The Impact of Industrial Placement on BIS Graduate Employment and Further Educational Advancement

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Abstract

This study followed two cohorts of BIS (business information systems) graduates (one group had undertaken an industrial placement and the other group had not) and explored the impact of such placement on graduate employment and further educational advancement. 18 BIS graduates with industrial placement and 36 BIS graduates without such placement were involved in the study. Both cohorts graduated near the end of 2017 from the same university in Australia. This study focused on two research questions: (a) What are the likelihood that BIS graduates with and without internship experience secure an IT job? (b) Does internship experience influence BIS graduates' future educational advancement along the IT career paths? On one hand, hypothesis testing found a positive association between BIS internship experience and the success of securing current/first IT-related jobs. On the other hand, no association was found between BIS internship experience and the time spent to find the first IT-related jobs (immediately or some time) after graduation, and between having BIS internship experience and pursuing further studies. The results of this study have contributed to the existing body of mixture evidence on the potential benefits of industrial placement. Due to the quantitative nature of this study, the qualitative aspects (e.g., the quality and fit of internship experience with respect to the type of jobs seek) of internships were not covered.

Keywords: work-integrated learning, internship, industrial placement, graduate employment.

1. INTRODUCTION

A primary mission of universities is to create "values" for students, the industry, and the society, by equipping students with practical knowledge and hands-on experience. This value creation not only enhances the employability of the graduates, but also provides the industry with

"work-ready" graduates to propel the society forward. Universities attempt to achieve this mission via a range of approaches. One of these approaches is *off-campus internship* (also known as *industrial placement* or *industry-based learning*), which offers students an opportunity to apply their learning into practice in a partner organization and at the same time to earn academic credit towards their degrees (Linn, 2015; Ram, 2008; Scott, Ray, & Warberg, 1990).

Various studies (Brooks & Youngson, 2016; Gamble, Patrick, & Peach, 2010; Jackson, 2015; Tran, 2016) showed that internship experience consistently contributes to higher employment rates among university graduates. Some employers even consider that relevant work experience is more important than the degree classification and institution attended (Bennett, Eagle, Mousley, & Ali-Chodhury, 2008).

Despite many studies reporting a positive contribution of internship experience to graduate employment, the opinion does not completely lean to one side. For example, Price and Grant-Smith (2016) cited a Canadian study reporting that graduates in arts, humanities, and social science who participated in an internship program in fact experienced less chance to secure a relevant full-time job. Price and Grant-Smith (2016) further argue that, although most research studies generally support the assertion that internship experience improves graduate employment, these studies are based on surveys of student's or employer's perception (or both) instead of more objective employment statistics.

Adding to the above controversial views about the contribution of internships to graduate employment (Problem 1), we observed that there is relatively little research to investigate the impact of internship experience on the future development of graduates via further educational studies (Problem 2). Our study addresses these two problems.

2. STUDY OBJECTIVES AND RESEARCH QUESTIONS

The first objective of this study is to explore the impact of internship experience on BIS (business information systems) graduate employment. In our study, we were only interested in those cases where graduates found jobs that were "relevant" to their study disciplines (i.e., IT-related). When determining whether a job is IT-related, we focus on the job position rather than the company type. For example, a position of IT technical support officer or systems/business analyst in a retail company is considered "relevant". On the other hand, a position such as marketing representative or accountant in an IT company is considered "irrelevant".

To avoid verbosity, for the rest of this paper, "BIS graduates" are simply referred to as "graduates". Also, the term "IT-related jobs" (or simply "IT jobs") also covers jobs in information systems.

Research Question 1 (RQ1): What are the likelihood that graduates with and without internship experience secure an IT job?

To answer RQ1, the following five sub-questions have been formulated:

- RQ1.1: What are the *current* employment status of graduates with and without internship experience?
- RQ1.2: What are the percentages of graduates with and without internship experience who are employed in non-IT areas?
- RQ1.3: What are the percentages of graduates with and without internship experience whose *first* jobs were IT-related?
- RQ1.4: How long have graduates with and without internship experience spent to find their first IT jobs after graduation?

Research Question 2 (RQ2): Does internship experience influence graduates' future educational advancement along the IT career paths?

RQ1 and RQ2 address problems 1 and 2 mentioned above, respectively.

3. DATA COLLECTION AND RESEARCH SAMPLE

The study involved two cohorts of graduates completing a bachelor's degree in BIS from an Australian university (anonymously referred to as "UNIV"), with all of them graduated in 2017. There were 29 graduates with internship experience and 64 graduates without internship experience. The 64 graduates without internship experience completed a three-year full-time (or its part-time equivalent) course in BIS. This cohort of graduates is collectively referred to as the *Group-NI*. On the other hand, the 29 graduates with internship experience (in the year 2016) completed a four-year full-time (or its part-

time equivalent) course in BIS. This cohort of graduates is called the *Group-IN*. Both degrees have the same curriculum, except that the 4-year degree has a full-time industrial placement (which lasts for about 10–12 months) in the third year of the curriculum. Table 1 compares the curricula of these two degrees.

Year of 3-year BIS degree	Equivalent year of 4-year BIS degree
1st (on-campus study)	1st (on-campus study)
2nd (on-campus study)	2nd (on-campus study)
N/A	*3rd (industrial placement)*
3th (on-campus study)	4th (on-campus study)

Table 1: Comparison of Curriculum Between 3-year BIS and 4-year BIS degrees

We collected graduates' data from their LinkedIn profiles. We also sent messages to these graduates to: (a) ask for their consents, and (b) confirm with them if there are any updates to their LinkedIn profile data. After excluding those who were unwilling to participate, 18 graduates in Group-IN and 36 graduates in Group-NI participated in our study. Data collection was performed in May and June 2019.

4. DESCRIPTIVE STATISTICS

Observations 1 and 2 are related to the *current* jobs (as of 30 June 2019) of the graduates.

Observation 1 (RQ1.1 – Current Status): We first investigated the numbers and percentages of graduates who are currently working. For Group-IN, all the 18 graduates (100%) are currently working with the following breakdown: 17 (94.4%) of them are working in IT areas, and the remaining one (5.6%) is working in a non-IT area. On the other hand, among the 36 graduates in Group-NI: 22 (61.1%) are engaging in IT work; 8 (22.2%) are engaging in non-IT work; 5 (13.9%) are not working and are pursuing a full-time IT-related master's degree (e.g., information systems, information technologies, and cyber security); and the remaining one (2.8%) are currently unemployed. Thus, in terms of their employment in IT, the percentage was much larger in Group-IN than in Group-NI — a difference of 33.3% (= 94.4% – 61.1%).

Observation 2 (RQ1.2 – Current Non-IT Employment): Observation 1 states that one graduate (5.6%) in Group-IN and 8 graduates (22.2%) in Group-NI are currently employed in non-IT areas (a difference of 16.6%). For these graduates, an investigation was performed to find out at what time (or how soon after graduation) these graduates moved out of IT. The finding is shown in Table 2. In this table, if, for example, graduates graduated in December 2017 and started their non-IT jobs in January 2018, they are considered to commence the jobs "immediately" after graduation. As another example, if graduates graduated in December 2017 and started their non-IT jobs in February 2018, they are considered to commence their jobs "one month" after graduation. This calculation scheme was used in all the relevant analyses in the study.

	Number (%) of graduates			
Group	A	B	C	D
Group-IN	1 (100.0%)	–	–	–
Group-NI	3 (37.5%)	3 (37.5%)	1 (12.5%)	1 (12.5%)

Column A: Graduates who have been working in *non-IT areas during study & have continued these jobs after graduation*
Column B: Graduates who started their *non-IT jobs immediately after graduation*
Column C: Graduates who started their *non-IT jobs 1 month after graduation*
Column D: Graduates who started their *non-IT jobs 9 months after graduation*

TABLE 2: Graduates Currently Working in Non-IT Areas

Refer to the graduate in Group-IN and the 8 graduates in Group-NI in Table 2. Although we are not certain about the reasons why they do not work in IT, it is speculated that they had intentionally opted to work in non-IT areas rather than being unable to find IT jobs. The speculation is made because: (a) the percentages of graduates who had successfully entered the IT workforce were fairly high (94.4% for Group-IN and 61.1% for Group-NI), indicating that graduates (with and without internship experience) should not have great difficulty in securing IT jobs; and (b) it has been about 1.5 years after graduation, so this period should be long enough for these graduates to find IT jobs if they prefer to. Reason (b) is supported by our Observation 4 (to be discussed later) that it took only about 0.82 months and 1.92 months for graduates in Group IN and those in Group NI, respectively, to find their first IT jobs after graduation.

Observation 3 below focuses on the *first* jobs (*excluding the internship jobs*) of the graduates *during or after* their studies.

Observation 3 (RQ1.3 – First Job): An examination was conducted to analyze the percentages of graduates in both groups whose first jobs (excluding the internship jobs) during or after their studies were related to IT. In Group-IN, among the 18 graduates, 17 (94.4%) of them had their first jobs related to IT. For the remaining graduate (5.6%), he had been first working in catering services (non-IT-related) during study and has continued this job after graduation. In Group-NI, 31 graduates are currently working or had ever worked before (but are currently unemployed). Among these 31 graduates without internship experience:

- 21 (67.7%) had their first jobs in IT areas with the following breakdown: during study = 8 (25.8%); after graduation = 13 (41.9%); and
- 10 (32.3%) had their first jobs in non-IT areas with the following breakdown: during study = 4 (12.9%); after graduation = 6 (19.4%).

The above statistics show that almost all graduates (94.4%) in Group-IN whose first jobs were IT-related. In Group-NI, the percentages (both during and after study) of graduates whose first jobs were IT-related (67.7%) were much larger than those whose first jobs were non-IT-related (32.3%).

Observation 4 (RQ1.4 – Duration of Job Hunting): An analysis was conducted to compare the duration of job hunting between graduates with internship experience (Group-IN) and those without (Group-NI). This analysis focused only on those graduates who found their first IT jobs *after graduation*. In Group-IN, there were 11 such graduates. On average, they spent 0.82 months (range = 0–5 months) to start their first IT jobs after graduation. In Group-NI, there were 13 such graduates. On average, they spent 1.92 months (range = 0–8 months) to start their first IT jobs after graduation. Thus, on average, graduates in Group-NI spent more than double the time in finding their first IT jobs after graduation than those in Group-IN (although the absolute difference was not large — only 1.10 (= 1.92 – 0.82) months). Note that the duration of job hunting depends on many factors such as the economic situation of a society. Studying the impacts of various factors on the duration of job hunting is obviously outside the scope of this paper.

Observation 5 (RQ2 – Post-Internship): For the 18 graduates in Group-IN, 6 (33.3%) of them have continued their IT work at the placement companies after their internships had been completed. Their placement companies offered these graduates full-time employment contracts immediately after their internships. As such, these graduates had to finish their final year (i.e., Year 4) of study in part-time mode (e.g., by attending evening lectures after work). It was also noted that these graduates had managed to finish their final year of study in one year and, hence, were able to graduate in 2017 (together with other students in the same cohort in Group-IN). This observation clearly shows a great merit of internship opportunities and explains one possible way on how internship contributes to higher graduate employment rates.

5. HYPOTHESIS ANALYSIS

Hypothesis Development

In all the following hypotheses, the subscripts "0" and "1" indicate a null hypothesis and its corresponding alternative hypothesis, respectively.

Observation 1 states that the percentage of current IT employment of Group-IN was 33.3% larger than that of Group-NI. Several studies (Brooks & Youngson, 2016; Gamble, Patrick, & Peach, 2010; Jackson, 2015; Tran, 2016) also argued that internship experience contributes to higher graduate employment rates. Accordingly, the following null and alternative hypotheses were formulated:

> Null Hypothesis 1 ($H1_0$ – Current IT Employment): The chance of BIS graduates with internship experience who are currently working in IT areas is the same as those without internship experience.
>
> Alternative Hypothesis 1 ($H1_1$ – Current IT Employment): The chance of BIS graduates with internship experience who are currently working in IT areas is higher than those without internship experience.

Observation 2 states that 5.6% of graduates in Group-IN and 22.2% of graduates in Group-NI are currently employed in non-IT areas (a difference of 16.6%). This observation led to the following hypotheses:

> Null Hypothesis 2 ($H2_0$ – Current Non-BIS Employment): The chance of BIS graduates without internship experience who are currently working in non-IT areas is the same as those with internship experience.

Alternative Hypothesis 2 ($H2_1$ – Current Non-BIS Employment): The chance of BIS graduates without internship experience who are currently working in non-IT areas is higher than those with internship experience.

Observation 3 found that 94.4% of BIS graduates with internship experience had their first jobs related to IT, whereas such percentage dropped to 67.7% for their counterparts without internship experience. This led to the following hypotheses:

Null Hypothesis 3 ($H3_0$ – First IT Job): The chance of BIS graduates with internship experience whose first jobs (excluding the internship jobs) are IT-related is the same as those without internship experience.

Alternative Hypothesis 3 ($H3_1$ – First BIS Job): The chance of BIS graduates with internship experience whose first jobs (excluding the internship jobs) are IT-related is higher than those without internship experience.

Observation 4 shows that BIS graduates without internship experience spent more than double the time in finding their first IT jobs after graduation (mean = 1.92 months) than those with internship experience (mean = 0.82 months). The following two alternative hypotheses ($H4_1$ and $H5_1$) and their corresponding null hypotheses were formulated in accordance with this observation:

Null Hypothesis 4 ($H4_0$ – Duration of IT-Related Job Hunting): The time spent by BIS graduates without internship experience to find their first IT jobs (after graduation) is the same as those with internship experience.

Alternative Hypothesis 4 ($H4_1$ – Duration of IT-Related Job Hunting): The time spent by BIS graduates without internship experience to find their first IT jobs (after graduation) is longer than those with internship experience.

Null Hypothesis 5 ($H5_0$ – IT-Related Job Immediately after Graduation): The chance of BIS graduates with internship experience successfully secured an IT job *immediately after graduation* is the same as those without internship experience.

Alternative Hypothesis 5 ($H5_1$ – IT-Related Job Immediately after Graduation): The chance of BIS graduates with internship experience successfully secured an IT job *immediately after graduation* is higher than those without internship experience.

Observation 1 found that none from Group-IN has pursued full-time further studies. On the other hand, 5 out of the 36 (13.9%) BIS graduates in Group-NI are currently studying for a full-time master's degree in an IT-related field. One of the authors of this paper had previously taught at UNIV and had supervised all the graduates in Group-IN. When supervising these interns, some of them expressed that they would not advance to further studies (at least in the next few years after graduation) because they already spent one extra year in industrial placement when compared with their counterparts studying for a three-year BIS bachelor's degree. This feedback from interns has resulted in the following hypotheses:

Null Hypothesis 6 ($H6_0$ – Further Full-Time Study): The chance of BIS graduates without internship experience to pursue further full-time study within 1.5 years after graduation is the same as those with internship experience.

Alternative Hypothesis 6 ($H6_1$ – Further Full-Time Study): The chance of BIS graduates without internship experience to pursue further full-time study within 1.5 years after graduation is higher than those with internship experience.

When defining the above hypotheses, *directional hypotheses* were used, because we aimed at predicting the "nature" of the effect of the independent variable (e.g., internship) on the dependent variable (e.g., graduate employment).

Hypothesis Testing and Results

Considering the types of independent and dependent variables: (a) the nonparametric Chi-Square test seemed to be applicable for testing the null hypotheses $H1_0$, $H2_0$, $H3_0$, $H5_0$, and $H6_0$, and (b) the nonparametric Mann-Whitney U test was apparently applicable for testing the null hypothesis $H4_0$. In the SPSS statistical package, both the Chi-Square test and the "original" Mann-Whitney U test adopt the asymptotic method for generating *p*-values. The *asymptotic method* generates *p*-values based on the assumption that the sample is large and conforms to a particular distribution (e.g., normally distributed), which is not the case for this study.

To mitigate this problem: (a) Fisher's Exact test was used instead of the Chi-Square test for testing $H1_0$, $H2_0$, $H3_0$, $H5_0$, and $H6_0$, and (b) the

"original" Mann-Whitney U test with the asymptotic method was replaced by the Mann-Whitney U test with the exact method for testing $H4_0$. Note that, when comparing with the asymptotic method, Fisher's Exact test and the exact method adopted by the Mann-Whitney U test always produces a reliable result, regardless of the size, distribution, sparseness, or balance of the data (Mehta & Patel, 2011).

The applicability of the Mann-Whitney U test for testing $H4_0$ was further analyzed. An assumption of applying this statistical test is that the distribution of scores (time spent for finding the first IT job) for both groups of the independent variable (Group-IN and Group-NI) have similar shapes. A histogram for the distribution of time spent for each group was generated; both histograms showed similar distribution patterns. This finding thus confirmed the applicability of the Mann-Whitney U test to $H4_0$.

Null hypothesis	Statistical test & method used	One-tailed *p*-value	Reject the null hypothesis in favor of its alternative hypothesis?
Contribution of internships to employment (related to Problem 1 and RQ1 (and its research sub-questions))			
$H1_0$	Fisher's Exact test	0.009	Yes
$H2_0$	Fisher's Exact test	0.120	No
$H3_0$	Fisher's Exact test	0.030	Yes
$H4_0$	Mann-Whitney U test with the exact method	0.145	No
$H5_0$	Fisher's Exact test	0.329	No
Impact of internship experience on further educational advancement (related to Problem 2 and RQ2)			
$H6_0$	Fisher's Exact test	0.119	No

TABLE 3: Hypothesis Testing Results

This study adopted a significance level of 0.05. Table 3 summarizes the statistical testing results of the null hypotheses. Overall, statistical evidence showed that, when compared with BIS graduates without internship experience, the current ($H1_1$) and first jobs ($H3_1$) of BIS graduates with internship experience were more likely to be IT-related. Evidence also showed that there was no significant difference between the BIS graduates with and without internship experience in terms of: (a) currently working in non-IT areas ($H2_0$), (b) time spent to find the first IT jobs after graduation ($H3_0$), (c) securing an IT job immediately after graduation ($H4_0$), and (d) pursing further full-time study shortly after graduation ($H5_0$).

6. DISCUSSION

Contribution of Internships to Employment

Hypothesis testing for $H1_0$ and $H3_0$ showed a positive association between BIS internship experience and the likeliness of securing current/first IT jobs (see Table 3). The education blog of the Good Universities Guide (2019) gives a plausible reason for this positive association. Internships offer an effective way for students to branch out from their courses into the relevant industry and expand their lists of contacts, from university academics to partitioners who are currently working in the industry. It has been said that "it's not about *what* you know; it's about *who* you know" (Good Universities Guide, 2019). After students have finished their internships, they often have a higher chance to obtain great references from their main industry mentors and a range of potential referees, thereby improving their chances of securing jobs related to their study disciplines after graduation. Furthermore, some "lucky" interns with excellent performance within their work placements may even be asked by their employers to stay on in a more permanent role before or after graduation. Indeed, in this study, among the 18 BIS graduates in Group-IN:

(a) Immediately after completing their industrial placements (at the end of Year 3), 6 (33.3%) were offered permanent employment contracts. Accordingly, these 6 graduates switched their final-year study to the part-time mode.

(b) Either immediately after or some time after graduation, 3 (16.7%) re-joined the companies where they completed their internships.

Note that, for the 6 and 3 graduates in (a) and (b), respectively, their permanent jobs (after industrial placement or graduation) at the companies where they completed their internships are also IT-related.

One may argue that the association between BIS internship experience and the likeliness of securing current/first IT jobs may be influenced by the graduates' GPAs. We have further investigated this issue. When collecting data from graduates, some of them hesitated to disclose their GPAs. As a result, there were only 5 graduates in Group-IN and 9 in Group-NI disclosed their GPAs. Table 4 shows the GPAs of these graduates and their responses related to hypotheses $H1_0$ and $H3_0$ (each row of Table 4 corresponds to one such graduate).

Group	Currently working in an IT area? ($H1_0$)[†]	First job is IT-related? ($H3_0$)
Group-IN		
3.8	Y	Y
3.6	Y	Y
3.5	Y	Y
3.3	Y	Y
2.6	Y	Y
Group-NI		
3.9	Y	Y
3.7	Y	Y
3.6	N	N
3.5	Currently studying for an IT Masters' degree	
3.4	Y	N
3.3	Y	Y
3.3	N	N
3.3	Currently studying for an IT Masters' degree	
3.0	Y	Y

([†]) As of 30 June 2019

TABLE 4: Impact of Graduates' GPAs on Hypotheses $H1_0$ and $H3_0$

Among the 5 graduates in Group-IN who have disclosed their GPAs, all of them are currently working in IT areas and their first jobs are/were IT-related. Among the 9 graduates in Group-NI who have disclosed their GPAs, 2 graduates are studying for IT Masters' degrees. For the remaining 7 graduates in Group-NI, two of them are currently working in non-IT areas and three of them whose first jobs are/were non-IT related.

The pattern as shown in Table 4 indicates that GPAs do not have an obvious influence on the test results for $H1_0$ and $H3_0$. We speculate that GPAs may have an influence on the *reputation* of companies where the graduates secured their jobs. However, this investigation is beyond the scope of our current study.

This study adds to the controversial debate on the impact of internship experience on graduate employment. Hypothesis testing of $H4_0$ and $H5_0$ have not revealed a positive association between internship experience and the time spent to find the first IT jobs (immediately or some time) after graduation. Similar to $H1_0$ and $H3_0$, we have also considered the potential impact of graduates' GPAs on the hypothesis testing results of $H2_0$, $H4_0$, $H5_0$, and $H6_0$. We found no obvious impact of GPAs on these four hypotheses. For example, Table 5 shows how long graduates in Group-IN have spent to secure their first IT jobs. The table indicates that graduates' GPAs did not have an obvious impact on the duration of IT-related job hunting.

Group-IN[†]	Number of months to secure the first IT jobs
3.8	0
3.5	5
3.3	2
2.6	0

([†]) Excluding the graduate who continued to work in her placement company immediately after the internship period

TABLE 5: Impact of Graduates' GPAs on Hypothesis $H4_0$ (Group-IN)

Observation 4 found that, on average, BIS graduates with and without internship experience spent 0.82 months and 1.92 months, respectively, to start their first IT jobs after graduation. The difference in time spent between the two cohorts was very small — only 1.1 (= 1.92 – 0.82) months. Therefore, if only considering the short-term employment aspect (and ignoring other aspects such as the quality of the job position secured and future career advancement), it may not be worthwhile to spend about an extra year on industrial placement to achieve only a very marginal reduction in the time spent on finding an IT job. Furthermore, one can argue that, instead of spending four years to obtain a bachelor's degree (with internship), students can pursue a three-year bachelor's degree (without internship) and a one-year postgraduate diploma using the same amount of time. The issue here is, in job hunting, whether having a postgraduate diploma (plus a three-year bachelor's degree) but without industrial placement is more competitive than having a bachelor's degree with internship experience. Certainly, this issue is subject to debate and is potentially a research area that warrants further investigation.

Implication: To obtain the benefits of internships but without requiring students to spend too much time on gaining internship experience, higher education administrators may consider offering shorter-term internships (e.g., 3–6 months) to students. It is argued that shorter-term internships will likely be more focused and intense, thereby reducing boredom due to too much free time (Yoon, 2019).

Impact of Internship Experience on Further Educational Advancement

Testing $H6_0$ revealed that there was no positive association between having internship experience and pursuing further studies. Observation 4, together with the testing results for hypotheses $H4_0$ and $H5_0$, may provide an explanation. As

discussed in the preceding paragraph, on average, BIS graduates with and without internship experience only spent 0.82 months and 1.92 months, respectively, to secure their first IT jobs after graduation (Observation 4). Thus, these graduates might not have a strong need for pursuing further studies (e.g., a postgraduate diploma or a master's degree) with a view to finding an IT job, if they did not emphasize much on the quality of that job and future career advancement at the time of graduation.

This study was based in Australia. Knott (2015) reported that the number of university graduates with large debts in Australia has been growing but fewer graduates have earned enough to pay back their loans. In addition, the Australian Government has implemented policy change to force university graduates to pay their study loans sooner (Karp, 2017; Workman, 2017). Worse still, postgraduate studies in Australia have been increasingly expensive over the years. All these factors will diminish the desire of those students with a bachelor's degree to pursue further studies.

Implication: Higher education administrators may consider incorporating a credit-bearing, shorter-term internship component in their postgraduate study programs. This will make postgraduate studies more appealing to those graduates who are considering advancing their academic qualifications.

7. LIMITATIONS OF STUDY

Small Sample of Graduates

This study only involved 18 (in Group-IN) and 36 (in Group-NI) BIS graduates. It would be desirable if more graduates were involved in the study. To alleviate this problem, the study used Fisher's Exact test and the Mann-Whitney U test with the exact method for statistical analysis. These selected tests and methods always produce a reliable result even when the sample size is small, and they can be applied to any distribution, sparseness, and balance of the data (Mehta & Patel, 2011).

Period of Data Collection

Ideally, all the data should be collected within a very short period for the purpose of comparison and analysis. However, due to the tediousness of collecting graduates' data and their consents, data collection spanned about a month (between May–June 2019) to complete. In principle, though not really very likely so, some changes could have occurred in the graduates' employment and educational status during data collection.

Quantitative Nature of Study

This study was primarily quantitative, therefore it did not cover the qualitative aspect of BIS internship experience. One can argue that some graduates are inclined to choose jobs that fit their internship experiences. Investigating this issue, however, is beyond the scope of this study. Nevertheless, it would be worthwhile to investigate: (a) the *quality* and *fit* of BIS internship experience, and (b) how these two aspects affect the BIS graduates' job choices or decision to pursue graduate study directly after graduation.

8. SUMMARY AND CONCLUSION

This study investigated the impact of industrial placement on two aspects, namely, BIS graduate employment and further educational advancement. For the graduate employment aspect, the results of this study have contributed to the existing body of mixed evidence on this aspect. On one hand, the study found a positive association between BIS internship experience and the likeliness of securing current/first IT jobs. On the other hand, the study found no association between BIS internship experience and the time spent to find the first IT jobs (immediately or some time) after graduation, thereby adding to the controversial debate on the impact of internship experience on graduate employability. For the further educational advancement aspect, the study found no association between having internship experience and pursuing further studies. This study did not explore the impact of BIS industrial placement on the quality of the IT jobs secured and future promotion prospect. Therefore, it would be worthwhile for future studies to explore these areas of research.

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