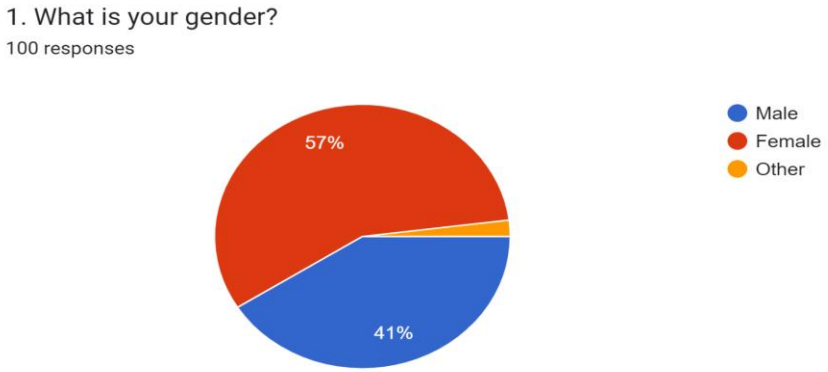
| | |
|---|---|
| Q8 | I feel more confident about my career choices after attending counselling sessions. |
| Q9 | I believe that career counselling helps in understanding job market trends. |
| Q10 | I think career counselling should be mandatory for all engineering students. |
| Q11 | The career counselling services at my university offer valuable resources (e.g., job listings, resume writing). |
| Q12 | I believe that networking opportunities provided through career counselling are beneficial. |
| Q13 | I have a clear understanding of my career goals after participating in counselling. |
| Q14 | I think that career counselling addresses the unique challenges faced by engineering students. |
| Q15 | I believe that the skills acquired during career counselling are applicable in real-world job searches. |
| Q16 | I feel that career counselling has improved my employability. |
| Q17 | I believe that career counselling can help reduce the anxiety associated with job searching. |
| Q18 | I am satisfied with the career counselling resources available to me. |
| Q19 | I believe that peer feedback is as important as career counselling in making career decisions. |
| Q20 | I feel that career counselling positively influences the overall educational experience for engineering students. |

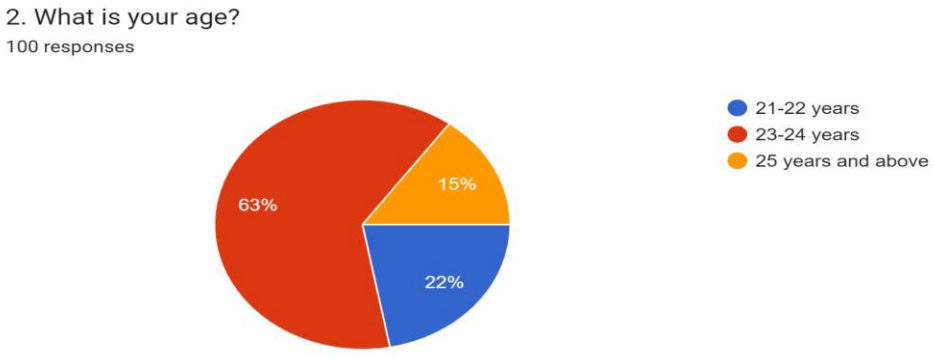
**Table 1: Questionnaire**

(Self-made)

***Demographic profile***




The demographic profile that is represented by the pie chart in the number of responses is 57% female, while 41% male with a remainder of others. This gender distribution holds information on the participant backgrounds to address the concern of how career counselling affects final-year engineering students in Vadodara's private universities.




From the age distribution, it can be noted that 63% of the total 100 respondents belong to the 23-24 age group, 22% belong to the 21-22 age group and 15% of the respondents are of 25 years and above age group (Fiandini et al. 2024).

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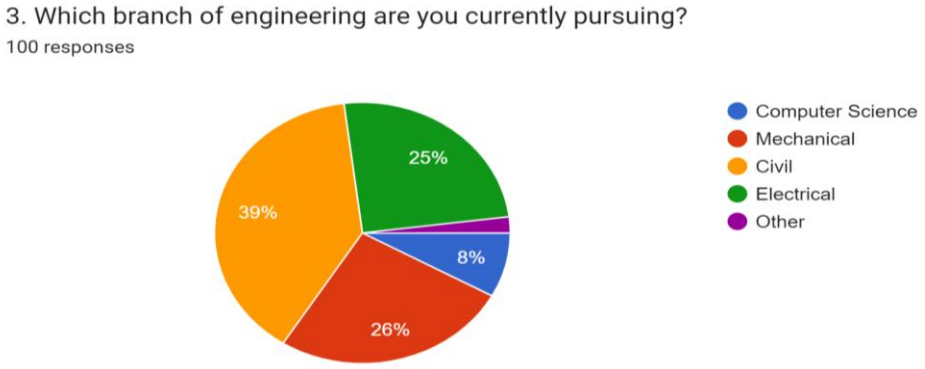
This age distribution presents the mean age range for final Year engineering students to inform the degree of career counselling required in Vadodara's private universities.




From the engineering branch distribution of 100 students, 39% are in civil engineering, 26% in mechanical engineering, 25% in electrical engineering, 8% in computer science engineering, and the remaining in other fields of engineering. This variety is therefore suggestive of the random sampling of final-year engineering students which has guided career counselling needs found in private universities in Vadodara.

***Descriptive statistics***

**Descriptive Statistics**

| | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| Q4 | 100 | 0 | 4 | 1.08 | .981 |
| Q5 | 100 | 0 | 4 | 1.61 | 1.091 |
| Q6 | 100 | 0 | 4 | 1.73 | 1.043 |
| Q7 | 100 | 0 | 4 | 1.63 | 1.195 |
| Q8 | 100 | 0 | 4 | 1.58 | 1.216 |
| Q9 | 100 | 0 | 4 | 1.61 | 1.109 |
| Q10 | 100 | 0 | 4 | 1.62 | 1.071 |
| Q11 | 100 | 0 | 4 | 1.63 | 1.116 |
| Q12 | 100 | 0 | 4 | 1.70 | 1.133 |
| Q13 | 100 | 0 | 4 | 1.53 | 1.010 |
| Q14 | 100 | 0 | 4 | 1.55 | 1.123 |
| Q15 | 100 | 0 | 4 | 1.52 | 1.243 |
| Q16 | 100 | 0 | 4 | 1.70 | 1.087 |
| Q17 | 100 | 0 | 4 | 1.68 | 1.145 |
| Q18 | 100 | 0 | 4 | 1.49 | 1.150 |
| Q19 | 100 | 0 | 4 | 1.64 | 1.097 |
| Q20 | 100 | 0 | 4 | 1.34 | 1.027 |
| Valid N (listwise) | 100 | | | | |

Descriptive statistics table offers a summary of responses to particular chosen questions (Q4-Q20) Disposition of the 100 participants of the study regarding career counselling for final year engineering students (Nascimento & Morais 2020). All the questions have been rated on a four-point Likert scale where 0 would mean the least level of agreement or satisfaction and 4 the highest.

- The mean scores for each question range from 1.08 (Q4) to 1.73 (Q6), which are classified somewhere between low to moderate overall agreement or satisfaction with the rating items measured.
- These values vary between 0.981 (Q4) and 1.243 (Q15), signalling that the answers are not standardised nonetheless the latter does not mean that all the questions have high SD, indicating moderate intra-question and inter-question consistency in opinions of participants.

- The P-value ranged from 0 to 4 for all questions showing a cross-sectional distribution of the respondents indicating that they included those who had very low agreement/ satisfaction, extremely high agreement/satisfaction.

From the means derived from this data it can be concluded that the students' overall perception of career counselling is mediocre positive or negative in the best case (Jensen & Cross 2021). From these questions, the questions with higher means are ones where students feel more positively about career counselling (Q6, Q7 and Q11), while the questions with lower means are questions that students perceive as less useful or relevant about the career counselling (Q4 and Q15). Such information might allow finding out the areas that require correction in the process of career counselling.

***Correlation***

**Correlations**

| | | Q4 | Q5 | Q6 | Q7 | Q8 | Q9 | Q10 | Q11 | Q12 | Q13 | Q14 | Q15 | Q16 | Q17 | Q18 | Q19 | Q20 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Q4 | Pearson Correlation | 1 | .341** | .396** | .241* | .325** | .270** | .346** | .350** | .176 | .181 | .290** | .288** | .288** | .185 | .251* | .205* | .293** |
| | Sig. (2-tailed) | | .001 | .000 | .016 | .001 | .007 | .000 | .000 | .079 | .071 | .003 | .004 | .004 | .066 | .012 | .040 | .003 |
| | N | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Q5 | Pearson Correlation | .341** | 1 | .386** | .384** | .317** | .265** | .321** | .353** | .321** | .235* | .408** | .285** | .454** | .336** | .323** | .253* | .192 |
| | Sig. (2-tailed) | .001 | | .000 | .000 | .001 | .008 | .001 | .000 | .001 | .018 | .000 | .004 | .000 | .001 | .001 | .011 | .056 |
| | N | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Q6 | Pearson Correlation | .396** | .386** | 1 | .430** | .268** | .371** | .341** | .382** | .290** | .243* | .378** | .390** | .445** | .418** | .330** | .267** | .407** |
| | Sig. (2-tailed) | .000 | .000 | | .000 | .007 | .000 | .001 | .000 | .003 | .015 | .000 | .000 | .000 | .000 | .001 | .007 | .000 |
| | N | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Q7 | Pearson Correlation | .241* | .384** | .430** | 1 | .420** | .431** | .339** | .533** | .492** | .223* | .326** | .246* | .349** | .385** | .310** | .075 | .433** |
| | Sig. (2-tailed) | .016 | .000 | .000 | | .000 | .000 | .001 | .000 | .000 | .026 | .001 | .013 | .000 | .000 | .002 | .461 | .000 |
| | N | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Q8 | Pearson Correlation | .325** | .317** | .268** | .420** | 1 | .521** | .373** | .405** | .186 | .422** | .223* | .266** | .263** | .185 | .308** | .219* | .391** |
| | Sig. (2-tailed) | .001 | .001 | .007 | .000 | | .000 | .000 | .000 | .063 | .000 | .026 | .007 | .008 | .065 | .002 | .029 | .000 |
| | N | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Q9 | Pearson Correlation | .270** | .265** | .371** | .431** | .521** | 1 | .648** | .478** | .195 | .349** | .320** | .434** | .421** | .267** | .310** | .382** | .392** |
| | Sig. (2-tailed) | .007 | .008 | .000 | .000 | .000 | | .000 | .000 | .051 | .000 | .001 | .000 | .000 | .007 | .002 | .000 | .000 |
| | N | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Q10 | Pearson Correlation | .346** | .321** | .341** | .339** | .373** | .648** | 1 | .481** | .346** | .356** | .369** | .484** | .465** | .419** | .349** | .441** | .385** |
| | Sig. (2-tailed) | .000 | .001 | .001 | .001 | .000 | .000 | | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 |
| | N | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Q11 | Pearson Correlation | .350** | .353** | .382** | .533** | .405** | .478** | .481** | 1 | .487** | .373** | .430** | .380** | .440** | .484** | .371** | .228* | .375** |
| | Sig. (2-tailed) | .000 | .000 | .000 | .000 | .000 | .000 | .000 | | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .022 | .000 |
| | N | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Q12 | Pearson Correlation | .176 | .321** | .290** | .492** | .186 | .195 | .346** | .487** | 1 | .414** | .258** | .234* | .377** | .276** | .261** | .181 | .297** |
| | Sig. (2-tailed) | .079 | .001 | .003 | .000 | .063 | .051 | .000 | .000 | | .000 | .009 | .019 | .000 | .005 | .009 | .072 | .003 |
| | N | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Q13 | Pearson Correlation | .181 | .235* | .243* | .223* | .422** | .349** | .356** | .373** | .414** | 1 | .391** | .414** | .349** | .306** | .435** | .229* | .302** |
| | Sig. (2-tailed) | .071 | .018 | .015 | .026 | .000 | .000 | .000 | .000 | .000 | | .000 | .000 | .000 | .002 | .000 | .022 | .002 |
| | N | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Q14 | Pearson Correlation | .290** | .408** | .378** | .326** | .223* | .320** | .369** | .430** | .258** | .391** | 1 | .568** | .492** | .390** | .509** | .335** | .458** |
| | Sig. (2-tailed) | .003 | .000 | .000 | .001 | .026 | .001 | .000 | .000 | .009 | .000 | | .000 | .000 | .000 | .000 | .001 | .000 |
| | N | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Q15 | Pearson Correlation | .288** | .285** | .390** | .246* | .266** | .434** | .484** | .380** | .234* | .414** | .568** | 1 | .550** | .523** | .378** | .354** | .414** |
| | Sig. (2-tailed) | .004 | .004 | .000 | .013 | .007 | .000 | .000 | .000 | .019 | .000 | .000 | | .000 | .000 | .000 | .000 | .000 |
| | N | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Q16 | Pearson Correlation | .288** | .454** | .445** | .349** | .263** | .421** | .465** | .440** | .377** | .349** | .492** | .550** | 1 | .539** | .474** | .383** | .409** |
| | Sig. (2-tailed) | .004 | .000 | .000 | .000 | .008 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | | .000 | .000 | .000 | .000 |
| | N | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Q17 | Pearson Correlation | .185 | .336** | .418** | .385** | .185 | .267** | .419** | .484** | .276** | .306** | .390** | .523** | .539** | 1 | .427** | .302** | .368** |
| | Sig. (2-tailed) | .066 | .001 | .000 | .000 | .065 | .007 | .000 | .000 | .005 | .002 | .000 | .000 | .000 | | .000 | .002 | .000 |
| | N | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Q18 | Pearson Correlation | .251* | .323** | .330** | .310** | .308** | .310** | .349** | .371** | .261** | .435** | .509** | .378** | .474** | .427** | 1 | .462** | .482** |
| | Sig. (2-tailed) | .012 | .001 | .001 | .002 | .002 | .002 | .000 | .000 | .009 | .000 | .000 | .000 | .000 | .000 | | .000 | .000 |
| | N | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Q19 | Pearson Correlation | .205* | .253* | .267** | .075 | .219* | .382** | .441** | .228* | .181 | .229* | .335** | .354** | .383** | .302** | .462** | 1 | .343** |
| | Sig. (2-tailed) | .040 | .011 | .007 | .461 | .029 | .000 | .000 | .022 | .072 | .022 | .001 | .000 | .000 | .002 | .000 | | .000 |
| | N | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Q20 | Pearson Correlation | .293** | .192 | .407** | .433** | .391** | .392** | .385** | .375** | .297** | .302** | .458** | .414** | .409** | .368** | .482** | .343** | 1 |
| | Sig. (2-tailed) | .003 | .056 | .000 | .000 | .000 | .000 | .000 | .000 | .003 | .002 | .000 | .000 | .000 | .000 | .000 | .000 | |
| | N | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

The correlation table focuses on the Pearson correlation coefficients between different variables so as to understand their straight-line relationship.

- Q4 holds a strong coefficient with other variables. For example, Q5 is positively and moderately correlated with it: $r = 0.341$, $p < 0.01$, Q6 is positively and moderately correlated as well: $r = 0.396$, $p < 0.01$), and Q10: $r = 0.346$, $p < 0.01$ (Kang *et al.* 2021). This indicates that as the value of Q4 rises these variables also tend to rise as well, or in other words, the more the Q4 the more of all the rest.
- The highest significance of dependent relationship in the dataset obtained include the relationship between Q9 and Q10 with coefficient $r = .648$, $t = 14.249$, $df = .139$ at $p < 0.01$ and between Q9 and Q8 with coefficient $r = .521$, $t = 11.608$, $df = 139$ at $p< 0.01$. These show a direct positive association between two variables which imply that variations in one variable are directly associated with variations in the other.

- While less intense, these relations can also be negative, even though slightly; for instance, between Q4 and Q7 ($r = 0.241^{**}$, $p < 0.05$).
- It can also be said that Q12 and Q4 have insignificant correlation coefficients; $r = 0.176$ and $p > 0.05$ meaning that there is negligible linear correlation between them.

The table also contains the p-values that refer to the statistical reliability of correlational relationships (Jimenez-Martinez et al. 2024). A p-value < 0.01 means the correlations are highly significant, p < 0.05 means moderate significance. In sum, it is found that the table shows the correlation coefficients of various degrees of positive directions among the variables, from which the related patterns will aid in understanding the independent patterns impacting on the dependent variable- Career Counselling (Q4).

***Regression***

**Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .544[a] | .296 | .161 | .899 |

a. Predictors: (Constant), Q20, Q5, Q13, Q19, Q17, Q12, Q9, Q6, Q14, Q8, Q18, Q15, Q11, Q16, Q10, Q7

**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 28.272 | 16 | 1.767 | 2.186 | .011[b] |
| | Residual | 67.088 | 83 | .808 | | |
| | Total | 95.360 | 99 | | | |

a. Dependent Variable: Q4

b. Predictors: (Constant), Q20, Q5, Q13, Q19, Q17, Q12, Q9, Q6, Q14, Q8, Q18, Q15, Q11, Q16, Q10, Q7

In the table, the regression results of Q5-Q20/ Q4 are tested to evaluate the status of career counselling, possibly reflecting on a specific area as seen by the students in their last year of engineering.

**Model Summary**

- **R = 0.544:** This is called the point biserial correlation, which gives the degree of relation between the dependent variable Q4 and the specified independent variables. Altogether the relationship is moderate positive and calculated as 0.544.
- **R Square = 0.296:** This shows that independent variables accounted for about 29.6% of variation in the dependent variable- Q4 (Araba et al. 2021). However, it makes it moderate, and it can be seen that other factors that could affect Q4 are not included in this analysis.
- **Adjusted R Square = 0.161:** The adjusted value is used to offset the number of predictors, signalling the elimination of R Square somewhat to the amount of the independent variables compared to the sample size. It presents a less optimistic picture about the ability of the model to explain the phenomenon under analysis.
- **Standard Error of the Estimate = 0.899:** This determines how scattered the observed values are from the regression line, and so the lower the value, a more precise model.

**ANOVA Table**

- **F-statistic = 2.186:** F-test on the other is a measure of the significance of the regression plane or line. And in this case the F-value suggests the given model is significant in the least squares sense.

- **Significance (p-value) = 0.011:** As the p-value = 0.001 is less than 0.05, it is concluded that the regression model is statistically significant; overall the independent variables significantly influence the dependent variable, Q4 (Laknizi et al. 2021).

Nonetheless, the predictor variables are only moderately correlated with the outcome, and the predictors alone account for about 30% of the variance of Q4. This means that although the career counselling factors as captured by the independent variables affected Q4, other variables could also play a role on students' perceptions.

***Chi-square test***

**Chi-Square Tests**

| | Value | df | Asymptotic Significance (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 29.033[a] | 16 | .024 |
| Likelihood Ratio | 28.695 | 16 | .026 |
| Linear-by-Linear Association | 11.499 | 1 | .001 |
| N of Valid Cases | 100 | | |

a. 17 cells (68.0%) have expected count less than 5. The minimum expected count is .08.

The Chi-Square Tests table presents outcomes for the evaluation of the relationship between two sets of nominal data.

- **Pearson Chi-Square = 29.033, p-value = 0.024:** This means there is a relationship between these variables as the p-value is less than 0.05 which means that the results are statistically significant and that the relation between these variables is not by coincidence.
- **Likelihood Ratio = 28.695**, but with the **p-value = 0.026,** to support this.
- **The Linear-by-Linear Association** equals 11.499 with p = 0.001, this elucidates the energetic linear congruence between the variables (Sayassatov & Cho 2020).

The study findings imply a significant relationship between the categories in focus within the research indicating how the independent variables affect the dependent variable.

**Findings and Discussion**

The correlation results presented in the study highlight the following important insights about the nature of the relationships in question. It was also agreed that results highlighted several valuable correlations proving that most important variables under study are interrelated and affect each other (Zhong et al. 2021). This results from analysing the direction of the relationship between variables such that if one variable goes up, the other goes up too. This is remarkably helpful in establishing which of the independent variables may affect the dependent variable, Q4.

About six of the variables exhibited moderate to strong positive correlation coefficients with Q4 which indicated the variables that could cause the variation in Q4. This implies multiple variables can be net covariance with each other, hence can be related by common factors or constructs. For example, the Q4 outcomes could be accounted for by variables that are under perceptions, attitudes, or behaviours categories because such variables may be highly correlated.

There are also significantly high correlations amongst some other variables which may indicate the existence of underlying factors or clusters of variables which are endogenous with the other. This could imply that some of the variables are sub-items in as umbrella constructs like satisfaction, engagement or performance that influence not only each other but also the dependent variable (Dwikat et al. 2023).

It has also emerged that all the variables do not have proportional impact, or that their impact on Q4 is mediated in some way. It is worthwhile to consider whether these relationships are moderated by other factors, or maybe affected by aspects that have not been taken into account within the framework of this work.

Concisely, the results show that some factors may have a direct relationship with Q4, and others may be mediating or moderated by other factors. Such findings can shed light on the subsequent research as to which variables are most important for explaining and predicting the changes in Q4.

Further, the results could be employed to advise a decision or intervention, with a focus on sixty-seven variables as optimum influences (Campbell et al. 2021). Perhaps regression or factor analysis could be used again to validate these patterns and see if the variables have any structures.

**Implications**

This study has profound implications to final-year engineering students, private universities in Vadodara, and the job market in terms of career counselling. In this study, the students' perspective to the findings equally stresses the need to have career counselling on a student to enable them to achieve the much-needed transition from learning to working. Career counselling can work for them in the following ways in helping them match their skills and the jobs they want with their personal values so as to boost their chances of finding employment in the right job markets (Martin et al. 2020). It also enhances their self-regulatory skills, self-efficacy and confidence to make appropriate career choices.

The study also shows that structured, theory-based career counselling should be incorporated into university curricula. In this way, universities will be able to assist students in their professional growth, the lack of which is in the connection between training received at a university, and further work in a company. This will increase the satisfaction levels of students and the employment rates of the students, hence the status of the institution.

**Limitations**

This study offers important information regarding the importance of career counselling for final year engineering students in the private universities of Vadodara, this study comes with some limitations.

This study is however not without limitations: Firstly, the sample size is fairly limited. The present study may involve a limited number of participants, only 100 students, and therefore is not a representative sample of final year engineering students of various universities. The sample selection from different medicine stores within the country targeted a limited population; therefore, the generalisation of results is slightly limited due to inadequacy of large sample sizes (Baltes & Ralph 2022). Also, that the study was centred on only private universities, there is the likelihood that some processes that prevail in public universities or other learning institutions were not captured, and may operate on a different paradigm different from that of career counselling.

A major disadvantage for the study is the use of data collected from the respondents through self-report measures. Despite the fact that the questionnaire was structured in an attempt to be neutral, it is not impossible to meet with students' bias, selective or even sheer prejudice or lack of comprehensive knowledge about the labour market. It could distort the data or at least the part that concerns the effectiveness of the career counselling. Over or underestimations of their capabilities in the market may also be possible thus affecting the results as perceived by the respondents.

However, as pointed out earlier, the study is quantitative, thus helpful when developing trends, but lacking in providing the reasons for students' attitude and experiences within career counselling (Ramírez-Montoya et al. 2021). The concept of mixed-methods' combining of the quantitative surveys with interpolation of the interviews or focus groups might afford a more complex look at the hardships students experience within their careers.

Finally, the study is restricted by time constraint, the results obtained in this study therefore may not be valid in a future that may see up and coming changes in the industries the graduates are producing for or may not capture the long-term effects of career counselling on the employment experiences of graduates.

**Conclusion**

This research emphasises that counselling services must be vital in helping final-year engineering students at private universities in Vadodara deal with plans for the career world. The existence of Super's Life-Span, Life-Space Theory, Holland's Theory of Vocational Personalities, and the SCCT show that career counselling is useful in assisting students relate their goals, abilities, and attitude to their career duties and the existing market demands.

From the research study, it is evident that career counselling not only paradigms the self-efficacy and self confidence among the students, but also assists them in making the right career decision. Accordingly, students are able to match their vocational personalities and the strengths they possess with the requirements of workplaces, and thereby starting their careers with proper expectations and fulfilment.

Also, the supporting study has its drawbacks, including a more modest number of observations involved in comparisons and the representation of private universities only. Moreover, the use of quantitative data restricts the general scope of insight (Van den Beemt et al. 2020).

Lastly, this study brings out the need for enhanced and coordinated career guidance services in universities so as to address the existing gap between academy and the workplace so as to produce versatile graduates who will be in a position to meet the emerging challenges in the workplace.

**References:**

Araba, A. M., Memon, Z. A., Alhawat, M., Ali, M., & Milad, A. (2021). Estimation at completion in civil engineering projects: review of regression and soft computing models. *Knowledge-Based Engineering and Sciences*, *2*(2), 1-12.https://kbes.journals.publicknowledgeproject.org/index.php/kbes/article/download/5433/4741

Baltes, S., & Ralph, P. (2022). Sampling in software engineering research: A critical review and guidelines. *Empirical Software Engineering*, *27*(4), 94.https://arxiv.org/pdf/2002.07764

Budiyono, N. R. (2020, August). A Development of Web Based John Holland Theory Career Interest Detection Instruments. In *2nd International Seminar on Guidance and Counseling 2019 (ISGC 2019)* (pp. 30-35). Atlantis Press.https://www.atlantis-press.com/article/125943344.pdf

Burga, R., Leblanc, J., & Rezania, D. (2020). Exploring student perceptions of their readiness for project work: utilizing social cognitive career theory. *Project Management Journal*, *51*(2), 154-164.https://www.academia.edu/download/109811448/875697281989669720231231-1-u0nrpt.pdf

Campbell, A. L., Direito, I., & Mokhithi, M. (2021). Developing growth mindsets in engineering students: a systematic literature review of interventions. *European Journal of Engineering Education*, *46*(4), 503-527.https://www.tandfonline.com/doi/pdf/10.1080/03043797.2021.1903835

Dhimmar, S. J., & Patel, R. C. (2023). The Experiences of Student-teachers' on VirtualSchool Internship Programme: A Qualitative Study. *Indian Journal of Educational Technology*, *5*(I), 188-195.https://journals.ncert.gov.in/IJET/article/download/435/175

Dwikat, S. Y., Arshad, D., & Mohd Shariff, M. N. (2023). Effect of competent human capital, strategic flexibility and turbulent environment on sustainable performance of SMEs in manufacturing industries in palestine. *Sustainability*, *15*(6), 4781.https://www.mdpi.com/2071-1050/15/6/4781/pdf

Fiandini, M., Nandiyanto, A. B. D., Al Husaeni, D. F., Al Husaeni, D. N., & Mushiban, M. (2024). How to calculate statistics for significant difference test using SPSS: Understanding students comprehension on the concept of steam engines as power plant. *Indonesian Journal of Science and Technology*, *9*(1), 45-108.https://ejournal.kjpupi.id/index.php/ijost/article/download/348/329

Habes, M., Ali, S., & Pasha, S. A. (2021). Statistical package for social sciences acceptance in quantitative research: from the technology acceptance model's perspective. *FWU Journal of Social Sciences*, *15*(4), 34-46.http://ojs.sbbwu.edu.pk/fwu-journal/index.php/ojss/article/download/837/12#page=37

Jensen, K. J., & Cross, K. J. (2021). Engineering stress culture: Relationships among mental health, engineering identity, and sense of inclusion. *Journal of Engineering Education*, *110*(2), 371-392.https://onlinelibrary.wiley.com/doi/pdf/10.1002/jee.20391

Jimenez- Martinez, M., Torres- Cedillo, S. G., Cortés- Pérez, J., & Reyes- Solís, A. (2024). Modal finite element correlation for computer aided engineering education. *Engineering Reports*, *6*(8), e12808.https://onlinelibrary.wiley.com/doi/pdf/10.1002/eng2.12808

Kang, C., Kwon, O. S., & Song, J. (2021). Evaluation of correlation between engineering demand parameters of structures for seismic system reliability analysis. *Structural Safety*, *93*, 102133.https://www.sciencedirect.com/science/article/pii/S0167473021000576

Laknizi, A., Ben Abdellah, A., Mahdaoui, M., & Anoune, K. (2021). Application of Taguchi and ANOVA methods in the optimisation of a direct evaporative cooling pad. *International Journal of Sustainable Engineering*, *14*(5), 1218-1228.https://www.tandfonline.com/doi/pdf/10.1080/19397038.2020.1866707

Main, J. B., Wang, Y., & Tan, L. (2021). The career outlook of engineering PhDs: Influence of postdoctoral research positions on early career salaries and the attainment of tenure- track faculty positions. *Journal of Engineering Education*, *110*(4), 977-1002.https://onlinelibrary.wiley.com/doi/pdfdirect/10.1002/jee.20416

Makki, B. I., Feng, F., Waqar, M. A., & Adhikari, I. M. (2023). Work Readiness, Decision- Making Self- Efficacy, and Career Exploration among Engineering Students: A Two- Step Framework. *Mathematical Problems in Engineering*, *2023*(1), 8166825.https://onlinelibrary.wiley.com/doi/pdf/10.1155/2023/8166825

Martin, J. P., Stefl, S. K., Cain, L. W., & Pfirman, A. L. (2020). Understanding first-generation undergraduate engineering students' entry and persistence through social capital theory. *International Journal of STEM Education*, *7*, 1-22.https://link.springer.com/content/pdf/10.1186/s40594-020-00237-0.pdf

Nascimento, M. M., & Morais, E. (2020). The Show Must Go On II: Statistics In (Engineering) Higher Education. *Open Education Studies*, *2*(1), 214-219.https://www.degruyter.com/document/doi/10.1515/edu-2020-0124/pdf

Ramírez-Montoya, M. S., Andrade-Vargas, L., Rivera-Rogel, D., & Portuguez-Castro, M. (2021). Trends for the future of education programs for professional development. *Sustainability*, *13*(13), 7244.https://www.mdpi.com/2071-1050/13/13/7244/pdf

Sakri, M. S. M., & Johari, K. S. K. (2023). Psycho-Education Group Counseling in Exploring Communication Skills of Final Year Students Career Preparation.https://pdfs.semanticscholar.org/7458/678ecd6dbe75a9a68d5123f49de0dc05bbac.pdf

Sayassatov, D., & Cho, N. (2020). The analysis of association between learning styles and a model of IoT-based education: Chi-square test for association. *Journal of Information Technology Applications and Management*, *27*(3), 19-36.https://koreascience.kr/article/JAKO202020941304202.pdf

Shaaidi, W. R. W., Radzuan, N. R. M., & Fauzi, W. J. (2023). ENGINEERING LECTURERS'PERCEPTIONS TOWARDS EFFECTIVE CONCLUSION SECTION IN ENGINEERING FINAL YEAR PROJECT PRESENTATION. *Language Literacy: Journal of Linguistics, Literature, and Language Teaching*, *7*(2), 425-434.https://www.researchgate.net/profile/Wan-Raihan-Wan-Shaaidi/publication/378555219_ENGINEERING_LECTURERS'_PERCEPTIONS_TOWARDS_EFFECTIVE_CONCLUSION_SECTION_IN_ENGINEERING_FINAL_YEAR_PROJECT_PRESENTATION/links/65e00bb4e7670d36abe60e03/ENGINEERING-LECTURERS-PERCEPTIONS-TOWARDS-EFFECTIVE-CONCLUSION-SECTION-IN-ENGINEERING-FINAL-YEAR-PROJECT-PRESENTATION.pdf

Tafahomi, R., & Chance, S. (2024). Comparing the meaning of 'thesis' and 'final year project'in architecture and engineering education. *European Journal of Engineering Education*, *49*(3), 514-539.https://www.tandfonline.com/doi/pdf/10.1080/03043797.2023.2244441

Van den Beemt, A., MacLeod, M., Van der Veen, J., Van de Ven, A., Van Baalen, S., Klaassen, R., & Boon, M. (2020). Interdisciplinary engineering education: A review of vision, teaching, and support. *Journal of engineering education*, *109*(3), 508-555.https://onlinelibrary.wiley.com/doi/pdfdirect/10.1002/jee.20347

Wohlin, C., Mendes, E., Felizardo, K. R., & Kalinowski, M. (2020). Guidelines for the search strategy to update systematic literature reviews in software engineering. *Information and software technology*, *127*, 106366.https://www.sciencedirect.com/science/article/pii/S095058491930223X

Zhong, S., Zhang, K., Bagheri, M., Burken, J. G., Gu, A., Li, B., ... & Zhang, H. (2021). Machine learning: new ideas and tools in environmental science and engineering. *Environmental science & technology*, *55*(19), 12741-12754.https://par.nsf.gov/servlets/purl/10289361