



UNDERSTANDING WHAT DRIVES YOUNG INDIVIDUALS TO PURSUE CRAFT CAREERS IN CONSTRUCTION: THE THEORY OF PLANNED BEHAVIOR

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Abstract: Previous studies show that the U.S. construction industry is facing a skilled labor shortage. The increase of the average age of craft workers within the industry, change in workforce demographics, decline in career and technical education in North America, and the difference between motivational factors of new entrants and the current workforce indicate that the industry is facing long-term structural changes regarding the construction craft workforce. These changes demand the need for understanding the underlying factors that influence young people to choose a career as craft workers in construction. The goal of this study is to shed light on the motivational factors that differ across different demographic groups. Based on the Theory of Planned Behavior, a survey is designed to measure 1) individual's attitude, 2) subjective norms, and 3) perceived behavioral control. A national survey was conducted involving 778 completed questionnaires. The target population for this research includes young people between the ages of 15- 24 who were exposed to Career Technical Education (CTE) or participated in construction training programs. The statistical analysis shows that if young people have some work experience in construction-related jobs, it can significantly improve their intention to choose a career in the construction industry. Also, some differences in components of attitude were found based on demographics. The results of this study will help the North American construction industry to gain more insight on how to attract young people to the industry.

1 INTRODUCTION

According to the RT-318 report published by Construction Industry Institute (CII) in 2015, the construction industry is facing a skilled labor cliff. The study found long-term structural changes in the construction craft workforce. One of them is the increase of the average age of craft workers within the industry. The rate of the increase is three times faster than the average age of workers in all other industries in U.S. Most of this is due to young workers not entering the industry. The goal of this research is to understand the underlying factors influencing young people to choose a career as craft workers in construction. The jobs included in this study are limited only to the construction trades such as carpenter, electrician, ironworker, painter, pipefitter, welder, etc.

Using a survey methodology designed based on theory of planned behavior, this study investigated the perception of young people towards working in the construction industry. The theory of planned behavior is a psychological theory that links perceptions and beliefs with behavior (Ajzen 1991). Since career-related decisions are made based on perceptions of reality rather than reality itself (Foskett and Hemsley-Brown 1999), we used the theory of planned behavior to understand the underlying motives behind people's decision to select a long-term career in the construction industry as a craft worker. Some poor images have traditionally been associated with the industry such as limited career progression opportunities, long

working hours, shift work, and work overload (Djerbarni 1996, Baldry 1997). So, it seems that in order to attract more young talent, the industry needs to understand how the upcoming workforce perceive working in construction.

Moreover, the role of social interaction has been emphasized in previous studies (Hodkinson and Sparkes 1997, Kniveton 2004, Bright et al. 2005, Taylor 2005, Zafar 2011, Granitz et al. 2014). Young individuals highly rely on information gathered from family members and peer friends (Taylor 2005, Zafar 2011, Granitz et al. 2014). Family members and peer friends who work in an occupation can also give young people confidence that they can be successful in that occupation (Taylor 2005).

The self-assessment of abilities to achieve a goal is a vital factor that determines how an individual approaches the goal (Bandura 1977). From this perspective, self-efficacy or confidence can be a strong predictor of career decisions (Hackett and Betz 1995).

The theory of planned behavior provides a strong theoretical framework to consider different aspects of career-related decisions. By using this theory, we examined what factors might influence young people decisions to choose a career in the construction industry given their demographics. The results can help industry re-evaluate its recruiting strategies for young talents.

2 LITERATURE REVIEWS

2.1 Career Decision Making Process

Career decision making is one of the most important decisions for every young person, which can affect his/her future work, personal and social life. Previous studies have shown that young adults start evaluating their career choices in early high school (Gysbers 2008, Granitz et al. 2014). There are different approaches to describe how people make decision about their careers. One of the first theories in this area is personality–job fit theory that was developed by John Holland. He presented six personality types and suggested that young adults need to clearly identify their personality traits in order to make the best career decision. In addition, the characteristics and requirements of different careers should be considered. The satisfaction and tendency to leave a job is determined by how well the person's personality traits matches with the job (Holland 1997).

What personality–job fit theory suggests is a completely rational process to make decision about individual's career. However, this approach was challenged by the other theories. Hodkinson and Sparkes (1997) believed that career decision making is not a rational process as traditional vocational psychology described. They discussed that although young people are able to decide rationally regarding their careers, they have to pragmatically make decisions based on partial information available to them. To describe this process, Hodkinson and Sparkes use the term “pragmatic rationality”. From this view, the decision is highly influenced by contextual factors such as interaction with other people, experiences, family influences, information derived from media, stereotypical occupational images portrayed in film and entertainment, and emotional propensity (Hodkinson and Sparkes 1997). In reality, it seems that career-related decisions are made based on ideas, perceptions, and images that begin to form from early childhood. In this process, perceptions of reality rather than reality itself are critical to the decision (Foskett and Hemsley-Brown 1999).

Social learning theory of career development tries to describe career decision making from a learning perspective. This theory was developed based on social learning theory of Albert Bandura (Mitchell and Krumboltz 1996). Bandura (1977) criticized the idea of conditioning approach as a dominant mode of learning in human beings. Conditioning or instrumental learning occurs when an individual is positively reinforced or punished in response to certain behaviors. In contrast, Bandura emphasized on observational learning which occurs by observing other people's actions and the consequences for them (Bandura 1977). Mitchell and Krumboltz (1996) believed that four main factors influence the individual's career decision making: 1) genetic endowment and special abilities, which are inherent qualities that may set limits to attain certain skills and opportunities, 2) environmental conditions and events, which include factors such as social, cultural, political, and economic forces, 3) learning experiences, which are unique individual's both instrumental and observational learning experiences, and 4) task approach skills, which include performance standards, work habits, cognitive processes, mental sets, and emotional responses.

Gottfredson's Theory of Circumscription, Compromise and Self-Creation (2002) attempts to describe how career choice develops in young individuals as self-concept develops with age. According to Gottfredson, the first process is circumscription in which the child gradually becomes aware of size and power, sex roles, social values, and internal and unique self. This understanding is shaped through the socialization process from the stimuli surrounding the child. Through this process, the child excludes unacceptable occupations based on her perceived fit with the developing self-concept. So, as the child becomes six to eight years old, even before getting old enough to rationally evaluate occupations, the child has learned what is considered appropriate for him/her. In the next step, individuals are forced to compromise their career choices from the remaining alternatives. Young people evaluate career choices based on their perception of jobs according to gender (masculine/feminine), level of prestige, and area of work (Gottfredson, 2002).

Gender schema theory explains how gender identity is formed within a child by information obtained from family, friends, school, the media and engagement with everyday life. People use their gender schema throughout the rest of their lives to process information about appropriate behaviors and attitudes including career decisions and preferences (Bem 1981). For example, a study showed that males put more emphasis on income levels, and females put more emphasis on relationship with others when choosing a career (Gati et al.1995). In another study among UK students of 14 to16 years old, researchers found that gender strongly defines how jobs are perceived and evaluated, and how job choices are made (Millward et al. 2006).

Several studies showed that young people are highly influenced by the information they receive from family, friends, teachers and career counsellors (Kniveton 2004, Bright et al. 2005, Taylor 2005, Zafar 2011, Granitz et al. 2014), but they do not have the same influence on the decision. Parents and family members are the most important influencers in the career decision (Taylor 2005, Zafar 2011, Granitz et al. 2014). Their influence changes over time (Cabrera and La Nasa 2000). For example, some studies found that college students become less dependent on information they receive from their families when they learn more about the majors through courses, work experience, and other sources of information (Arcidiacono 2004, Zafar 2011). The social influence does not merely play a role in information gathering process. Taylor (2005) discussed that for most youth especially those who choose vocational and technical education and following career path, career decisions involve uncertainty, anxiety, stress and confusion. Family members or peer friends who already work in an occupation not only can give young people very clear and personalized information about the job but also can make them more confident that they can be successful in that occupation.

Bandura's (1977) self-efficacy theory explains that a person's perception of her abilities to becoming successful in a certain situation or achieve a goal has a significant role in the way she deals with the situation or approaches the goal. Hackett and Betz (1995) extended this approach to career selection decisions. As an example, Hackett (1985) described how higher levels of self-efficacy can lead to "approach" rather than "avoidance" behavior towards major selection among college students. She justified women's underrepresentation in mathematics-related majors in college by low math self-efficacy. She argued that self-efficacy or confidence not only reflects the ability information but also significantly predicts career choice behavior.

2.2 Theory of Planned Behavior

We used the theory of planned behavior as a theoretical framework to analyze how young people make a decision to choose a career in the construction industry. We chose this theory because it seems that the individual's perception, social influence, and mental barriers mainly affect the decision. In psychology, the theory of planned behavior is used to explain the relationship among beliefs, attitudes, and behaviors (Ajzen 1991). According to this theory, to predict an individual's behavior, we need to understand the underlying factors of intention or motivation. Ajzen (1991) suggested that the intention has three determinants: 1) attitude, which indicates how much an individual has a favorable or unfavorable evaluation of the behavior, 2) subjective norm, which is the perceived social pressure to perform or not to perform that behavior, and 3) perceived behavioral control, which reflects the individual's perception of difficulty of performing the behavior. This theory has been used in several studies to describe career-related decisions (Gelderens et al. 2008, Zellweger et al. 2011, Chen et al. 2016).

3 RESEARCH METHOD

The survey method was used to understand what factors might potentially influence a person's decision to choose a long term career in the construction industry. The jobs included in this study are limited only to the construction trades such as carpenter, electrician, ironworker, painter, pipefitter, and welder. The theory of planned behavior was used as a theoretical framework to design the survey questionnaire. Factors were identified based on a thorough literature review and discussion within a research team, which included industry experts involved with workforce development in construction. The survey and research framework was reviewed and approved by the university internal review board (IRB). After conducting a pilot test and receiving feedback, the final version of the questionnaire was developed. Both electronic and paper-based questionnaires were prepared and distributed between the months of January and September, 2016. The target population for our research was young people between the ages of 15 and 24 years (i.e., the age of career selection). These young people comprise the future workforce for the construction industry. Most of the participants in our sample were exposed to career and technical education or participating in construction companies' training programs. A total of 778 responses were collected from different participants across the US. The survey gathered information on demographic background, intention to choose to work in the construction industry, potential factors that influence attitude towards the construction industry, influence of other people important in individual's life (e.g. family, spouse/partner, friends, teachers, and school counselor), and mental factors that might control individual's decision to choose to work in the construction industry. Participants were asked to evaluate the degree to which they agree or disagree with statements related to different aspects of working in the construction industry using a 7-point Likert-type scale.

4 RESULTS

The sample includes 87% males and 11% females (two percent did not identify their gender). Twenty-two percent of respondents are between 15 to 17 years old and the other 78% are between 18 to 24 years old. In terms of ethnicity, distribution of respondents is 71% White/Caucasian, 16% Hispanic/Latino, 8% African American, 3% Indian American, and 1% Asian. Most of the subjects in our sample (86%) reported that they took career and technical education classes or courses related to either construction or other industries (such as automotive, aviation, hospitality or health) in their high school. Figure 1 shows the distribution of respondents based on work experience in any construction-related jobs.

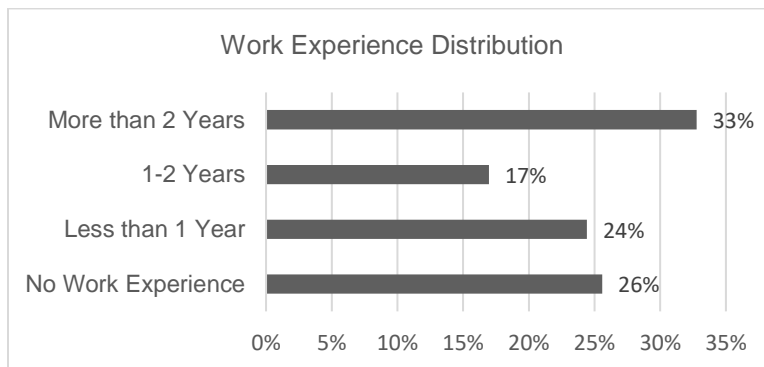


Figure 1: Distribution of respondents based on work experience

4.1 Intention and Work Experience

Respondents were asked to indicate how much likely is to choose a career in the construction industry. ANOVA analysis proved that people with different levels of exposure to any construction-related jobs are significantly different in terms of intention to choose a career in the construction industry (Table 1).

Table 1: ANOVA analysis of intention based of work experience

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	205.136	3	68.379	31.508	.000
Within Groups	1668.9	769	2.17		
Total	1874.03	772			

Robust Tests of Equality of Means					
	F	df1	df2	Sig.	
Welch	27.672	3	399.597	.000	
Brown-Forsythe	32.755	3	684.984	.000	

Moreover, post hoc comparisons using the Tamhane's T2 test indicated that the mean of intention for the group with no work experience (mean= 4.89) was significantly lower than the other groups (Figure 2). The mean of intention for the group with less than one year of work experience (mean= 5.77) was also significantly different than other groups. However, the mean score for the group with one to two years of work experience (mean= 6.18) did not significantly differ from the group with more than two years of work experience (mean= 6.13). The results show that just one year of work experience in the construction-related jobs has a positive and significant effect on the individual's intention to choose to work in the industry.

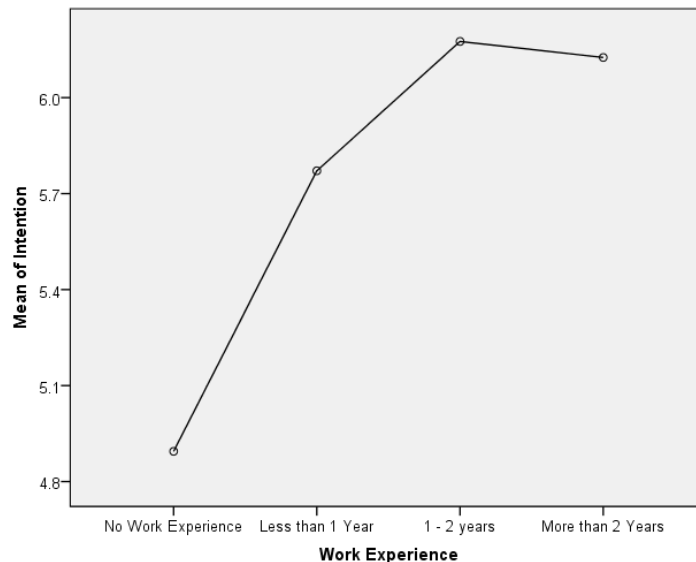


Figure 2: Intention and work experience

Our analysis indicates that males (mean= 5.81) are more likely to choose a career in the construction industry than females (mean=5.12) regardless if they have work experience in construction-related jobs (sig. level = 0.000).

Among young people with some levels of work experience in the construction-related jobs, people between the ages of 18 to 24 years (mean= 6.08) are more likely to pursue a career in the construction industry than people between the ages of 15 to 17 years (mean=5.22, sig. level= 0.000). This could be alarming for the construction industry and indicate that the industry is even less attractive to upcoming generation. However, we did not see any significant difference across these two groups when they have no work experience.

We also examined the intention to pursue a career in the construction industry across different races. Among people with some work experience, ANOVA results show that there is significant difference between different races in terms of intention (Table 2). Figure three shows that working in construction is more attractive to Hispanics and Latinos (mean= 6.22) and less attractive to African Americans (mean= 5.23).

However, we did not see any significant difference across different ethnic groups when they have no work experience.

Table 2: ANOVA analysis of intention based of ethnicity

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	29.143	3	9.714	4.491	.004
Within Groups	1397.26	646	2.163		
Total	1426.41	649			

Robust Tests of Equality of Means				
	F	df1	df2	Sig.
Welch	4.593	3	83.5	.005
Brown-Forsythe	4.514	3	117.577	.005

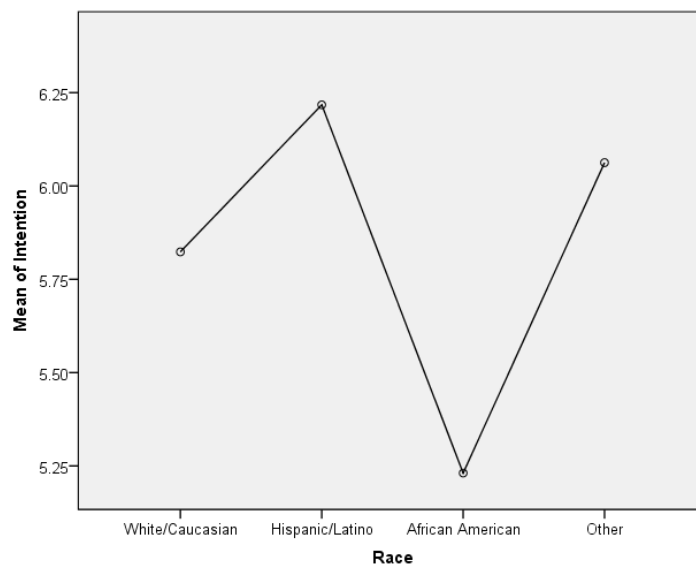


Figure 3: Intention across different ethnic groups

4.2 Attitude towards Working in the Construction Industry

As mentioned earlier, according to the theory of planned behavior one determinant of intention is attitude. In this research, we measured the overall and 13 components of attitude. The components of attitude measured in our research are mentioned in Table 3.

For those who have no any work experience in any construction-related jobs, we found that the overall attitude of males and females are not significantly different. However, in terms of components of attitude, there are several differences. Females believe that there are less opportunities for career promotion in the industry than males (sig. level = 0.017). Interestingly, females think that working in the construction industry is less physically demanding than males (sig. level = 0.029). This perception may be due to their lack of work experience or the nature of the works generally assigned to females in the industry. Comparing to males, females perceive that working in the construction industry is less mentally challenging (sig. level = 0.023). Passion for building measures the individual's inherent passion and interest to work with hand and build things. The results show that males are more passionate to build things than females (sig. level = 0.001).

Table 3: Overall and components of attitude for people without any work experience

	Without Work Experience		With Work Experience	
	Males	Females	Males	Females
Overall Attitude	5.53	5.25	5.99	5.47
Wage	5.57	5.63	5.74	5.83
Job security	4.97	4.89	5.13	5.11
Job opportunities*	2.84	2.88	2.69	2.92
Career promotion	5.39	5.00	5.50	5.25
Benefits to society	6.06	5.97	6.19	6.08
Work-life balance*	4.32	4.22	4.37	4.26
Working hours*	5.31	5.12	5.41	5.33
Career option	5.74	5.83	5.91	5.97
Learning opportunities	6.00	6.15	6.15	6.24
Physical toughness	5.56	5.13	5.77	5.08
Mental toughness	5.18	4.70	5.29	4.91
Respectable career	5.96	5.72	6.06	5.73
Passion for building	6.03	5.30	6.33	5.50

* The components with asterisk were asked with negative questions.

We did similar analyses among males and females with some work experience in construction-related jobs. Here, we found that males have significantly more positive attitude towards working in the construction industry than females (sig. level= 0.012). Again, females evaluated working in the industry less physically and mentally challenging than males (with respectively significance level of 0.000 and 0.021). In addition, as women gain more exposure to the industry, they believe less than men that working in the construction industry is a respectable career (sig. level = 0.035). Similar to previous results, males have more passion for building things than females (sig. level = 0.000).

4.3 Subjective Norms

The respondents were asked to rate the degree to which family, spouse or partner, friends, school teacher, and school counselor encourage them to choose a career in the construction industry. We found that there are significant correlations between the intention and the degree of support they receive from these people (Table 4). Although the role of family and relatives are more important than others. This results are compatible with previous studies indicating the role of family in individual's career decision (Taylor 2005, Zafar 2011, Granitz et al. 2014). Interestingly, people with at least one family member in the construction industry are more encouraged by their families to choose a career in construction (sig. level= 0.002).

Table 4: Pearson correlation analysis of intention and subjective norms

	Intention	Family/ relatives	Spouse/ partner	Friends	School teacher	School counselor
Intention	1	.370**	.347**	.350**	.255**	.190**
Family/relatives		1	.665**	.627**	.567**	.495**
Spouse/partner			1	.672**	.535**	.606**
Friends				1	.645**	.535**
School teacher					1	.698**
School counselor						1

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

4.4 Perceived Behavioral Control

In this section, we analyzed respondents' perception towards possible barriers they might face in choosing a career in the construction industry. Results indicate that having knowledge about construction training programs and courses needed to take to become a credentialed craft professional and confidence are significantly correlated with intention (Table 5). Young people with work experience in construction-related jobs are more likely to have good knowledge of construction craft or apprenticeship programs (sig. level= 0.000) and more likely to have good knowledge of courses required for becoming a craft professional (sig. level= 0.000).

As illustrated in Table 5, intention has a high correlation with confidence (0.591). As described earlier, self-efficacy theory considers confidence as a strong predictor of a behavior (Bandura 1977). Also, Figure 4 shows that as people become more experienced in the construction industry, they become more confident in their abilities to be successful in the construction industry. This is also compatible with self-efficacy theory which implies that confidence can create a positive spiral in which persons with high confidence become more involved in their tasks and then, in turn, strengthen their performance, which increases confidence further (Bandura 1977).

In addition, young males (mean= 6.10) are generally more confident in their abilities to be successful in the construction industry than young females (mean= 5.66) with a significance level of 0.005. Interestingly, young people who have at least one family member working in the construction industry, have more confidence in their abilities to be successful (sig. level = 0.006). This finding confirms that family members who work in an occupation can be a role model in that job for young individuals (Taylor 2005).

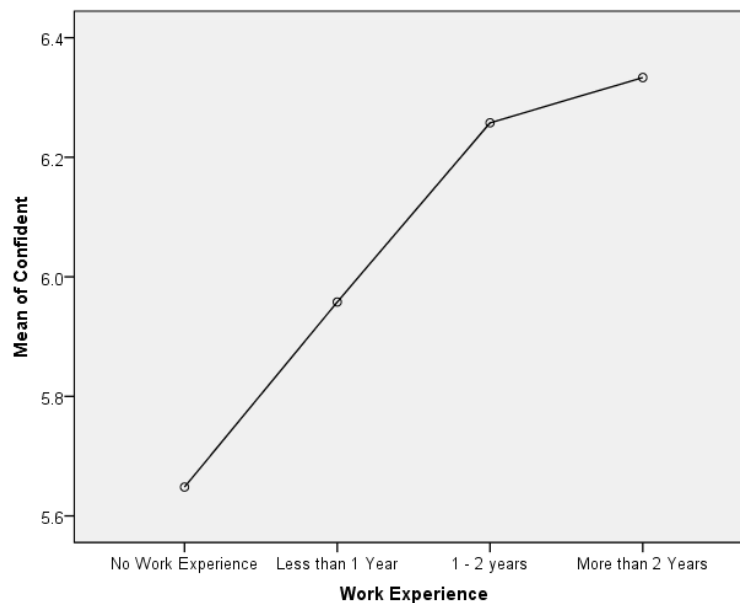


Figure 4: Confident and work experience

5 CONCLUSION

One of the challenges facing the construction industry is to attract new talent in order to sustain the availability of a qualified workforce. To make young adults interested in working in the industry, it needs to understand the underlying factors behind people's decision to select a long-term career in the construction industry. In this research, we applied the theory of planned behavior to investigate this issue.

The results indicate that if people gain some exposure to construction-related jobs, it can significantly influence their decision to choose a career in the industry. We found that even one year of work experience

in the construction-related jobs has a significant effect on their decision. Although, we found that among young people who have some work experience, people ages 15-17 are less likely to choose a career in construction than people ages 18-24. This may warn that if the industry cannot understand the perceptions of the upcomming workforce, it might face even more severe shortages.

Table 5: Pearson correlation analysis of intention and elements of perceived behavioral control

	Intention	Difficulty of getting certification	Knowledge of construction training programs	Difficulty of getting information about potential careers	Knowledge of courses needed to become craft professional	Confidence
Intention	1	.009	.273**	-.051	.336**	.591**
Difficulty of getting certification		1	-.178**	.402**	-.040	-.096**
Knowledge of construction training programs			1	-.215**	.574**	.338**
Difficulty of getting information about potential careers				1	-.149**	-.134**
Knowledge of courses needed to become craft professional					1	.438**
Confidence						1

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

Components of attitudes were also analyzed in this research. Generally, males have more positive attitude towards working in construction than females. There are several differences between females' and males' perceptions. Most interestingly, compared to males, females believe that working in the construction industry is not so much mentally challenging. On the other hand, males have more passion for building things and working with their hands compared to females. The relative importance of components of attitude in shaping the overall attitude needs further investigation.

The results of this study also confirmed the influence of family members and friends in the decision making process. Especially, those who have at least one familiiy member working in the industry, are more encouraged to choose a career in construction.

We also found those who have high motivation to choose a career in construction industry are also more confident about their furture success in the industry. Having work experience and family memebtrs working in construction can boost an individual's confidence. These results are compatible with the theory of self-efficay.

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