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Exploring the Differences Between Students in IS and Other Disciplines in the Perceptions of Factors Influencing Study Program Choice: A Survey Study in Norway

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Abstract In this study, we explored the differences between students in IS and other disciplines in their perceptions of factors influencing study program choice. A quantitative research approach was employed. We used an online survey for data collection. Data was collected in a Norwegian public university in the Fall semester of 2021. The findings from this study showed that the factors that most influence students' choice of study program are career-related. The most influencing factor for students in choosing a study program was identified as job availability, followed by job security, career opportunities, and interesting work assignments. Significant differences were found between students in IS and other disciplines in the following five factors influencing study program choice: job security, opportunity to be innovative, personal skills, ease of study topics, and performance in high school subject matter courses.

1   Introduction

Student recruitment and diversity have been a concern in Information Systems Departments in higher education institutions (Vainionpää, Molin-Juustila, & Arhippainen, 2022; Havelka, & Merhout, 2020), as the demand for IT-related professionals and managers has increased drastically.

Studies from various disciplines have explored the factors affecting students' decisions in choosing their study programs and careers. Influencing factors could be categorized as internal and external (Downey et al., 2011). Internal influences include attitudes, beliefs, abilities, and personality, such as one's personal image, interest and aptitude in the field, and the influence of others. External factors include job characteristics, the prestige of employment, and the degree of difficulty and workload of the major (Downey et al., 2011). Some of the factors influencing career choice are tangible such as financial rewards; others are intangible, like prestige or status (Downey et al., 2011). Skatova & Ferguson (2014) reported that people choose university degrees for four reasons: career concerns, intrinsic interest in the subject, an opportunity to help others and to find an easy way to get into higher education. Students' socioeconomic background influences their selection of major in higher education institutions (Goyette & Mullen, 2006; Johnson & Muse, 2017). Johnson & Muse (2017) reported that the lower the socioeconomic status of an individual, the more likely they are to choose more lucrative careers and careers with more favourable outlooks. Students' high school academic performance and curriculum are highly related to their choice of major (Johnson & Muse, 2017), while financial difficulties have different effects on female and male students when choosing their major (Johnson & Muse, 2017).

Vainionpää, Molin-Juustila, & Arhippainen (2022) explored why students had chosen the IT field and reported motivational factors as "interest," "IT identity," "potential of the field," "study opportunities," "people," and "desire for change". Havelka & Merhout (2020) investigate factors that influence students' decision to major in IS. They reported that for students, the first reason in choosing IS as major was new and exciting career opportunities. Chipidza, Green, & Riemenschneider (2019) reported that intrinsic motivators, such as interest and the potential for a rewarding and satisfying experience, were the strongest influencer of a students' attitude about majoring in Management Information Systems (MIS), followed by

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job-related aspects of MIS, such as competitive advantage, salary, support structure, and the ease of finding a job that MIS careers offer. Li et al. (2014) grouped factors that may impact students' choice of major into three categories as career-related factors, personal interest factors, and social and referent factors.

In this current study, we investigated the differences in the perceptions of factors influencing study program choice between students in IS and other disciplines. This study aims to contribute to a deeper understanding of motivating factors in choosing IS study program in the Norwegian context, using the results of an online survey. The main research questions for this study include: What are the motivating factors in choosing study program? What are the motivational differences between students in IS and other disciplines in choosing study program? Which information sources are important in choosing a program for students? How are students' perceptions towards IS study program and profession?

2   Methodology

In this study, we used an online survey for collecting data from undergraduate students. A group of IS students and students from other disciplines at the University of Agder, Norway, was surveyed in the Fall semester of 2021. The survey questionnaire used was based on previous studies and consisted of items about the demographic characteristics of respondents, reasons for not choosing IS study program, influencing factors in choosing their study programs, information sources, and perceptions of IS. The survey questionnaire items were adapted from previous studies by Croasdell et al. (2011), Ferratt et al. (2010), Li et al. (2014), Papastergiou (2008), Snyder & Slauson (2014), Walstrom et al. (2008), Walstrom & Schambach (2012) and Zhang (2007). The questionnaire was made available in Norwegian and English. The Norwegian Centre for Research Data (NSD) approved the questionnaire before we started the collection of data. This study is a part of a larger study.

First, we sent an online questionnaire link with an e-mail to 159 IS students who enrolled in an introductory IS course. The students' registered university email addresses were used. Data was collected from IS students from September 13, 2021, to October 12, 2021. We then sent the online survey to students in other disciplines

at the same university. The survey link was emailed to registered university email addresses of 609 undergraduate students enrolled in four different courses at the Faculty of Social Sciences and School of Business and Law. Data was collected from students in other disciplines from October 12, 2021, to November 30, 2021. The survey has been administered online through SurveyXact. Participation in the survey was voluntary. IBM SPSS (version 25) software was used to analyse data.

3   Results

115 completed responses were used in this study, with 65 responses (56.5%) from students in IS (with female, n=17, 26%) and 50 responses (43.5%) from students in other disciplines (with female, n=30, 60%). 33 percent of respondents were at the age of 18-19 years, 30.4 percent of respondents were at the age of 20-21 years, 27.8 percent of respondents were at the age of 22-35 years, and the remaining (8.7%) were more than 35 years old.

Table 1 presents the mean values of the students' responses to the importance of each factor on the list in choosing their study programs and their standard deviations. Student participants in this study were asked to indicate the importance of the item listed in Table 1 for why they chose the department to study at the university with a five-point scale (1=Not important, 5=Very important). The results indicated that the most motivating factors for both IS and non-IS students in choosing their study programs was job availability, followed by job security, career opportunities and interesting work assignments. Students rated the importance of the probability of working in the field after graduation (job availability) in choosing a study program higher than personal interest in the subject matter. Career-related factors play an important role in choosing a study program at university, consistent with previous study findings (Jung et al., 2017; Snyder & Slauson, 2016; Corneliussen et al., 2021; Hodges & Corley, 2017).

The influence of high school teacher(s) was the least important motivating factor on the list in choosing a study program, followed by the counselling service at the high school, the influence of friend(s), and the influence of family member(s). The results show that the influence of friends and family members do not play an important role in choosing a study program. On average, students rated the influence of friends and family members in choosing their study programs as not important.

Table 1: Motivating factors in choosing study program (1=Not important, 5=Very important)

Motivating factors	Total		IS Students		Non-IS Students		p
	M	SD	M	SD	M	SD	
Job availability	4.35	0.96	4.42	1.00	4.26	0.90	0.390
Job security	4.21	0.90	4.35	0.93	4.02	0.84	0.049**
Career opportunities	4.21	0.87	4.20	0.94	4.22	0.79	0.904
Interesting work assignments	4.21	0.89	4.18	1.00	4.24	0.74	0.743
Personal interest in subject matter	4.01	1.10	4.00	1.03	4.02	1.19	0.923
Opportunity to be innovative	3.77	1.10	4.02	1.02	3.46	1.13	0.007*
Geographical location of the university	3.70	1.26	3.63	1.29	3.80	1.21	0.476
Long-term salary and benefits	3.67	1.12	3.77	1.06	3.54	1.20	0.279
Personal skills	3.62	1.11	3.29	1.20	4.04	0.83	0.000*
Choose a study where I can get the opportunity to work with people	3.49	1.25	3.31	1.30	3.72	1.14	0.078
Starting salary and benefits	3.42	1.18	3.55	1.10	3.24	1.27	0.160
Choose a study that gives the opportunity to help others	3.25	1.30	3.05	1.28	3.52	1.28	0.052
Prestige of profession	3.23	1.20	3.17	1.24	3.32	1.15	0.507
Study topics are easy for me	3.09	1.05	2.85	1.06	3.40	0.95	0.004*
Reputation of university	3.06	1.24	3.02	1.29	3.12	1.17	0.655
Reputation of degree program at university	2.97	1.17	2.83	1.23	3.16	1.06	0.134
Performance in high school subject matter courses	2.94	1.35	2.60	1.32	3.38	1.26	0.002*
Influence of family member(s)	2.25	1.14	2.08	1.14	2.48	1.11	0.059
Influence of friend(s)	2.23	1.13	2.28	1.19	2.18	1.06	0.652
The counseling service at your high school	1.81	1.12	1.78	1.12	1.84	1.11	0.793
Influence of high school teacher(s)	1.75	1.11	1.65	1.08	1.88	1.14	0.263

M = mean; SD = standard deviation; * Significant at the 0.01 level; ** Significant at the 0.05 level

T-test revealed five significant differences between students in IS and other disciplines on the following factors: job security ($p<0.05$), opportunity to be innovative ($p<0.01$), personal skills ($p<0.01$), ease of study topics ($p<0.01$), and performance in high school subject matter courses ($p<0.01$). For the two motivating factors, job security and the opportunity to be innovative, the mean values of ratings of IS students were significantly higher than that of students in other disciplines. The mean values of ratings of IS students for the importance of job availability and job security in choosing their study program were higher than the mean values of ratings of students in other disciplines. IS students rated the importance of job

security in choosing the study program significantly higher than students in other disciplines. These results show that jobs availability and job security play a much more important role in choosing a study program for IS students than for students in other disciplines. The other significant difference between students in IS and other disciplines was about the "opportunity to be innovative". IS students rated the importance of the opportunity to be innovative in choosing the study program significantly higher than other students. Information technologies today provide innumerable opportunities for innovation, and this influences students' choice of IS study program.

Ratings of students in other disciplines were significantly higher than that of IS students for three factors in choosing a study program: personal skills, ease of study topics and performance in high school subject matter courses. The highest difference between the mean values of ratings of IS and non-IS students was on "performance in high school subject matter courses". Even though it was not rated as important on average, students in other disciplines rated the importance of performance in high school subject matter courses significantly higher than students in IS.

The mean value of importance ratings for personal interest in subject matter was almost the same for students in IS and other disciplines (4.01 and 4.02). Personal interest was an important motivating factor for students in IS and other disciplines when choosing their study programs.

The results revealed that the geographic location of the university was one of the motivating factors in choosing the study program. The mean value of importance ratings for the geographic location of the university in choosing a study program was sixth on the list. It was higher than the mean values of importance ratings for "long-term salary and benefits" and "personal skills". As Kristiansand is located in the south of Norway, the University of Agder also attracts students due to its location.

Table 2 shows the importance of information sources for students in choosing their study programs on a five-point scale ranging from 1 (Not important) to 5 (Very important). Not applicable responses were coded as missing data. The university/department website was the most important information source in choosing their study programs, while the scores for other information sources were

less than three. T-test results revealed significant differences between students in IS and other disciplines in importance ratings of three information sources in choosing their study program: presentations by current students, brochures and information received at career or job fairs arranged at high school.

Table 2: Importance of information sources in choosing study program
(1=Not important, 5=Very important)

Information source	Total		IS Students		Non-IS Students		
	M	SD	M	SD	M	SD	p
Information on university/department website	3.91	1.13	3.86	1.19	3.98	1.06	0.568
Presentations by current students	2.67	1.24	2.45	1.21	2.95	1.23	0.048**
Presentations by university staff	2.69	1.40	2.68	1.47	2.70	1.32	0.927
Media presentation of the field's reputation	2.98	1.28	2.93	1.36	3.04	1.18	0.661
Newspaper articles	1.98	1.12	1.89	1.12	2.09	1.11	0.379
Brochures	2.02	1.17	1.74	0.98	2.38	1.29	0.009*
Information and marketing via social media	2.56	1.28	2.43	1.34	2.72	1.19	0.241
Information you received at career or job fairs arranged for you at high school	2.55	1.44	2.19	1.36	3.00	1.43	0.004*
Information you received at a university Open Day (e.g. UiA)	2.20	1.44	1.94	1.38	2.55	1.47	0.043

M = mean; SD = standard deviation; * Significant at the 0.01 level; ** Significant at the 0.05 level

Students were asked to indicate their opinions towards seven statements about the IS study program and profession on a five-point scale ranging from 1 (Strongly disagree) to 5 (Strongly agree). Table 3 presents the students' perceptions towards IS study program and profession. The t-test results revealed that there were three significant differences ($p<0.01$) between students in IS and other disciplines regarding the listed statements about the IS study program and profession. As expected, IS students have more positive perceptions towards the IS study program and profession than students in other disciplines. The results show that students think IS graduates have good and well-paid jobs and that IS jobs are stable and fast-growing. The last two statements in Table 3 are about women in IS profession. An unfavourable gendered perception of the IT field can have a negative impact on women's career choices in IT/IS (Vainionpää et al., 2020). The results didn't reveal

negative gendered perceptions towards IS. In general, both IS and non-IS students disagreed with the negative statements on the list about women in the IS profession.

Table 3: Students' perceptions towards IS study program and profession (1=Strongly disagree, 5=Strongly agree)

Statements	Total		IS Students		Non-IS Students		
	M	SD	M	SD	M	SD	p
IS graduates have good and well-paid jobs.	3.83	0.75	3.95	0.74	3.68	0.74	0.051
IS jobs are stable and fast-growing.	4.15	0.79	4.42	0.68	3.80	0.78	0.000*
IS seems easy to study.	2.67	0.91	2.75	0.92	2.56	0.88	0.257
IS major/jobs sounded interesting and cool.	3.62	1.07	4.09	0.86	3.00	1.01	0.000*
IS studies give me the opportunity to contribute to the development of the society of the future.	4.05	0.94	4.38	0.65	3.62	1.09	0.000*
IS is more suitable for men than for women.	2.03	1.12	1.86	1.01	2.26	1.21	0.057
Men are more likely to succeed in the IS profession than women.	2.24	1.11	2.17	1.15	2.34	1.06	0.417

M = mean; SD = standard deviation; * Significant at the 0.01 level

4   Conclusion

The purpose of our study was to explore the differences in the perceptions of factors influencing study program choice between students in IS and other disciplines. We conducted an online survey among undergraduate students in a Norwegian public university.

Job availability was found to be the most motivating factor for both IS students and non-IS students when choosing their study program at a university. That was followed by job security, career opportunities and interesting work assignments. There were five significant differences identified between students in IS and other disciplines in perceptions of factors influencing study program choice: job security, opportunity to be innovative, personal skills, ease of study topics, and performance in high school subject matter courses. The importance of job security and the opportunity to be innovative in choosing a study program was significantly higher for IS students than for students in other disciplines. Students in other disciplines rated three factors significantly higher than IS students: personal skills, ease of study

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topics and performance in high school subject matter courses. Results also revealed that the location of the university was an important motivating factor in selecting the study program among undergraduate student participants of this study at the University of Agder.

Although the participants of the study generally have positive views towards the IS study program and profession, students in other disciplines have less positive perceptions than IS students. In addition, it was found that the participants did not have negative gendered perceptions towards IS.

The results of the survey show that the websites of universities/departments serve as an important information source for students when choosing their study programs.

There is an obvious need to increase awareness of IS study programs among prospective students. Prospective students may not know the difference between IS and other IT-related studies like computer science. Therefore, candidate students should be given sufficient information about IS, and its difference from other IT-related study programs should be explained well.

The limitations of this study should be taken into account. First, this study used a convenience sampling technique, and the sample size was relatively small. Second, the sample consists of undergraduate students from only one Norwegian university. Third, students' university e-mail addresses were used for sending the survey's link. This may have negatively affected the survey response rate. Future studies with larger sample sizes and among high school students will help to better understand students' motivations in choosing IS.

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