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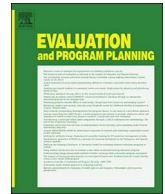
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Internship training in computer science: Exploring student satisfaction levels



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ABSTRACT

The requirement of employability in the job market prompted universities to conduct internship training as part of their study plans. There is a need to train students on important academic and professional skills related to the workplace with an IT component. This article describes a statistical study that measures satisfaction levels among students in the faculty of Information Technology and Computer Science in Jordan. The objective of this study is to explore factors that influence student satisfaction with regards to enrolling in an internship training program. The study was conducted to gather student perceptions, opinions, preferences and satisfaction levels related to the program. Data were collected via a mixed method survey (surveys and interviews) from student-respondents. The survey collects demographic and background information from students, including their perception of faculty performance in the training poised to prepare them for the job market. Findings from this study show that students expect internship training to improve their professional and personal skills as well as to increase their workplace-related satisfaction. It is concluded that improving the internship training is crucial among the students as it is expected to enrich their experiences, knowledge and skills in the personal and professional life. It is also expected to increase their level of confidence when it comes to exploring their future job opportunities in the Jordanian market.

1. Introduction

Internship plays an important role in preparing students for real life situations, including at work and other settings that are necessary for their future careers and skills acquired during their formal education (Posner, 2008). Internship training is a course that is commonly offered to undergraduate students in many universities around the world. More often than not, such training programs are mandatory before graduation. The need to conduct internship training at the undergraduate level pertains to providing students with an opportunity to improve their academic knowledge and enhance their soft skills as well as to acquire additional skills that are highly needed in the workplace later on.

A formal learning environment will never be able to fully provide students with the complexities that the problem-solving and analysis skills pose in the real world of workplace (D'Abate & Youndt, 2009). In Jordan, it has particularly become crucial for most of the actors in the job market to seek potential workers with 1–3 years of work experience – a requirement that is quite difficult for fresh graduates to meet. In order to keep abreast with the developments of the national and regional economies, Jordanian universities nowadays face a tremendous challenge to prepare students with theoretical knowledge, and professional soft skills required by the various industries. Such training programs are highly recommended for junior and senior students of Information Technology and Computer Science in order to increase

their employability.

The internship training program for Information Technology and Computer Science juniors and seniors is conducted over the course of four months every semester. An internal study in late 2015 reported that almost all of the graduates completed their internship training within four months. Internship periods vary from one institution to another. The objectives of introducing internship are to develop students' ability to apply academic knowledge and theories at workplace, enhance student soft skills and familiarize them with the actual environment of a workplace setting and experience. At the same time, such a program aims at making student skills relevant in job market by exploring and engaging various partners and networks among the Jordanian industries and market actors. Students are expected to be able to find a job opportunity after graduation in the fields of education, programming and development, system analysis, and entrepreneurship. Furthermore, the new policy of the Ministry of Higher Education and Scientific Research in Jordan aims at preparing the graduates to act as job creators rather than job seekers only. This training is also part and parcel of the faculty's responsibility to provide students with the knowledge and skills needed to succeed in the real workplace experience once they have completed their studies at the university.

The research objectives of this paper are:

1. To identify the student satisfaction levels about the internship

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training program; and

2. To explore student comments and suggestions with regards to improving internship training program.

The paper is organized in 6 sections. Section 2 describes the statement of the problem while some related works are presented in Section 3. Research methodology of the study is presented in Section 4. Section 5 illustrates and discusses results and findings of the study while Section 6 introduces the conclusions of the study.

2. The statement of the problem

After graduation, students join the manpower needed to develop the country's economy. As Jordan currently faces challenges to develop its economy, certain measures should be adopted to ensure that its youth are ready to address this national requirement. These fresh graduates will need to ensure the continuity of the resilient economic growth in the country. As highlighted by Bennet (2002), common attributes deemed essential in workplaces include responsibility, confidence, self-control, and social attitude in addition to cooperative, and self-motivated individuals. Self-management and good transferable skills can also be considered a big plus. However, conflict may arise as most graduates are not aware of these demands. Therefore, an efficient and effective internship training program is very important during the undergraduate study to produce knowledgeable and skillful fresh graduates capable of securing their place in the job market smoothly and effectively. Thus, investigating the way they function will significantly ensure the attributes needed to achieve the foundation of our resilient domestic economy. Ko (2008) indicates that higher satisfaction in student practicum training will result in higher satisfaction and confidence levels with regards to future careers. The requirement of employability in the job market prompted universities to mainstream internship training within their study plans. There is a need to train the students on the important skills related to the workplace and their acquired knowledge.

Recognizing the importance of these issues, the government initiated a framework for public and private universities to report on their alumni and monitor their employability afterwards. The aim is to ensure that graduates secure good jobs within six months of graduation, with at least 50% of them expected to be employed within their field of study. (Wye, Lim, & Lee, 2012) stated that one contributing factor to this event is the job un-readiness upon graduation. This is similar to the case of Jordan. To ensure the sustainability and competency of the skilled talents in the job markets, the readiness among graduates to embark on the labor force is a must (Wye et al., 2012). However, almost no research has focused on this issue (in Jordan). Thus, more research on this area is necessary to attain an in-depth understanding of future domestic potentials.

The important issues that were considered in this study in relation to internship experiences include the type of internship, and the place assigned to the student during the internship experience. The purpose of this study is to better understand the level of satisfaction that computer science students experience upon completing internships. Hence, the following hypothesis seems appropriate:

H1. Students express higher satisfaction with internships that provide positive experiences and for which they perceive greater personal benefits.

Enhancing employability and facilitating the subsequent job search process (increasing the ease by which future employment can be gained) can be viewed as primary reasons to participate in an internship; in this respect, the following hypothesis is appropriate.

H2. Students who perceive that their job prospects are improved as a result of their internship are more satisfied with their internship.

3. Related works

Internships programs or training courses are intended to enable students to gain crucial skills in a work-based setting, facilitated through experiential learning (Ruhanen, Robinson, & Breakey, 2013). Internship program is a platform for students in the academic world to integrate theoretical knowledge with real working environments and put them into practice. It is important for them to apply theoretical knowledge previously acquired in the classroom (Idrus, MohamedNoor, Salleh, & MohdHashim, 2010). As such, they need to take part in a supervised and planned work in the real-world specialized settings Muhamad, Yahya, Shahimi, & Mahzan (2009) and Alexei, Galina, and Tamara (2013). By taking part in this internship program, the students will have professional skills that can boost their understanding of issues which are significant to a particular work (Hughes, 1998) and enhance employability, provide the students with real expectations of interns, furnish satisfaction of the internship experience and give internship prerequisites as predictors of internship success (Knouse & Fontenet, 2008). Thus, internship programs provide a unique opportunity for undergraduates to learn about the roles and tasks relevant to their fields of study. In teaching the information technology professions, the internship is conducted through integration of service learning as an increasingly important trend in information technology services delivery to become a community-based setting.

Misiran, Yusof, Mahmuddin, and Yasin (2013) carried out a study to explore the internship readiness among university's final year students. Results suggest that all the items were retained and classified under three different categories, namely the 'University Experiences', 'Employment Preparation' and 'Internship Presumption'. The first category is comprised of eight items whereas seven other items were categorized under category 2'. As for category 3 "Internship Presumption", seven items were included. Generally, these three categories will become helpful factors or indicators in discussing the important element of internship readiness among students. This will help universities develop suitable course outlines that may be relevant in order to prepare students for work. The findings in their study give in depth understanding to the underlying student needs and prepare them by using important knowledge and skills to join the work force.

Aznan and Rohaiza (2013) identified the items that assessed perceived influence among students; these items include 'developing self-confidence' (89%), 'ability to be independent' (89.8%) and 'readiness to face the working world and challenges' (88%). Sahrir et al. (2016) mentioned in their study that all graduates reported that the university has a strong influence on their life. Adawiyah and Yazid (2013) reported that their data shows the need to enhance the students' abilities, especially while they are still enrolled at the University, so as to experience more internship and industrial training programs in order to make them well-prepared for the job market and match their skills with the needs of the industry.

The study of Garland, Garland, and Vasquez (2013) sought to understand pre-service education interns' readiness to manage behaviors of students with exceptionalities in inclusive classrooms. Their analyzed results indicated that there was evidence that shows how some teaching interns felt uncertain about their ability to manage classroom behaviors. Many respondents expressed a desire to access classrooms earlier in their educational program and felt that having a more initial exposure could solidify foundational pedagogies of best practices in behavior management. Both of their conducted survey and interview responses indicated that students recognized the importance of honing a skill set in behavioral management, and evidenced that they grasped some of the concepts integral to best practices when working with students who have special needs. However, many respondents also stated that they required more in-depth instruction before becoming the teacher of records themselves. Their findings reported that the incorporation of increased instruction on the implementation of evidence-based practices for behavior management when working with students

who have exceptional needs is a predominant factor to student success and teacher retention, and should occur within the teaching curricula.

Bilsland, Nagy, and Smith (2014) examined an internship program in an offshore education context. It reports results from work supervisor evaluations of interns in a foreign university that delivers its internship program to undergraduate business degree students in Vietnam. Although preliminary results indicate that work supervisors are generally satisfied with intern performance on employability skill measures, the authors proposed further research that would enable universities to deliver locally relevant internship programs. They concluded that by proposing internship program research initiatives aimed at incorporating richer communication and involvement with the company representatives/frontline supervisors; understanding relevant factors of importance held by industry; and building closer connections with industry.

Varshney and Mishra (2014) studied the characteristics of the job factors and work environment. They studied their impact on general satisfaction and behavioral intentions of interns. They have found that it helped students in getting the on-hands experience. It also benefited the higher education institute and the organization where interns are trained. Internship has helped improving different intern skills such as communication and writing skills. Results indicated no correlation between job characteristics and satisfaction, but indicated a strong degree of correlation between work environment and satisfaction. They stated that these findings can be useful to all the stakeholders studying internship satisfaction and its behavioral implications. Through Pearson's correlation, the authors studied the correlation between job characteristics and overall satisfaction. On the one hand, the test has shown that there is no correlation between job characteristics and overall satisfaction. On the other hand, there exists significant correlation between work environment and intern satisfaction at 0.01 level of significance. It was also seen that there is no correlation between internship satisfaction and behavioral intention.

Therefore, they concluded that *"to make internship or industry participation in academics more effective, the interns should be communicated and proper orientation should be provided to get the maximum benefits. Interns should be mentored. Students should select appropriate organization fit for them. Institute gets benefit when their best and brighter students have opportunities to complete excellent internship because such opportunities creates interest amongst the school students who are aspiring to work on higher corporate ladder. These prospects look up to the institute as means of full filling their dreams of joining corporate world and being successful in their career. This also generates positive image in the industry and influence the organization to select the institute during campus placement. From this study it can be stated that there exists need to plan for better off-campus internship and create appropriate models for internship which will help students with more effective future career planning."*

Sahrir et al. (2016) attempted to investigate the performance of internship training program in the Department of Arabic Language and Literature, at the International Islamic University of Malaysia. Methodologically, this study was conducted to congregate the opinions and experience about internship program among their students. The participants were purposively selected from a pool of 57 students who have completed their three months internship either in the public or private sector during the period from June to September 2015 by using an online survey and open-ended questionnaires. General findings from this study show that internship training has essentially improved their soft skills and increased their workplace literacy and well-being. Their students are reported to be well accepted in both private and public sectors to undertake their internship training. The study recommended that continuous aspects of improvement as mentioned by the students should be heeded in order to ensure effective planning and implementation of internship program among undergraduate students.

4. Research methodology

This study was conducted to explore internship training satisfaction levels among junior and senior computer science students in the faculty of Information Technology and Computer Science. Sixty juniors and seniors were selected. The sample is made of students enrolled at the Information Technology and Computer Science program. The respondents were randomly selected using the stratified sampling method, and were interviewed to retrieve information about their expectations vis-à-vis the internship program and its outcomes.

As recommended by Bryman and Bell (2015), it is important to develop a deeper understanding of students' feelings of readiness to recommence the study by adopting an interpretive approach, where students explored the narrative of their experiences. This can be achieved through qualitative in-depth semi-structured interviews, allowing the researcher to fully explore the views and experiences of the students as recommended by Bryman (2008).

A mixed method survey was used to collect the data for this study. The respondents were selected from intern students who have completed their four-month internship from February to May during the school year of 2014/2015, and from October to January 2015/2016. A questionnaire was distributed to measure the interns' self-assessment of their knowledge and skills after the internship training program in order to investigate their workplace knowledge and experiences (as recommended by Diah, Abd Rahman, Mustari, & Ramli, 2014).

The survey contained four parts, including the demographic background, satisfaction level of interns in the internship program, interns' overall comments, and suggestions on internship program among students towards readiness and satisfaction. For part two, a Likert scale of 5-points was used to measure the intern responses where 1 = strongly disagree and 5 = strongly agree. All descriptive data was analyzed using the Statistical Package for Social Sciences (SPSS) software and the open-ended responses were reported in the thematic table after the comments or suggestions by students were analyzed and concluded accordingly. All of the questionnaires were distributed and collected from the respondents within one week with a 100% response rate. Interviews with 23 students added Supporting information about variables in the internship experience affecting their satisfaction or affecting their perception of readiness for practice.

Taking all these factors together, this instrument is highly reliable in measuring student satisfaction levels with regards to the internship environment. To assess the experience and the benefits students receive from participating in an internship training program, 23 factor items were developed. A list of factor items is adopted from Gupta, Burns, and Schiferl (2010) for this study since it seems to cover a good portion of the entire domain.

A factor analysis was run to identify the underlying factors. Six factors with an eigenvalue exceeding 2 were extracted via principal components analysis and were rotated via varimax rotation. The first factor (positive internship experience) is comprised of 8 items ($\alpha = 0.822$). The second factor (positive work environment) is comprised of 3 items ($\alpha = 0.591$). The third factor (comfort with work environment) is comprised of 3 items ($\alpha = 0.543$). The fourth factor (new skills) is comprised of 3 items ($\alpha = 0.657$). The fifth factor (communication skills) is comprised of 3 factors ($\alpha = 0.812$). The sixth factor (improved job prospects) is comprised of 3 items ($\alpha = 0.708$). The items comprising each factor are displayed on Table 1.

This table shows factors from the factor analysis of 23 items. A factor analysis of student responses identified 6 internship experience factors. Each of the factors is identified in this table, along with a title. Similar to Paulins (2008) and Gupta et al. (2010), satisfaction with internship was measured by a single item. Students' perceptions of their job prospects were measured by three single-item measures: students' confidence in their ability to obtain a full-time position, perceived likelihood of obtaining a position with the interning company, and

Table 1
Internship experience factor items.

Internship experience factors	Factor items
Factor 1: Positive internship experience	<ol style="list-style-type: none"> 1. I really did something worthwhile in my internship. 2. Overall, I would rate my internship experience as excellent. 3. I was satisfied with the work assignments I had during my internship. 4. My internship was very interesting. 5. My internship work was satisfying. 6. Projects were beneficial to goal of enhancing overall marketing knowledge. 7. Assigned internship work responsibilities were well defined. 8. The work I did was challenging and stimulating.
Factor 2: Positive work environment	<ol style="list-style-type: none"> 1. I received respect from co-workers while training. 2. I was treated on the same professional level as the other employees. 3. I now feel more comfortable working with different types of people.
Factor 3: Comfort with work environment	<ol style="list-style-type: none"> 1. Application process and interview improved my level of comfort with the employer. 2. I feel that my internship experience gave me a realistic preview of my field. 3. I was satisfied with my interactions with my supervisor.
Factor 4: New skills	<ol style="list-style-type: none"> 1. I feel my personal interests and career ambitions are more defined. 2. My internship work was valuable. 3. I developed new skills and knowledge as a result of the internship.
Factor 5: Communication skills	<ol style="list-style-type: none"> 1. My internship experience improved my oral communication skills. 2. My internship experience improved my written communication skills. 3. My internship experience improved my leadership/teamwork skills.
Factor 6: Improved job prospects	<ol style="list-style-type: none"> 1. Students who have done internships are more likely to get job offers. 2. Feel internships are an effective strategy for gaining employment. 3. I now feel more confident in finding a job upon graduation.

perceived importance of internship to future career success.

5. Results and discussions

The results and findings of this study are reported in three main categories – demographic background, satisfaction level of interns in the internship training program, and overall comments/suggestions on internship training program among faculty students with a focus on readiness and satisfaction. The details are as shown below:

5.1. Demographic background

5.1.1. Gender

As shown in Table 2, the majority of respondents are male undergraduate students, accounting for 65% of the sample, while the rest are female undergraduate students (31.6%). A percentage of 3.3% is missing.

5.1.2. Year of study

In Table 3, the final year students (seniors) indicate the highest percentage of participants in the previous internship training program (55%), while the rest are juniors (41.6%). The percentage of those missing was 3.3%.

5.1.3. Nationality

Jordanian students make the majority of internship trainees who have participated in the program (78.3%) of sample population; 11 other students are non-Jordanian (18.3%), with 2 missing (3.3%) based on Table 4.

Table 2
Gender.

Gender	Frequency (N)	Percentage (%)
Male	39	65
Female	19	31.6
Missing	2	3.3
Total	60	100

Table 3
Year of Study.

Year	Frequency (N)	Percentage (%)
Junior	25	41.6
Senior	33	55
Missing	2	3.3
Total	60	100

Table 4
Nationality.

Year	Frequency (N)	Percentage (%)
Jordanian	47	78.3
Non-Jordanian	11	18.3
Missing	2	3.3
Total	60	100

5.1.4. Type of internship

Table 5 shows the distribution of internship places which have been selected by the supervisors of the interns based on capability and knowledge. It is very obvious that most of them (78%) were involved in Education, Database management (13.3%), Software development (11.6%), Networking & Information Security (10%), Object Oriented & Data Structure programming (8.3%), Web development (8.3%), Mobile Application testing/development (6.6%), Broadcasting & Social media (6.6%). The rest of interns went to various places (18.6%) and 3.3% makes the missing information.

5.2. Satisfaction levels among interns

Correlations between the internship experience factors and satisfaction with internship is displayed in Table 6.

In each instance, a significant (at the 0.05 level) relationship was observed between the internship experience factor and students' satisfaction with the internship. Hence, support for Hypothesis 1 (H1) is observed – students with internships which provided positive experiences and for which they perceive greater personal benefits

Table 5
Type of Internship.

Nature/Place	Frequency (N)	Percentage (%)
Education	8	13.3
Software development	7	11.6
Object Oriented & Data Structure programming	5	8.3
Web development	5	8.3
Mobile Application testing/development	4	6.6
Database management	8	13.3
Networking & Information Security	6	10
Graphical design	2	3.3
Project management	1	1.6
System analysis	1	1.6
Marketing & Communications	1	1.6
Blogger	1	1.6
Research assistant	1	1.6
Customer services (IT consultant, Solution architect)	3	5
Quality assurance	1	1.6
Broadcasting & Social media	4	6.6
Missing	2	3.3
Total	60	100

Table 6
Correlations between internship experience factors and satisfaction with internship.

Internship experience factor	Correlation with satisfaction with internship	Significance
Factor 1: Positive internship experience	0.748	.000***
Factor 2: Positive work environment	0.243	.007***
Factor 3: Comfort with work environment	0.301	.000***
Factor 4: New skills	0.334	.000***
Factor 5: Communication skills	0.221	.008***
Factor 6: Improved job prospects	0.512	.000***

***indicates significance at the 1% level.

expressed higher satisfaction with their internships. However, Table 6 indicates that relationships involving internship experience factors are not equal in strength. Consequently, relative strengths of relationships between satisfaction with the internship and each of the internship experience factors are examined.

A Dunn & Clark's (1969) Fisher z transformation (to test differences between the correlations) is employed to compare correlation coefficients between a dependent variable and a set of independent variables. Results are displayed in Table 7.

Results indicate that: (i) *positive internship experience* is significantly more strongly related to internship satisfaction than the other five factors; (ii) *positive work environment* is significantly less related to internship satisfaction than *new skills* or *comfort with work environment*; (iii) *new skills* is significantly less strongly related to internship

Table 7
Comparing correlation coefficients.

Internship experience factor	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
Factor 1: Positive internship experience	–					
Factor 2: Positive work environment	8.375***	–				
Factor 3: Comfort with work environment	5.035***	–0.207	–			
Factor 4: New skills	5.824***	–0.354	0.892	–		
Factor 5: Communication skills	9.360***	1.943*	1.922*	2.394***	–	
Factor 6: Improved job prospects	4.344***	–1.821	0.464	–2.591**	0.114	–

*indicates significance at the 10% level.

**indicates significance at the 5% level.

***indicates significance at the 1% level.

Table 8
Correlations between employment-related perceptions and satisfaction with internship.

Employment-related perceptions	Correlation with satisfaction with internship	Significance
Confidence in their ability to obtain a full-time position	0.312	.013**
Perceived likelihood of obtaining a position with the interning company	0.229	.059*
Perceived importance of internships to future career success and satisfaction with internship	0.293	.009***

*indicates significance at the 10% level.

**indicates significance at the 5% level.

***indicates significance at the 1% level.

satisfaction than *improved job prospects*; (iv) *communication skills* is significantly less strongly related to internship satisfaction than *new skills* and is marginally significantly less strongly related to internship satisfaction than *positive work environment*.

Correlations between students' *confidence in their ability to obtain a full-time position*, *perceived likelihood of obtaining a position with the interning company*, and the *perceived importance of internships to future career success and satisfaction with internship* are displayed in Table 8.

Significant (at the 0.05 level) findings were observed for the relationships involving students' *confidence in their ability to obtain a full-time position* and the *perceived importance of internships to future career success and satisfaction with internship*. A marginally significant (at the 0.1 level) relationship is observed for *perceived likelihood of obtaining a position with the interning company*. The direction of each relationship is in the direction hypothesized. Hence, support for Hypothesis 2 (H2) is observed – students who perceived that their job prospects are improved as a result of their internship are observed to be more satisfied with their internship.

5.3. Overall comments and suggestions by interns towards employability opportunity in Jordanian job market for future improvement

The respondents were asked to provide their comments and suggestions in an open-ended questionnaire with regards to the internship program among faculty students towards employability opportunities in Jordanian job market. The feedback is as important as the descriptive results and findings due to its in-depth responses and explanations by the respondents. They are analyzed and grouped accordingly based on specific themes as shown in Table 9.

The comments and suggestions from a previous open-ended questionnaire indicated positive and negative feedbacks by students towards employability Jordan. The responses focus on the main themes of practicality, needed skills, prior knowledge, support and management of internship.

Student' satisfaction is found to be related to the nature of the

Table 9
Open-ended responses for comments and suggestions.

Main Theme	Comments and Suggestions
Practically	Good for student to practice their skills. Enhance knowledge and skills.
Needed skills	Provide employability skills in academic programs before internship training. Need of extra skills among students such as communication, writing, customer service, leadership, critical thinking, software development, problem solving, decision making, and teamwork.
Prior knowledge	Student must take courses of project management, decision making, advanced programming, and system analysis for occupational purpose before internship program. Expose the students more to programming training and workshops.
Support	Need to find financial support during internship training. Visit to internship place by every appointed supervisor. Need to review academic courses related to programming, software development, and software documentation. Improve the selection of internship places or natures by the supervisor. Adding academic courses that are related to research methodology, web programming, mobile applications, and problem solving.
Management of internship	Make it longer during normal semester. Improve the observation procedures of internship program.

internship experience and the benefits associated with it. This is logical since one would expect that satisfaction should be affected by the qualities of the internship. This study, however, appears to indicate that students' assessment of their internships is multi-dimensional as it depends on several factors.

Although it was observed that each factor was related to internship satisfaction, the strengths of the relationships are not that equal. Clearly, the relationship between *positive internship experience* and internship satisfaction is stronger than any other factor. This suggests that the qualities of the internship itself seem to be the primary issue in student assessments of the success of an internship. Hence, internship coordinators should be concerned with the activities in which students will be engaged in potential internship positions to ascertain that the experience will include challenging, interesting work with well-defined work responsibilities.

It is interesting that the relationship between *positive work environment* and internship satisfaction is found to be weaker than that between *new skills* and *comfort with the work environment*. This finding suggests that satisfaction with the internship is not synonymous with improvement. Student satisfaction levels about their internships seem to be more strongly related to the skills gained than to job prospects. Although job prospects are commonly a primary issue which is stressed as a reason to pursue an internship, the fact that the satisfaction students gain from an internship appears to be more strongly related to skills gained; the acquisition of *new skills* should also be stressed when attempting to market internships to students.

Similarly, the relationship between *communication skills* and internship satisfaction is found to be weaker than *new skills*, and is marginally significantly less important than *positive work environment*. This could be explained by realizing that students may not perceive that the *communication skills* gained from their internships are as valuable as other skills. Likewise, it could be that students experienced more problems in the area of communication which lowered their satisfaction level with their internship.

Finally, the *new skills* factor is significantly less strongly related to internship satisfaction than the factor related to *improved job prospects* – where students' satisfaction with their internships is related to the intern's job prospects. To entice students to join internships, coordinators need to ensure that the internship experiences are available to students. This provides students with experiences which will equip them to compete in the job market, and increase their satisfaction levels.

6. Conclusion

This paper studied the evaluation of an internship training program

for information technology and computer science students during the 2014/2015, and 2015/2016 academic years. Although the overall results and findings have shown positive student feedback, the faculty should be aware of the need to effect continuous improvement of certain aspects as mentioned by the students in order to ensure effective planning and implementation of internship programs among undergraduate students.

More structured and intensified internship programs should be continuously made compulsory at the undergraduate level. This endeavor aims at providing more work exposure to undergraduates and better bridging of classroom learning to workplace practice. Employers can do their part by engaging the interns in problem-solving and decision-making processes, under staff mentoring. Performance of interns should be solely based on employer assessments.

The objective of the paper was to identify the student satisfaction levels about the internship program and; to explore student comments and suggestions with regards to improving internship program. A sample of 60 students responded to a scale consisting of 23 factor items developed to assess the experience and the benefits students receive from participating in internships. Factor analysis identified six factors that have been observed to be significantly correlated with student satisfaction levels. Correlational analysis also indicated positive relationships between student satisfaction levels and their confidence in their ability to obtain a full-time position and the perceived importance of internships for future career success. A marginally significant relationship was observed for the likelihood of obtaining a position with the interning company.

The study faces several limitations which may constrict the generalizability of the results such as the small sample size, and the lack of an attempt to control differences in the type of internships. Future research should extend the analysis to include universities of different characteristics, and control the various types of internship experiences. Furthermore, the analysis can be expanded to examine other disciplines, such as education and arts.

Competing interests

The authors declare that they have no competing interests.

References

- Adawiyah, D. M., & Yazid, Z. M. (2013). Employment pattern. In R. Rohaiza (Ed.), *First degree and post-Graduate IUM tracer study 2013* (pp. 199–326). Malaysia, Kuala Lumpur: Alumni and Career Services Divisions, IUM and Ministry of Education.
- Alexei, V. B., Galina, G. V., & Tamara, G. S. (2013). Regional aspects of labour management. *Middle-East Journal of Scientific Research*, 16, 1105–1108.
- Aznan, Z. S., & Rohaiza, S. (2013). Effectiveness of study programme and self-readiness.

- In R. Rohaiza (Ed.), *First degree and post-graduate IIUM tracer study 2013* (pp. 101–144). Malaysia: Kuala Lumpur: Alumni and Career Services Divisions, IIUM and Ministry of Education.
- Bennet, R. (2002). Employers' demands for personal transferable skills in graduates: A content analysis of 1000 job advertisements and an associated empirical study. *Journal of Vocational Education & Training*, 54(4), 457–476.
- Bilsland, C., Nagy, H., & Smith, P. (2014). Planning the journey to best practice in developing employability skills: Transnational university internships in Vietnam. *Asia-Pacific Journal of Cooperative Education*, 15(2), 145–157.
- Bryman, A., & Bell, E. (2015). *Business research methods* (4th ed.). Oxford: Oxford University Press.
- Bryman, A. (2008). *Social research methods*. Oxford: Oxford University Press.
- D'Abate, C., & Youndt, M. A. (2009). Making the most of an internship: An empirical study of internship satisfaction. *Academy of Management Learning and Education*, 8(4), 527–539.
- Diah, N. M., Abd Rahman, K., Mustari, S., & Ramli, N. S. (2014). Internship in sociology: A new dimension of increasing students' employability in Malaysian job market. *World Applied Sciences Journal*, 30, 263–268 [Innovation Challenges in Multidisciplinary Research & Practice].
- Dunn, O. J., & Clark, V. A. (1969). Correlation coefficients measured on the same individuals. *Journal of the American Statistical Association*, 64, 366–377.
- Garland, D., Garland, K. V., & Vasquez, E. (2013). Management of classroom behaviors: Perceived readiness of education interns. *Journal of the Scholarship of Teaching and Learning*, 13(2), 133–147.
- Gupta, P. B., Burns, D. J., & Schiferl, J. S. (2010). An exploration of student satisfaction with internship experiences in Marketing. *Journal of Business Education and Accreditation*, 2(1), 27–37.
- Hughes, C. (1998). Practicum learning: Perils of the authentic workplace. *Higher Education Research & Development*, 17, 207–227.
- Idrus, H., MohamedNoor, A., Salleh, R., & MohdHashim, H. (2010). An exploratory study on interns' communicative abilities: The industrial internship experience, in engineering education (ICEED), 2010. *2nd international congress*, 1–6.
- Knouse, S. B., & Fontenot, G. (2008). Benefits of the business college internship: A research review. *Journal of Employment Counseling*, 45, 61–66.
- Ko, W. H. (2008). Training, satisfaction with internship programs, and confidence about future careers among hospitality students: A case study of universities in Taiwan. *Journal of Teaching in Travel & Tourism*, 7(4), 1–15.
- Misiran, M., Yusof, Z. M., Mahmuddin, M., & Yasin, A. (2013). Exploring internship readiness among final year students in university: A case study? *Australian Journal of Basic and Applied Sciences*, 7(12), 180–183.
- Muhamad, R., Yahya, Y., Shahimi, S., & Mahzan, N. (2009). Undergraduate internship attachment in accounting: The interns perspective. *International Education Studies*, 2, 49–55.
- Paulins, V. A. (2008). Characteristics of retailing internships contributing to students' reported satisfaction with career development. *Journal of Fashion Marketing and Management*, 12(1), 105–118.
- Posner, B. Z. (2008). *On leadership*. AACSB international, 7, Biz Ed26–27 3.
- Ruhanen, L., Robinson, R., & Breakey, N. (2013). A tourism immersion internship: Student expectations, experiences and satisfaction. *Journal of Hospitality Leisure Sport & Tourism Education*, 13, 60–69.
- Sahrir, M. S., Ismail, T., Mustapha, N. H., Abu Bakar, R., Man, S., Ahmad, M. A., et al. (2016). An evaluation of internship programme in improving graduate skills and marketability among arabic language students in IIUM from the perspective of malaysian job market. *Journal of Education and Human Development*, 5(1), 206–212 [Published by American Research Institute for Policy Development].
- Varshney, S., & Mishra, N. (2014). Students perspective towards internship at higher education institutes in Oman. *The International Journal of Business & Management*, 2(7), 109–114.
- Wye, C., Lim, Y., & Lee, T. (2012). *Perceived job readiness of business students at the Institutes of Higher Learning in Malaysia*, 1, 149–156 [6].