Engineering Educators Bringing the World Together
2025 ASEE Annual Conference & Exposition
Palais des congrès de Montréal, Montréal, QC • June 22–25, 2025
Paper ID #45764

Determinants and Obstacles in the Selection of Construction-Related Academic Programs: A Student Perspective

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Determinants and Obstacles in the Selection of Construction-Related Academic Programs: A Student Perspective

The Building Construction Science (BCS) program at Mississippi State University has witnessed significant enrollment growth in recent years, placing it among the fastest-growing majors at the university. This rapid expansion occurs at a time when many other majors struggle to maintain their current enrollment numbers. Exploring factors influencing students' decisions to choose BCS reveals several influential elements in their decision-making process. The insights from this exploration are particularly important for higher education institutions in the Southeast region facing potential enrollment declines. The decrease in student population, which consequently results in more intense competition among institutions to attract students, motivates academic administrators to find ways to increase enrollment. This study explores factors that influenced BCS students to choose the program despite strong regional competition. A quantitative approach was employed to collect data on various aspects, including drivers, obstacles, expectations, and future career paths. All first, second, and third-year BCS students participated in the survey. Results indicated that family-inspired factors, job opportunities, and the nature of the program were among the important influencers, while social perceptions, work situations, and lack of accurate advising were hindrances. The findings of this study contribute to the body of knowledge by shedding light on factors affecting the new generation of students' choices of construction majors in higher education.

Keywords: Construction, Education, Academia, Enrollment

Introduction

The enrollment decline projection in the near future is a national concern, but it is more pronounced in some states, which necessitates careful plans to at least maintain the current status of majors and departments. The quantitative growth of majors in higher education is generally seen as a positive trend that supports the sustainability of the departments. Every year, many schools stop offering some of their majors due to steep declines in their enrollment and concerns about the future of their graduates. Therefore, educational units, at the department or college levels, assign resources to provide student enrollment increase programs. This can happen through various plans and initiatives including summer camps, orientations, high school presentations, social media, and printed materials. While the effectiveness of these methods is shown in various studies, it should be noted that these approaches are generated by the educational units and prospective students are generally the recipients of them. It is important that educational administrators know the perceptions of their students to better prepare the content and delivery methods for students' engagement and absorption. To explore this, a study was designed and developed in Fall 2024 in which construction students participated in a quantitative research project. This study strives to explore factors that impacted students in a construction program to choose their major. Also, hindrances to construction programs and professions were examined to better understand the perceptions of students so that educational leaders can better plan for their prospective students.

Background

Over the past decade, construction education has seen a major increase in both enrollment and interest in the United States. As these construction education programs continue to gain interest and produce more construction professionals, more opportunities are emerging to study these trends. In recent years, construction science programs have been growing in attendance and popularity all over the United States. This has prompted research into these programs as well as how students decided to enroll in them. A multitude of these students have shown similar reasons for enrolling in construction science. One of the most commonly held beliefs is that students enrolled in construction science programs have a family member in construction. In 2009, students at Clark County School District (CCSD) Career and Technical Academies (CATA) in Nevada completed surveys to see if there was validity in this belief and 724 students participated in the study, among which 234 students planned to enroll in a construction science program. Fifty-one percent of these students said that they had at least one family member in construction. This statistic shows that having a family member in the construction industry is a strong influence when it comes to students deciding what academic route to follow [1]. Another highly influential factor in the students' reasoning for enrolling in construction science is having work-related experiences with construction, specifically, working in construction outside of an internship capacity [2].

That is an effective approach to learn about the construction industry and the kind of people that work in it every day. Unfortunately, not every student can work in or around construction before they need to decide if they will go into construction science. The portion of students outside of that category select construction science for varied reasons. Bigelow et al. [3] collected data from students enrolled in construction management at multiple universities to see what their reasons were for entering construction science. Across all these universities, the career opportunities that construction provides presented themselves as a clear favorite. Careers in project management, project supervising, and quality control and assurance offer stable, well-paying jobs to a multitude of people after graduation. While this is common knowledge for most people in and around the construction profession, those who are outsiders do not have the same knowledge. This information is crucial to young adults as they are deciding on what major to pursue. Mathew conducted a study across five different universities on attracting females to construction management. This study showed that there is a general lack of knowledge among high school-age students about careers and educational opportunities in the construction industry [4]. This is a troubling discovery and one that could not only be affecting the number of educated professionals in construction today but also the younger generation's perception of construction.

High school students' knowledge of construction is important to construction science programs. If the younger generation has incorrect or biased information about construction, then they may not want to go to college to learn it. A study conducted in 2016 identified challenges students face that keep them from pursuing a career in construction. This study was given to Hispanic high school juniors who attended public schools in five different cities in Texas. The study revealed that students reported low pay, unsafe and unclean working conditions, and disapproval from their family kept them from entering construction [5]. It is unfortunate that students let this information sway them. This knowledge is what is keeping a lot of young people from pursuing a degree in construction science. While there are many areas of construction that can be dirty and

dangerous, construction professionals are working every day to develop new safety measures and make the construction industry safer. In another study conducted on high schoolers in 2018, participants were asked why they decided to pursue a degree in construction management. One of the most prominent reasons was the idea of performing hands-on work in the construction industry [6]. There are some students who see the construction industry not as a dangerous and dirty profession, but as one that allows professionals to take pride in their work and work with their hands. The presence of these students should be encouraging for construction management programs all over the country. When discussing high schoolers' knowledge of the construction industry, high school counselors need to be included as an influence. They are responsible for educating the students about potential careers and how to pursue them. Koch (2007) performed a study to determine career influences among construction management students in the Midwest United States. Four construction management programs were surveyed, and information was pulled from five hundred and four students to form the results of this survey [7]. From this data, it was determined that when construction management majors were in high school, their guidance counselor was the least influential person who helped them choose which career to follow. High school counselors should be providing more information about the construction industry and construction management programs because it will influence high schoolers' knowledge of construction and their perceptions of construction management programs.

For a long time, there has been a negative perception of construction as a vocation compared to other jobs. There has been a lot of time and research spent on studies that support this. However, there is not a lot of research about the perceptions of construction science programs. In 2011, a study was conducted on construction management students at Illinois State University to gain insight into students' perceptions of hybrid versus face-to-face learning. The students overwhelmingly preferred the hybrid approach in place of the face-to-face learning experience [8]. Students liked having time to consult the professor and be responsible for their work outside of class. Some studies have shown that students do not perceive some construction management programs as academic in nature, and this causes them to do poorly in the program as a result. From 2007 to 2010, postgraduate construction management students were asked to complete a questionnaire on factors affecting their academic performance. One of the responses from the students was that the program was not viewed as academic in nature [9].

While many construction management programs offer great hands-on experience to their students, it is still an academic major with curriculum like all other majors. Students need to view these programs as academic and promote success by encouraging good habits such as studying, being organized, and taking notes. Programs have seen these problems and are taking steps to combat them. One article talks about Generation Z students and how tech-savvy they have become by growing up with electronics. To fight boredom, poor retention, and a lack of interest, virtual reality and mixed reality technologies were introduced to students in a construction management class setting [10]. These students enjoyed using VR and MR and stated it helped them learn. Another way to improve students' perceptions of construction management and attract students is by using camps. In 2020, the Building Construction Science Program at Mississippi State University hosted a summer camp to increase students' interest in construction careers and attract potential students into the program. Students were asked if they would join the program before and after the summer camp. When comparing the two sets of responses, the number of students who said they had a high likelihood of joining the program doubled after the

camp [11]. This indicated that summer camps are great for programs trying to attract students and have a positive effect on their perceptions of these programs.

The means and methods of construction are becoming more advanced every day and shaping the future of the industry. Due to this fact, construction management programs are starting to adapt. In many engineering and architectural programs, students are training to use virtual reality technology in the construction industry. Virtual reality and building information modeling software are making the younger generation excited about the future [12]. Zou conducted a study to explore students' expectations and perceptions in comparison with current construction professionals. After collecting 257 responses from architectural, engineering, and construction students through a survey, it was found that students were finding jobs in BIM more desirable than traditional design and project management jobs [13]. Students and young professionals are now seeking different attributes in prospective jobs. In the past, research suggested that young professionals look for stability and cohesiveness in their jobs. Now, the research suggests that they are looking for more flexibility, opportunities, and challenges in their jobs [14]. As the future changes for construction, construction management programs need to change as well. Construction education needs to reform itself and move away from the traditional education methods [15]. Not only is the industry changing, but students are now looking towards the future and want to adapt.

Methodology

The main research question was to explore students' perceptions about various factors that influenced their decisions in choosing construction in college. Secondary questions included how they perceived their current status, and how they expected their professional careers to be. After designing the scope of the study, a preliminary literature review was performed to examine similar previous studies in the area of construction or other majors on a broader scale. A quantitative research approach was deemed appropriate as a wider range of perceptions and opinions could be obtained. A survey was designed, developed, and reviewed through an IRB approval process. The survey was converted to the Qualtrics platform for online delivery, and subsequently, students in BCS were invited to participate in the survey. All responses were obtained in Fall 2024. The data were molded, cleaned, and coded based on weight assignments, and appropriate descriptive analysis was conducted to show frequencies and potential associations between parameters.

Results

In the first phase of the study, 191 students participated, of which 90% were male and the rest were female students. In reporting race, 95% were white, 2% were Black or African American, and 3% were Hispanic. In addition, 30% of participants were Freshmen, 38% Sophomores, and 32% Juniors. The reported GPA for all participants was 3.16. The reported number of hours worked outside classes was 11.33 hours. Also, 34% of participants were transfer students and the rest were regular students choosing BCS as their first major.
The next section of the survey included questions about role models, in which 63% of participants reported having a role model. Also, 55% of all believed that gender is an influencer in the suitability of their future career.

In the next section, a series of motivators, derived from literature, were provided to participants and they were asked to rate the impact of each factor in choosing construction as their major in college. A five-level Likert scale was provided to participants to rate each factor, using 1: Very Low, to 5: Very High. The average score of factors (out of 5) was calculated and shown in Figure 1. Opportunities in the industry, self-satisfying career, and high salary were among the top three motivators for students.

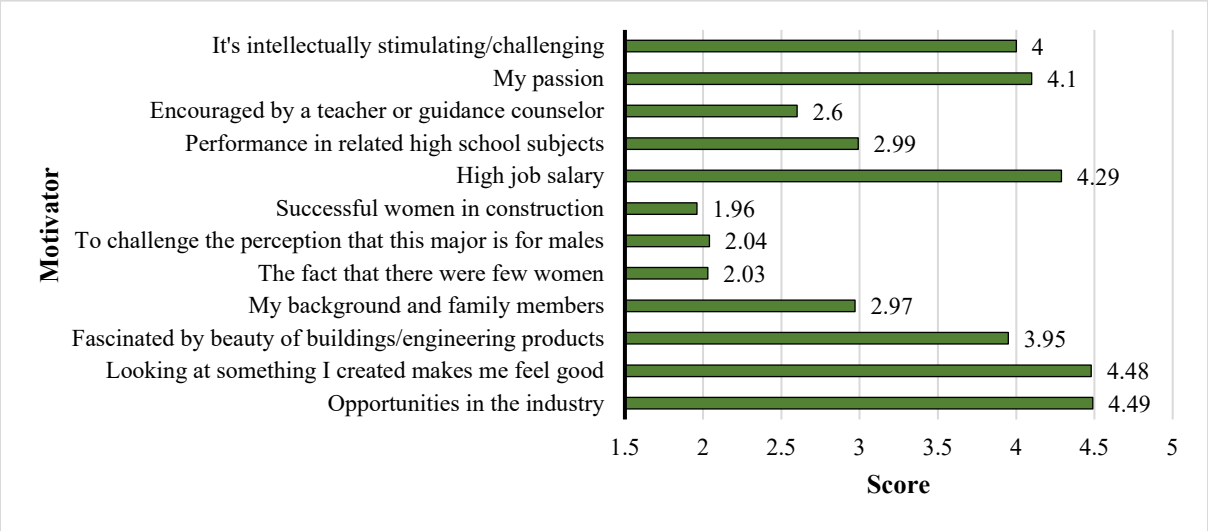

Figure 1. Average Score of Motivators

In a similar way, a list of impediments that might discourage students from choosing construction as their major was provided to students to be rated using a five-level Likert scale. The average score of factors is shown in Figure 2. The long hours of work, lack of information during high school, and difficulty of content were the top three factors that might influence students not to choose construction in college.

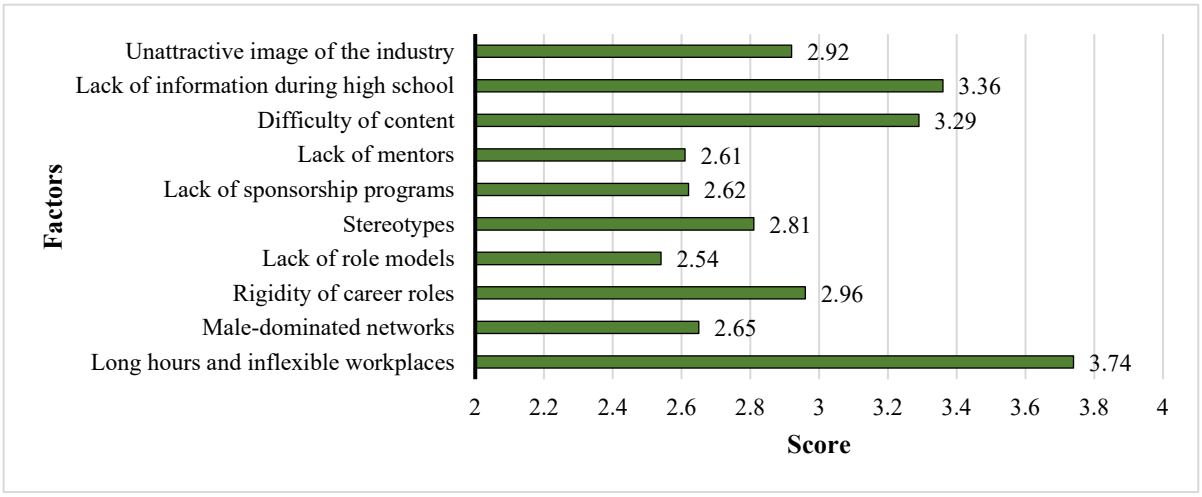

Figure 2. Average Score of Impediments

In addition, participants were asked whether they preferred to work in an office or on-site for their professional career, for which 74% chose on-site whereas the rest preferred to work in an office.

Also, participants were asked to specify their expected number of hours per week when they would work in their future job. Different ranges of hours were provided from which participants could select their likely working hours. The percentage of each category is shown in Figure 3.

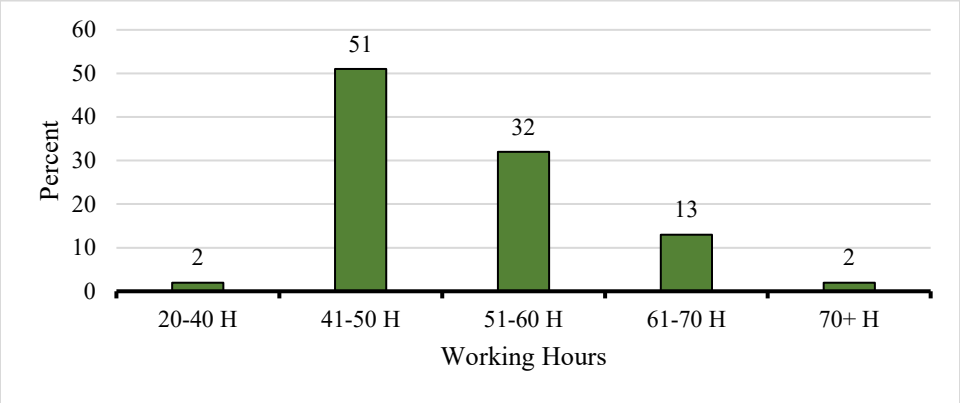

Figure 3. Expected number of working hours per week

As shown, about half of participants expected to work more than 51 hours per week in their future jobs. In another question, participants were asked how much they expected their salary would be, right after graduation and five years from graduation. The average numbers were $85,000 and $120,000, respectively.

The next section explored factors that could potentially improve women's status in construction. A list of methods and actions, derived from literature, was provided to be rated, using a five-level Likert scale. The average score of each factor is shown in Figure 4.

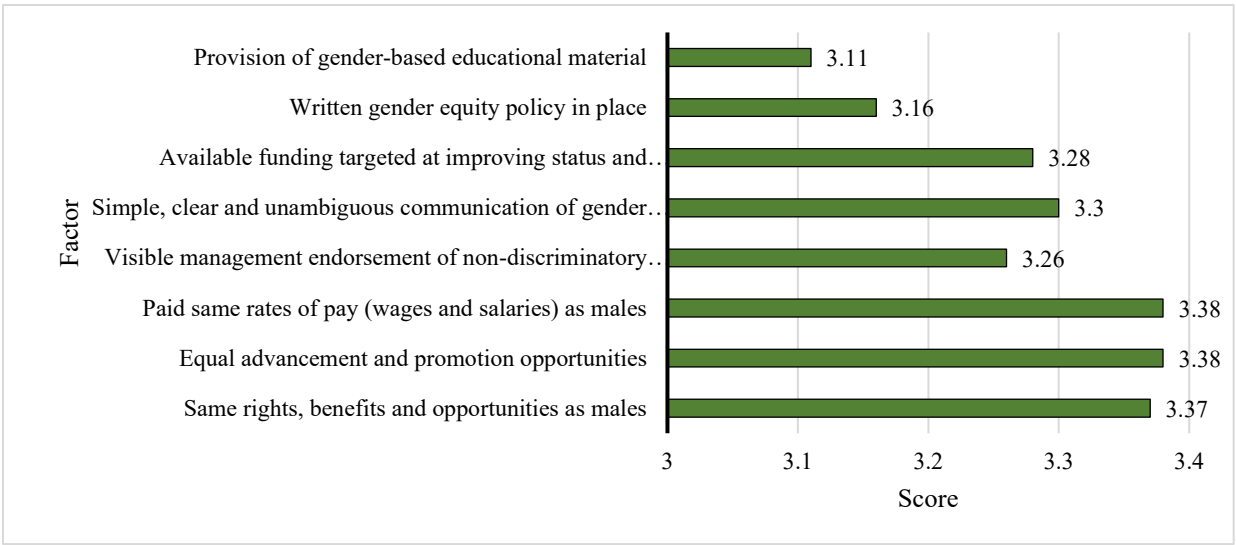

Figure 4. Women Status Improving Factor

The influence of individuals in the inner circles of students was the subject of the next section. Students were asked to rate to what extent various individuals impacted their decision in choosing construction as their major. Figure 5 shows the average score of each individual, out of 5.

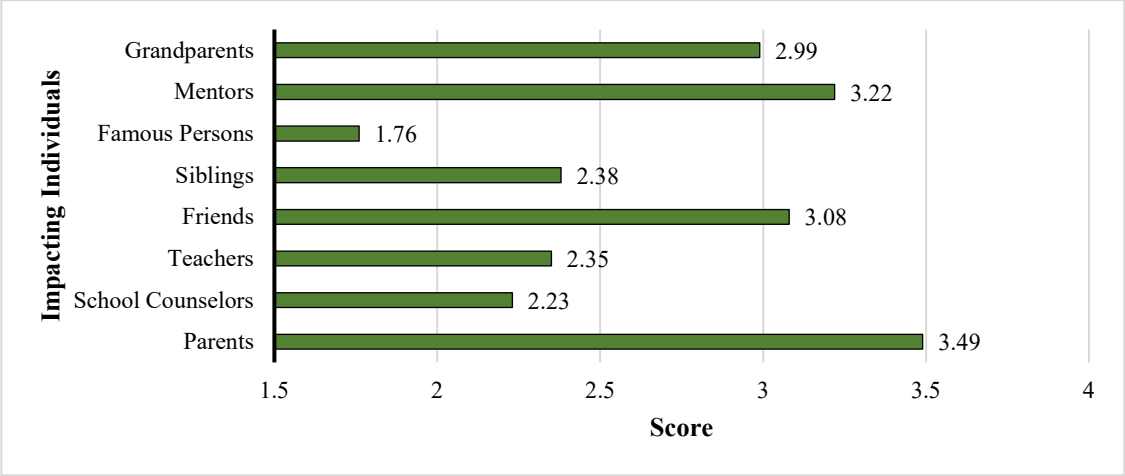

Figure 5. Average Score of Impacting Individuals

Characteristics of students' professional careers in construction were explored in the next section of the survey. A list of features for professional jobs in construction was extracted from literature and provided to students to be rated using a five-level Likert scale. The average score of each feature is shown in Figure 6. As shown, income, self-actuation, and social contributions were among the top characteristics of jobs.

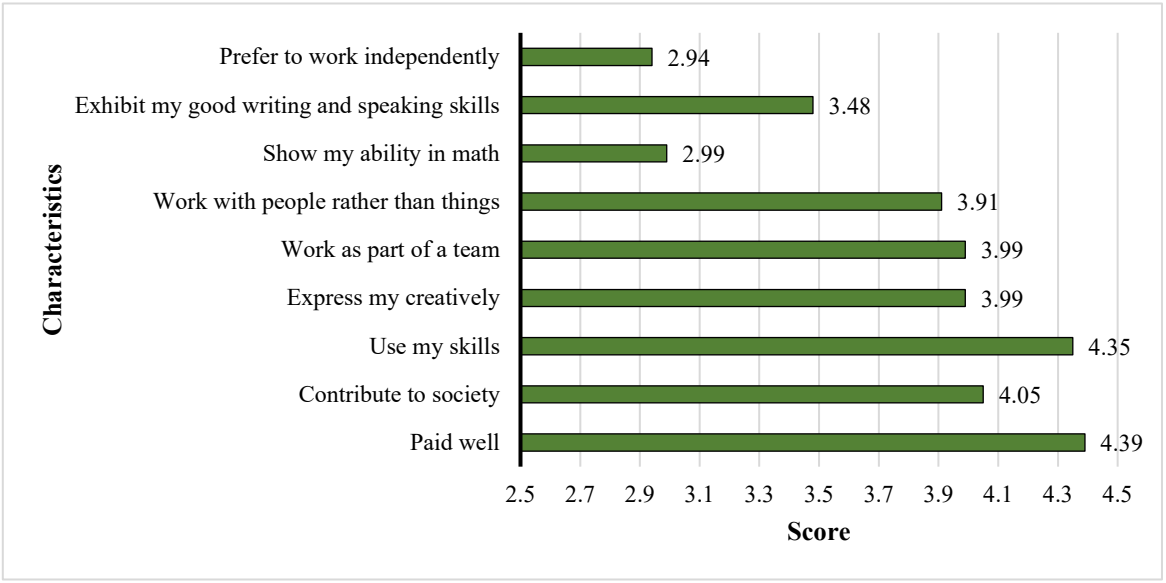

Figure 6. Job Characteristics

Channels that students used to gain information about construction content were also examined in the next section of the survey. It was important to understand what possible resources students used to gain information about their majors and associated topics. The tendency of students towards certain references specifies the importance of such resources in the navigation of students in their academic life. Figure 7 shows the average score of each reference, out of 5.

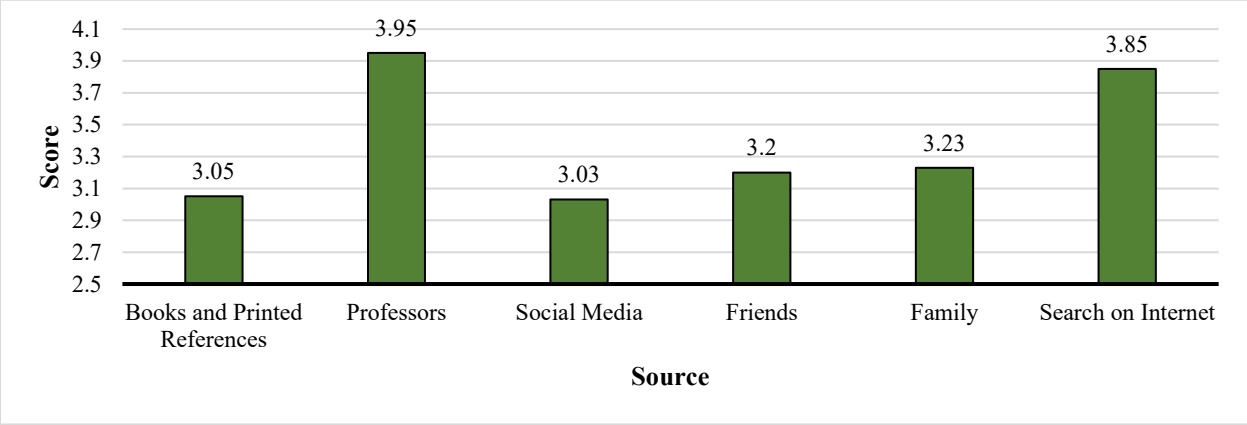

Figure 7. Source of Information

Finally, students were asked to rate to what extent they were confident about their success and prosperity in their professional careers. While the results indicated perceived success of students, it was important to explore current perceptions of students, as such perceptions greatly impact students throughout their professional journeys. A five-level Likert scale was provided to quantify students' perceptions. The percentage of each level is shown in Figure 8.

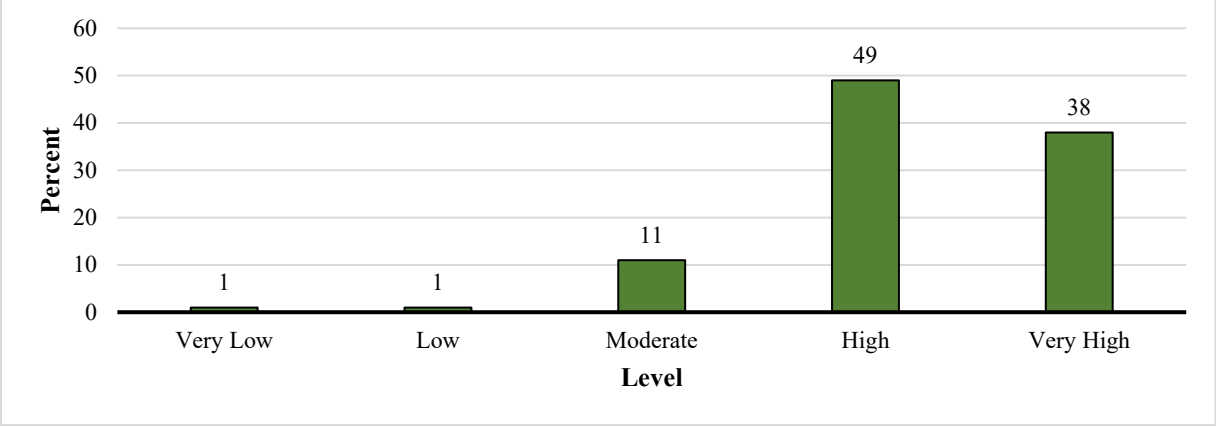

Figure 8. Perception of success

Discussion

The results of this study provide valuable insights into students' perceptions and motivations regarding construction as a major and career path. Several key findings warrant further discussion and have implications for recruitment strategies and program development. The majority of students reported having role models, which underscores the importance of mentorship and representation in the construction industry. Additionally, most students believed that gender is an influencer in career suitability, highlighting the ongoing need to address gender diversity and inclusion in construction education and the industry at large.
The top three motivators for students choosing construction as their major were opportunities in the industry, self-satisfying career, and high salary. These factors should be emphasized in recruitment materials, such as flyers, promotional videos, and presentations to prospective students. Conversely, the long hours of work, lack of information during high school, and difficulty of content were identified as the primary deterrents. This suggests a need for better outreach to high schools and clearer communication about the nature of construction work and academic requirements.

About half of the participants expected to work more than 51 hours per week in their future jobs. This high expectation should be addressed, as it may not align with actual industry practices or could deter potential students seeking better work-life balance. Students' salary expectations were relatively high, with averages of $85,000 right after graduation and $120,000 five years post-graduation. While these figures may be appealing to students, it is crucial to provide accurate, reliable data to ensure realistic perceptions of the industry.

Parents, mentors, and friends were identified as the top influencers in students' inner circles, impacting their decisions. This suggests that recruitment efforts should also target these groups to effectively attract students to construction programs. Regarding job characteristics, income, self-actualization, and social contributions were among the top factors valued by students. These aspects should be highlighted in program marketing and curriculum development.

Professors and internet searches were the main resources students used to gain information about their majors and related topics. This emphasizes the importance of providing relevant, up-to-date materials through departmental channels and ensuring that professors have access to accurate and consistent information, perhaps through the development of factbooks. While 38% of students expressed a high level of perceived future success, there is room for improvement. Factors contributing to lower levels of confidence should be investigated and addressed to boost overall student optimism about their future careers in construction.

In summary, these findings provide valuable guidance for enhancing recruitment strategies, improving program content, and addressing student concerns in construction education. By focusing on these areas, construction programs can better attract and retain students, ultimately contributing to the development of a skilled and diverse workforce for the construction industry.

Conclusion

This study provides insights into the perceptions, motivations, and expectations of students in construction management programs. The findings highlight several key areas for improvement in recruitment strategies, program development, and industry representation. The importance of role models, the influence of gender perceptions, and the impact of career expectations on student choices are all significant factors that need to be addressed. The research underscores the need for better information dissemination, particularly during high school, to combat misconceptions about the construction industry. It also emphasizes the importance of addressing concerns about work-life balance and providing accurate salary information. By focusing on the positive aspects of construction careers, such as opportunities for self-actualization and social contribution, programs can attract more diverse and motivated students. Furthermore, the study reveals the crucial role of professors and online resources in shaping students' understanding of the field. This highlights the need for consistent, accurate, and up-to-date information across all platforms. Lastly, while many students express confidence in their future success, there is room for improvement in bolstering this confidence across the student body. By addressing these findings, construction management programs can enhance their recruitment efforts, improve student satisfaction, and better prepare graduates for successful careers in the industry. This, in turn, will contribute to the development of a skilled, diverse, and motivated workforce to meet the future challenges of the construction sector. While this study used a statistically reliable sample size, the generalization of findings is not warranted. Additional participants, subsequent rounds of data collection, inclusion of other schools, and incorporation of factors such as location, gender, and financial considerations could enhance the reliability of the analysis and provide more robust findings.

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