The Selection of a Supply Chain Management Major by Female Students

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While female students represent more than half of the student population in U.S. universities, they account for 36 percent of students enrolled in the top undergraduate Supply Chain Management (SCM) programs. Motivated by that phenomenon, this paper aims to (1) identify and contrast the impact of contextual factors influencing the selection process of a business major between male and female students, (2) compare and contrast the impact of the identified factors between the SCM major and other business majors, and (3) propose new approaches to increase the current SCM female student enrollment of 34 percent experienced at a Midwestern university.

INTRODUCTION

Based on the responses to a 2013 Supply Chain Management (SCM) World survey of 147 supply chain executives, O'Marah (2014) reported that the overwhelming majority of respondents agreed that "women's different skillsets [are] advantageous for supply chain management" (p. 3). While female students represent over 50 percent of the student population in colleges and universities across the United States, they account for only 36 percent of students enrolled in the top undergraduate SCM programs and "only 5% of top-level supply chain positions at Fortune 500 companies are filled by women" (Fairchild, 2014, p. 2).

During the period between 2014 and 2018, it is estimated 270,000 SCM related positions per year will need to be filled in the United States (MHI, 2014). Many of these positions will be filled from the pool of graduates from SCM undergraduate programs from across the country, and from these graduates will come the future leaders in supply chain management. The question that begs to be asked is, "Will companies have the opportunity to take advantage of the skill sets of both female and male SCM graduates to meet the needs of future SCM professional positions, or will the results reported by Fairchild (2014) continue to be the 'norm' in years to come?"

Kenney, McGee, and Bhatnagar (2012) pointed out that from a feminist science perspective, the inclusion of women in male-dominated occupations "bring[s] a rich diversity of experience and perspectives that are invaluable, and the incidence of fewer women in higher echelons of technology jobs creates a detrimental void of outlooks and sensitivity" (p. 3). Bostic (1998) noted that, "it is an important waste of talent when women are diverted from jobs because of their gender" (p. 4). It would be logical to conclude from these referenced studies, and countless others not cited, that there are workplace and

societal benefits resulting from increased female participation in male-dominated academic majors and professional careers.

Extant research on pipeline theory, as well as the failure of the pipeline, provided useful insight on the topic of addressing the shortage of female talent in a male-dominated workforce (Blickenstaff, 2005; Cannady, Greenwald, & Harris, 2014; Metcalf, 2010, 2014; Schweitzer, Ng, Lyon, & Kuron, 2011). According to pipeline theory, increasing the number of women in male-dominated fields should lead to more equality in the labor market. However, it has been proven that the pipeline hypothesis is insufficient to explain the gendered career gaps (Schweitzer et. al, 2011). Keohane (2003) suggested that there were "stubbornly durable blockages" at specific points in the pipeline that prevent women's movement in their career pursuit (e.g., hitting the glass ceiling for female executives). These findings give rise to the need to further understand these blockages in specific contexts, thus facilitating women's career pursuit in male-dominated fields.

The present study addresses the above issue in the context of undergraduate female students selecting an academic major at a Midwestern university (hereafter known as "University") where female students represent 58% of the total 2015 fall undergraduate student population, but only 34% of the SCM program's enrollment. It should be noted that the undergraduate female student enrollment at the University's SCM major is consistent with the undergraduate female student enrollment average of 36% experienced at the Top 25 SCM undergraduate programs in the United States. Based on social cognitive career theory (Lent et al., 1994, 2000), we argue that environmental variables (hereafter referred to as "contextual factors") play an important role in shaping and influencing the choice of an academic major. Hence, our work aims to better understand the impact of these contextual factors and subsequently develop recommendations to assist in increasing female student enrollment in the SCM program at the University. However, our understanding of the impact of the identified contextual factors on female students cannot be complete unless we also know the impact of the identified factors on male students. This is why we included male students in our study to examine if there was a contextual factor impact differential between female and male students. While it is our intent to provide suggestions to increase female student enrollment at the University, we also must keep in mind that the SCM program should be a great experience for both female and male students.

To accomplish the purpose of our study, we used a descriptive research approach for our study. The descriptive research approach was considered appropriate, because descriptive studies are aimed at finding out "what is," so survey methods are frequently used to collect descriptive data (AECT, 2001; Borg & Gall, 1989). More specifically, we collected data for our study by surveying female and male students at the University. We identified and contrasted the impact of twenty-one contextual factors associated with the process of selecting a business related major between male and female students. We compared and contrasted the impact of the identified contextual factors between the recently created SCM major and other well-established business majors at the University. Lastly, we proposed new approaches to increase the proportion of female students enrolled in the SCM major.

LITERATURE REVIEW

Since limited research has taken place with regard to the issue of under-representation of female students enrolled in undergraduate SCM academic majors, we referred to studies related to other academic fields to gather relevant insight to the under-representation of undergraduate female students in SCM academic majors. This study considered research related to social cognitive career theory as well as empirical studies pertaining to factors influencing the selection of an academic major by undergraduate college students in general, and research specifically related to the selection of an academic major by undergraduate female students.

Social Cognitive Career Theory (SCCT)

Given the purpose of this study, the SCCT provided particularly useful insight that illustrated how experiences accumulated by college and university students influenced their academic major selection

process. According to the SCCT framework, there are two complementary sets of variables that influence choice behavior: (1) cognitive-person variables including self-efficacy (the belief that one will be successful at a given task), outcome expectations, and personal goals, and (2) person and contextual factors such as gender, ethnicity, socioeconomic conditions, and familial support (cf. Lent et al., 1994, 2000).

More specifically, SCCT's choice model postulates that self-efficacy and outcome expectations jointly cultivate career-related interests that: 1) influence one's goals (e.g., intentions or plans) to pursue an academic major, 2) stimulate choice actions (based on the goals) that are designed to implement one's goals (e.g., major declaration), and 3) revise and/or reinforce self-efficacy and outcome expectations (based on the outcome of choice actions and/or performance experiences) that solidifies or redirects one's choice behavior (Lent et. al, 1994). Furthermore, choices are influenced by contextual factors and personal characteristics through either shaping self-efficacy and outcome expectations, or influencing the choice formation and implementation process (Lent et. al, 1994).

Empirical Studies

The determination of what are considered to be acceptable female and male academic majors and careers in the United States has been accomplished over time through such actions as: sex stereotyping, sex labeling of academic majors, and sex labeling of jobs. Once American society established female and male cultural standards as acceptable expectations of the American population, gender biases began to influence and control the academic and career decisions of female students and employees (Padavic & Reskin, 2002). Many male-dominated disciplines have been successful in convincing females that their interests are best served if they pursued positions requiring developed social and nurturing skills (Cleveland, Stockdale, & Murphy, 2000). Previous empirical studies have identified various contextual factors associated with the selection of an academic major by female students: gender stereotype, gender role model, family and friends support, availability of financial resources, internships, and awareness of career opportunities (Arendell, 1999; Bettinger & Long, 2005; Bigelow et al., 2015; Kenney et al., 2012; Silverman & Pritchard, 1996; Super & Hall, 1978; Swanson & Woitke, 1997).

From their research involving students at two different colleges, Lent et al. (2002) found in addition to interests and relevant work experiences, financial concerns and social/family support were considered critical contextual factors in students' academic major selection. Related research conducted by Dahling and Thompson (2010) demonstrated the impact contextual factors had on a student's decision to change academic majors. The four variables used in their study to capture contextual influences were (a) family supportiveness, (b) peer supportiveness, (c) financial status, and (d) job market outlook. Dahling and Thompson (2010) also found that the impact of family supportiveness and peer supportiveness were weaker for non-European American participants than European American participants. This finding appears to suggest that the effects from contextual factors vary with person-related variables such as race and ethnicity.

Gender, another person-related variable, has drawn a considerable amount of research interest (Bartolj & Polanec, 2012; Cleveland, Stockdale, & Murphy, 2000; Hollenbeck & Hall, 2004; Padavic & Reskin, 2002; Zafar, 2012). Bartolj and Polanec (2012) discovered gender differences among students in business and economic programs associated with selecting academic majors. More specifically, male students preferred business informatics, management, and banking and finance majors while female students were more likely to major in accounting, finance, and marketing. Zafar (2012) pointed out that while both female and male sophomore students at Northwestern University considered coursework and parental approval to be critical factors in their choice of an academic major; male and female students were different in terms of their preferences (rather than ability) in the workplace.

With regard to STEM related academic majors and occupations, where under-representation of females is often common, studies have found that female students lack self-confidence in their mathematical, scientific, and intellectual abilities (Hollenbeck & Hall, 2004; Shanahan, 2006) even though female students on average have higher college GPA than their male counterparts. As noted by Hollenbeck and Hall (2004), "self-confidence is based on perceptions, both of our capabilities and of

what the task or challenge requires, not on the underlying skills themselves or the task requirements." Hence, the lack of self-confidence can be corrected if needed actions are taken to change how people perceive a situation.

Bigelow et al. (2015) identified sixteen factors that were related to attracting female undergraduate students into the male-dominated construction management major. Their survey of students at five universities pointed out that the two most influential factors were internships and awareness of career opportunities. Based on their findings, Bigelow et al. (2015) suggested that a more in-depth understanding of specific aspects associated with internship experiences and career opportunities would be helpful for recruiting female students to the construction management major. Following this suggestion, we explored many aspects of these influences when constructing the list of contextual factors for our study. For example, we expanded Bigelow et al. (2015) "career opportunities" into our three contextual factors: the abundance of jobs, attractive salaries, and a variety of career paths.

Bettinger and Long (2005) investigated whether faculty gender affected course-taking behavior and academic major choice. Their research results suggested that the effects were mixed across academic fields. While there were no apparent effects (positive or negative) on scientific, quantitative, and technical fields on academic major choice, the effect was negative on economics, psychology, and education and positive on sociology. Nevertheless, the results suggested the potential impact of gender role model on female students' choice of academic major.

Super and Hall (1978) explained, "adolescence is the period in which exploratory behavior is the most common of the career behaviors. It is the stage during which the youth is finding out about adult roles and trying [them] out either in real life or in fantasy" (p. 336). "The non-occupational positions occupied before the adult career begins influence both the adult positions…and the way in which their role expectations are met. Thus the amount and type of schooling is one determinant of occupation entered…" (Super, 1980, p. 286). Based on his mixed methods study related to career development differences between male and female college students, Luzzo (1995) explained, "women were much more likely than men to mention role conflicts and barriers that they perceive as stumbling blocks along the career development pathway. [T]oday's middle- and late-adolescent women are much more likely to consider the integration of occupational and family roles in adulthood than are adolescent men (p. 321)."

Swanson and Woitke (1997) concluded, "Perhaps the most fundamental conclusion from our research examining career barriers is that college students clearly do perceive the existence of barriers" (p. 454). Additionally, "women typically score higher on a number of scales, indicating greater perceptions of barriers" (p. 455). Swanson and Woitke (1997) pointed out that the perceived career barriers for women included "sex discrimination, multiple role conflict, and conflict between children and career demands" (p. 454). The "patriarchal construction" of "intensive mothering and its institutionalization define women and promote standards by which they are judged, both as mothers and not-mothers, in a gender-stratified society" (Arendell, 1999, pp. 3-4). It is from this at-home and societal backdrop that female students develop their early perception of stereotyped roles for women that is difficult to overcome when considering their undergraduate academic major and future career opportunities. Kenney et al. (2012) noted, "women are capable and competent, yet remain underrepresented in STEM-related fields. The problem is not about ability or deficiency, it is the socio-cultural phenomena of stereotypes—stereotypes of abilities, social influences, and workplace environments (p. 3)."

Silverman and Pritchard (1996) focused on the wide gender gap in technology education experienced in four Connecticut high schools. The study surveyed a total of 241 high school students made up of 107 girls and 134 boys. The study provided insight related to the difference between female students enrolled in technology education courses and those who did not choose technology education courses. More specifically, the study found that students choosing technology education courses were frequently encouraged to do so by relatives and friends outside of school, which was noted as especially important for female students. A second significant factor noted by Silverman and Pritchard (1996) that discouraged female students from selecting technology education courses was the lack of information about the academic discipline and the future technological career opportunities that were available to women.

Overall, we drew upon the findings from various empirical studies in the literature to construct our inventory of twenty-one contextual factors (see Appendix 1). Based on this inventory, a survey was developed and distributed to undergraduate students at the University.

METHOD

First, we constructed a list of the Top 25 SCM undergraduate programs in the United States for our study by comparing and combining the "Top SCM Undergraduate Schools" listing published by the U.S. News and World Report (2014) and the "Top 25 Supply Chain Undergraduate Programs" published by Gartner (Stiffler, Chadwick, & Carter, 2014). Next, information requests were sent to the 25 schools asking each school to report their 2014 SCM undergraduate academic major enrollment by gender. Twenty-one out of 25 schools responded to the information request. The average percentage of female students enrolled in the SCM undergraduate academic major for the 21 responding schools was 36% with a standard deviation of 0.13. It follows that the 95% confidence interval for the average is between 30% and 42%. Given these numbers, we are quite confident to conclude that on average undergraduate female students were under-represented in the SCM academic programs in the United States.

We then conducted a survey of undergraduate business college students at the University that included SCM students. (The SCM program was established in 2012; at the time of the survey in 2016, the total SCM enrollment was 53, of which 18 were female students accounting for 34% of the enrollment in their SCM program.) Identical online and hardcopy versions of the survey were distributed to the undergraduate business college students. An online survey link was sent to 1,144 student email addresses and a hard copy of the survey was handed out at the SCM student organization monthly meeting to SCM students that had not responded to the online survey. There were a total of 203 survey responses received (18% response rate); of which 36 responses were rejected due to the survey's underage restriction (i.e., below 19 years old) or failure by the respondent to properly complete the survey. As a result, the final survey sample size was 167 respondents with 33 of the 167 respondents declaring Supply Chain Management as their academic major or minor. The descriptive statistics of the sample are included in Table 1.

TABLE 1
SURVEY SAMPLE DESCRIPTIVE STATISTICS

Respondent	Frequency	Percent
Age		
19-23 years	140	84
24 years and older	27	16
Gender		
Female	82	49
Male	85	51
Ethnic group		
European American	123	74
Non-European American	24	14
Others	20	12
Class Standing		
Freshman	16	10
Sophomore	44	26
Junior	47	28
Senior	60	36
First-generation college student		
Yes	58	35
No	109	65
Major/Minor		
Accounting	24	14
Management	27	16
Marketing	23	14
SCM	33	20
Others	60	36

RESULTS

Our data analysis is organized into two subsections. The first subsection reports the overall impact of the contextual factors and their impact across gender and academic major. The second subsection summarizes how students selected their academic major, as well as their awareness of the recently established SCM major at the University.

Contextual Factors

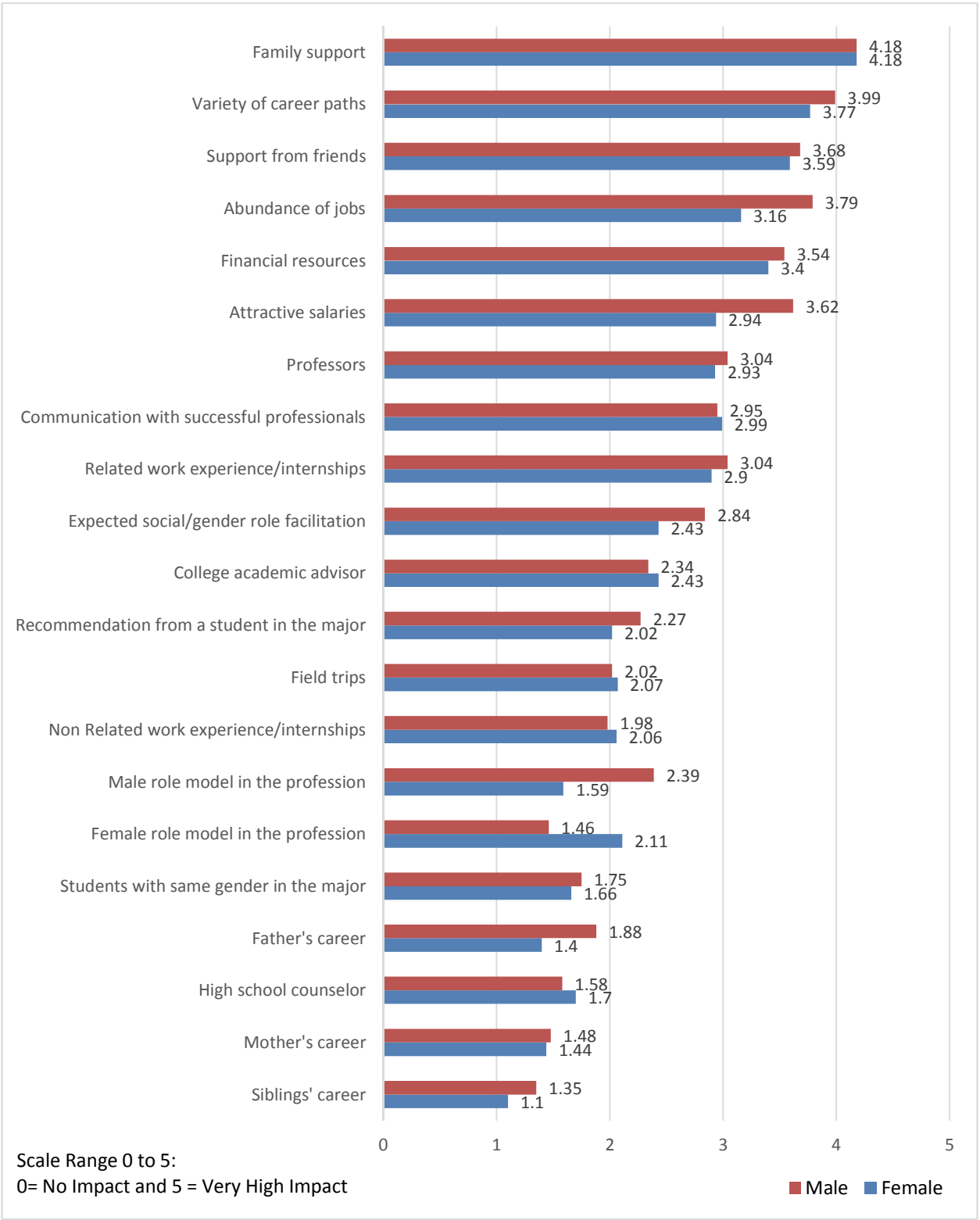
Table 2 shows that the twenty-one contextual factors examined in this study did have some level of impact on the students' selection of their academic major as evidenced by the fact that all contextual factors scores were greater than 1.0 using a scale that ranged from 0 to 5, with 0 = "No Impact" and 5 = "Very High Impact." (A complete description of the contextual factors used in this survey can be found in Appendix 1.) The top six contextual factors included; "family support" (Mean = 4.18), "variety of career paths" (3.88), "support from friends" (3.63), "abundance of jobs" (3.48), financial resources" (3.47), and "attractive salaries" (3.29).

TABLE 2
THE DISTRIBUTION OF CONTEXTUAL FACTORS SCORES

	Contextual Factor	Mean	Standard Deviation	Min	Max
1	Family support	4.18	1.31	0	5
2	Variety of career paths	3.88	1.28	0	5
3	Support from friends	3.63	1.45	0	5
4	Abundance of jobs	3.48	1.6	0	5
5	Financial resources	3.47	1.73	0	5
6	Attractive salaries	3.29	1.56	0	5
7	Professors	2.98	1.69	0	5
8	Related work experience/internships	2.97	1.79	0	5
9	Communication with successful professionals	2.97	1.7	0	5
10	Expected social/gender role facilitation	2.63	1.96	0	5
11	College academic advisor	2.38	1.83	0	5
12	Recommendation from a student in the major	2.15	1.86	0	5
13	Field trips	2.05	1.77	0	5
14	Non Related work experience/internships	2.02	1.72	0	5
15	Male role model in the profession	1.99	1.81	0	5
16	Female role model in the profession	1.78	1.73	0	5
17	Students with same gender in the major	1.71	1.69	0	5
18	Father's career	1.65	1.65	0	5
19	High school counselor	1.63	1.62	0	5
20	Mother's career	1.46	1.48	0	5
21	Siblings' career	1.23	1.45	0	5

Next, we examined the impact variation of the contextual factors by gender. Figure 1 shows the average scores of all factors for female and male. Multiple t-tests were conducted to determine if there were any significant differences between female and male students' responses. Four factors were found to be statistically significant: (1) abundance of jobs, (2) attractive salaries, (3) male role model in the profession, and (4) female role model in the profession.

FIGURE 1
IMPACT LEVEL OF CONTEXTUAL FACTORS BETWEEN MALE AND FEMALE STUDENTS



More specially, when comparing female students to male students, the first two factors are less impactful for female students (t=-2.58, p=0.011 and t=-2.89, p=0.004 respectively). In other words, when it comes to career opportunities, the abundance of jobs and attractive salaries play a larger role in a male student's major decision than in a female student's. It should be noted that in our study there are three factors relating to career opportunities: abundance of jobs, attractive salaries, and variety of career paths. We found statistically significant differences in the first two factors, but not the last.

Regarding gender role model in the profession, female students reported a higher impact of female role model in motivating their major selection (t=2.47, p=0.014) and male students reported a higher impact of male role model (t=-2.93, p=0.004). This result appears to reflect the impact of "same gender role model" on career decision (through major selection).

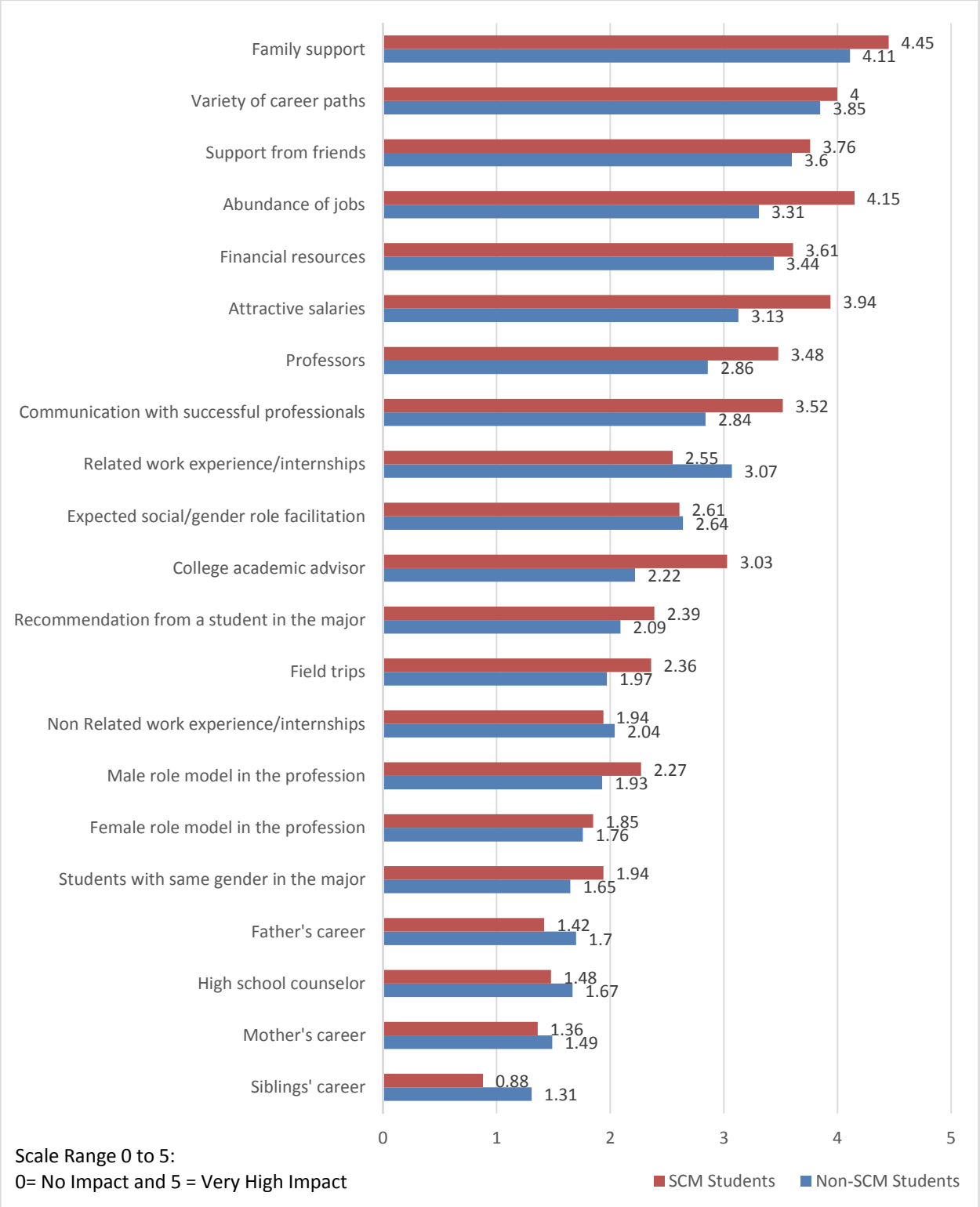
We then conducted multiple t-tests to compare the impact of contextual factors on two groups of students: those who declared SCM as their major or minor (hereafter referred to as "SCM students") and those who declared other business majors (hereafter referred to as "non-SCM students"). We first examined the gender makeup of these two groups; Chi-square test revealed that there was a statistically significant difference between them (χ^2=4.09, p=0.043). This implies female students might be under-represented in the SCM group; in particular, female students accounted for 33% of SCM students and 53% of non-SCM students respectively (see Table 3).

TABLE 3
THE GENDER MARKUP OF SCM AND NON-SCM STUDENTS

	SCM Students	Non-SCM Students	Total
Female	11	71	82
	33%	53%	49%
Male	22	63	85
	67%	47%	51%
Total	33	134	167
	100%	100%	100%

Figure 2 presents the average scores on the contextual factors of the two groups of students. Multiple t-tests showed that compared to non-SCM students, SCM students reported a higher impact on five factors: (1) professors (t=2.17, p=0.034), (2) academic advisor (t=2.3, p=0.023), (3) the abundance of jobs (t=3.31, p=0.002), (4) attractive salaries (t=3.56, p=0.001), and (5) communication with successful professionals (t=2.07, p=0.040).

FIGURE 2
IMPACT LEVEL OF CONTEXTUAL FACTORS BETWEEN SCM AND NON-SCM STUDENTS



Selection of Academic Major

With regard to the students' academic major selection, 94 students (56%) had considered or declared a different undergraduate academic major before selecting their current major while at college; 47 students (28%) chose their current major while in high school; and 26 (16%) came to college as undecided. These numbers appear to suggest that the majority of students made a decision about their current undergraduate academic major after they were enrolled at the University, and the probability of these students changing or declaring a different major appears to be relatively high. It was noted that approximately 40% of the students responding to this survey that remained in the academic major they chose while they were in high school selected either Accounting (10 students) or Management (8 students).

Among the 134 students responding to the survey that had not selected SCM as their major/minor, 49 students (37%) were not aware of the existence of the SCM major/minor; 73 students (54%) were aware of the SCM major/minor but did not consider it when selecting their academic major/minor; and 12 students (14%) were aware of the SCM major/minor and did consider it before choosing a different major/minor (see Table 4). This result appears to imply a need for the SCM program to improve its performance in the area of student awareness of the SCM academic major at the University if its objective is to increase SCM student enrollment.

TABLE 4
THE AWARENESS OF SCM MAJOR/MINOR AMONGST NON-SCM STUDENTS

Response	Frequency	Percent
I was not aware of the SCM major/minor.	49	37
I was aware of the SCM major/minor, but I did not consider it when selecting my current major/minor.	73	54
I was aware of the SCM major/minor and I did consider it before selecting my current major/minor.	12	9
Total	134	100

DISCUSSION

In this section, we discuss the implications of our results and recommend new approaches to increase the proportion of female students for the SCM program at the University. It should be noted that when developing our recommendations, we have made an assumption that increasing female student enrollment generally will affect male students' learning experience positively, therefore, enhancing the learning experience of students in the SCM program.

Implications of the Results

Regarding contextual factors, the six most impactful factors in our study demonstrate the two categories of environmental influences on the students' academic major choice as postulated by the SCCT theory (Lent et al., 2000). These two categories are identified based on their relative proximity to the career choice-making process. The first contains distal, background contextual factors such as family support, support from friends, and financial resources in our study, while the second contains proximal contextual factors such as variety of career paths, abundance of jobs, and attractive salaries. More importantly, proximal contextual factors could have moderating and direct effects in the choice process (Lent et al., 1994, 2000). It implies that modifying the perception of proximal contextual factors such as career opportunities by increasing awareness could alter a student's academic major selection. This reflection could be particularly useful in developing the recruitment strategy for the SCM program.

Next, the differential impact of two of the three contextual factors on career opportunities between female and male students provided us with a clearer picture on how female and male students view this

group of factors. Previous work has reported the different career expectations among female and male students, particularly a lower earnings expectation in the group of female students (Bartolj & Polanec, 2012; Schweitzer et al., 2011). The results from our study revealed that male students reported a higher impact regarding the abundance of jobs and attractive salaries than female students appears to be consistent with previous research literature. The insignificant statistical difference on the contextual factor "variety of career paths" is an important result, because it implies the possibility of attracting both female and male students to a specific major by emphasizing this factor in academic major promotional material, particularly when the marketing budget for the program is limited.

Our results also highlight the impact of the contextual factor "same gender role model in the profession" for both male and female students. This suggests a more conscious selection when inviting guest speakers to an academic program, especially in male-dominated or female-dominated fields of study. Furthermore, it might indicate that an academic program could be more appealing if students were given the option of having a same gender practitioner mentoring them during their academic pursuit at the University. That said, in many cases, there might be too few mentors to satisfy this preference.

When it comes to the SCM program at the University, the differences perceived among SCM and non-SCM students strongly confirm the impact of contextual factors on academic major selection. Our reasoning for such a conclusion is based on the structure and recruitment efforts implemented by the SCM program at the University. First, the SCM Program Coordinator is also the academic advisor for all SCM students, and all the SCM professors are involved in activities associated with the SCM student organization. Second, during the past two years, guest speakers have presented at the monthly SCM student organization meetings; hence, SCM students have been provided with several opportunities to communicate with successful SCM professionals thus increasing their awareness of SCM related career opportunities. As a result of these efforts, over the past two years the SCM program has experienced an enrollment increase of 231 percent.

To further grow student enrollment, a greater understanding of the students' major selection process and awareness of the SCM program at the University would be helpful. Our results indicate a relatively high probability of students changing their academic major while at the University (except some well-established majors like Accounting and Management). From simply a cost perspective, it would seem to be the most advantageous if all business academic programs at the University combined their resources when recruiting high school students to enroll at the University, and then have a subsequent effort by each academic major to raise the awareness of career opportunities in their major once the students arrived on campus.

Recommendations for Increasing Female Student Enrollment

Since the SCM program recruiting efforts at the University have resulted in a 2-to-1 ratio of male to female students, this imbalance would appear to imply that the current SCM recruiting approach is skewed toward the recruitment of male students. Our suggested approaches to increasing female student enrollment were developed from two main implications from the study's results: increasing awareness of career opportunities, and nurturing the relationship between students and various role models in their chosen major and career.

The effort to increase awareness of SCM career opportunities can be divided into two categories: internal and external. The former targets the current students enrolled at the University while the latter focuses on high school students. The key personnel in charge of increasing awareness of the SCM program and associated SCM career opportunities should be the SCM Program Coordinator and active members of the SCM student organization (hereafter referred to as SCMO). To support the awareness development effort, this group should create SCM promotional materials that can be used in conjunction with the promotional activities directed toward potential SCM students. We suggest that these materials should contain two categories of promotional content: gender-neutral and gender-specific. The former centers on the availability of financial resources (both incoming and current students) and career paths associated with SCM; while the latter is designed to appeal specifically to either female or male students. The current materials used at the University appear to have been designed without a gender-conscious

mindset. Adding a female-specific promotional component to the current materials should make the SCM major more attractive to female students.

Because of the high probability of current students changing their major, the activities for external recruitment should take into account the University-wide activities and available resources. One possible approach for external recruitment is to take advantage of resources across male-dominated majors at the University to develop various outreach activities towards potential female students. A good benchmark for such an effort is the Purdue Women in Engineering Program – WIEP (see https://engineering.purdue.edu /WIEP). In addition to attracting new female SCM students through external recruiting tactics, the internal recruitment activities need to address the concern of student retention in the SCM major. The current SCMO related activities appear to be working well to keep all SCM students engaged and should be maintained.

Our next recommendation aims to further enhance female student engagement and build a stronger relationship between these students and the SCM discipline. More specifically, we propose new activities (or settings) to nurture the bond between female students and various role models. While this proposal could also be used for male students, we recommend these activities for female SCM students due to findings from previous work related to stronger perceived career barriers of female students in male-dominated disciplines (Kenney et al., 2012; Luzzo, 1995; Swanson & Woitke, 1997). We suggest a female SCM mentoring process that is tailored to the relative proximity to the student's progress toward graduation. Based on the University's business program curricula, students receive little exposure to their chosen major in their first two years because of the general studies and business core requirements. Hence, at an early stage of their academic pursuit, female SCM students may need coaching (i.e., task oriented advice) to get through the system and develop comfort with college life. Upper-class female SCM students could become a role model who would help guide and retain the younger female students in the SCM major.

A second category of role model for female SCM students could be SCM professors who currently play an active role during a student's junior and senior years. One suggestion to develop a student's bond to this group of role models would be project-oriented activities that link female SCM student specific topics of interest covered in the classroom to their chosen SCM career path. The newly established SCM Business Center at the University should be useful to generate these suggested projects, and SCM professors could supervise activities that fit the curricula of their classes.

The third role model category would be the use of female SCM practitioners who could be particularly useful for female SCM students during their senior year. We believe that female SCM students, who are about to join the workforce, will appreciate and value career advice (and coping strategies) from successful women professionals in the SCM profession.

The SCM academic advisors and SCM Program Coordinator would serve as the primary facilitators in our recommended mentoring measures. In particular, they would be responsible for managing activities associated with the development of the different categories of role models, and would ensure female SCM students have access to needed role models during the different points of time in their academic pursuit.

CONCLUSION AND FUTURE RESEARCH

In this paper, we have provided contextual impact data on students' academic major selection; our comprehensive list of twenty-one contextual factors allowed us to explore different aspects of the environment influencing students' decisions. We pointed out how female and male students perceived the impact of contextual factors differently and how certain interventional actions from a particular academic major (i.e., SCM) have changed the perceived impact of these contextual factors. The results from our data collection at the University enabled us to develop and recommend different approaches that could be used by the SCM program at the University to increase female student enrollment in the SCM major.

Future research could be focused on the effectiveness of SCM promotional materials developed specifically for recruiting female students to the SCM major. Such a study might determine if promotional materials targeted specifically toward the interests and expectations of female students were

more effective in recruiting female students into the SCM academic major than the current SCM promotional material. A research project could be developed that measured the effectiveness of different delivery strategies for SCM related information, such as one-to-one discussions, small group settings, social media, and high school recruiting trips.

Another area for future research could be related to developing an empirical test that identified various characteristics of female students who would be more likely to have an interest in pursuing an SCM academic major. The considered characteristics may include personality traits and behaviors, personal strengths and weaknesses, interests, past experiences, and other relevant factors.

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APPENDIX 1: DESCRIPTION OF CONTEXTUAL FACTORS

	Survey Item	Label
1	My father's career is closely related to my current selection.	Father's career
2	My mother's career is closely related to my current selection.	Mother's career
3	One or more of my siblings' career is closely related to my current selection.	Siblings' career
4	My family is supportive of my current selection.	Family support
5	Professors in my college inspired me to pursue my current selection.	Professors
6	My high school counselor recommended/encouraged me to pursue my current selection.	High school counselor
7	A UNK academic advisor recommended/encouraged me to pursue my current selection.	College academic advisor
8	A student in my current major recommended/ encouraged me to pursue my selection.	Recommendation from a student in the major
9	My friends think my current selection is a good idea and support my decision.	Support from friends
10	I and/or my family have sufficient financial resources (including scholarships) that I feel confident I can finish my current selection.	Financial resources
11	Having work experience and/or internship that is related to my current selection motivated my choice.	Related work experience/internships
12	Having work experience and/or internship that is NOT related to my current selection helped my choice.	Non Related work experience/internships
13	Attending job site field trips that were related to my current selection motivated my choice.	Field trips
14	The abundance of jobs related to my current selection motivated my choice.	Abundance of jobs
15	The attractive salaries related to my current selection motivated my choice.	Attractive salaries
16	The availability of various career paths related to my current selection motivated my choice.	Variety of career paths
17	Male role model in the profession related to my current selection motivated my choice.	Male role model in the profession
18	Female role model in the profession related to my current selection motivated my choice.	Female role model in the profession
19	Being able to talk with successful professionals in my current selection area motivated my choice.	Communication with successful professionals
20	Knowing that many students in my current selection share my same gender gives me confidence to pursue my major/minor.	Students with same gender in the major
21	My current selection suits my expected role as a husband and father/wife and mother (depending on the gender of the respondent, the wording was presented differently).	Expected social/gender role facilitation