Understanding College Students' Desire for Internships in the Information Technology Industry

Paul Juinn Bing Tan[1,a], Chi-Hsuan Lin [2,b*], and Wei-Chuan Wang [3,c]

[1] *National Penghu University of Science and Technology, Department of Applied Foreign Languages, Penghu, China*

[2] *National Penghu University of Science and Technology, Department of Information Management, Penghu, China*

[3]*Chinese Culture University, Department of Finance, Taipei, China*

[a] pashatan@yahoo.com.tw, [b*] lin600115@yahoo.com.tw, [c] mark1682074@yahoo.com

Key word Internship, Counseling internship, Human resources, Employment market, Action learning, Technology transfer, Aedes aegypti, Aedes aegypti.

Abstract This study focuses on the internships (job shadowing) of university students in the information technology industry in Taiwan. The research methods include a literature review and a questionnaire. The participants are university students who have participated in internship programs. Using those students' perceptions, our research analyzes the students' preferences and experiences from the internships that they participated in. According to statistical analyses of the results, we were able to conclude the following: Technical and professional students tend to prefer internships on campus. Moreover, students agree about internship goals and satisfaction. The skills learned from being an intern are helpful in finding a job in the future.

Introduction

Research background The background of this study involves the reasons that college students participate in internships. Campus internships strengthen students' professional competence and professional training. Today, Taiwanese business workplaces reveal a variety of patterns. Technical and vocational schools are increasingly focused on on-campus and off-campus practice. For example, moving from theory to practice is now the major focus of education. To enable students to understand relevant developments within an industry, schools have signed internship contracts with companies. Thus, students can experience the workplace before graduating to better understand operations, patterns and trends in their field.

Research purposes This study identified the following research purposes:

1. Understanding college students' cognitive situations in various types of internships.

2. Exploring internship demands for industrial projects in human resources, knowledge management, and social responsibility.

3. Promoting countermeasures for college students' internship units.

Literature Review

Definitions of Internship and Internship Guidance

The definitions of internship Today, internships have become a collaborative effort between industry and academia that involves and benefits three main participants:

(1) The school: School education systems are strengthened through cooperation with industry because students gain more experience and enhance their technical skills.

(2) The industry: Industry-university cooperation has become an the important part of human resources within industries, including recruitment strategies, building teaching systems, and cooperative manpower for planning education, as well as education, training and other matters.

(3) The student: Students learn practical applications and gain experience related to their chosen career path. Moreover, they develop technological knowledge about companies' modes of operations and environments. Through industry-university cooperation opportunities, interns also learn more about their own work ethic and orientation, which helps them to determine their own future career plan.

Chen, Hsin-Hung defines an internship (field), using the Oxford English Dictionary and the Merriam-Webster dictionary, as: People who do research or a practical job in a classroom or a laboratory [1]. This means that students leave the environment of the school and learn skills and professional service practices from actual organizations in an industry. Chen notes that school education can be appropriately used in industry. This helps students learn by theory and practice while also allows them to build confidence in learning and promotes personal growth. Therefore, schools should arrange internship courses. Tayler, K. suggests that the experience of being an intern trains people for industry. Experiences, professional skills, and interpersonal relationships are difficult for schools to replicate, and after an internship, students often have enough knowledge about their chosen profession that the industry can recruit the intern for official employment [2]. On the industry side, this can solve the problem of seasonal human resources and reduce human resource costs.

Hypothesis 1: Does a high desire to participate in an internship represent a strong determination to learn?

Information about internships

Types of internships At present, domestic tertiary institutions are not required to implement internship systems. All such programs are voluntary, and each institution's implementation, approach, and grading scales are individual. In 1999, researchers participated in a test conducted by the Ministry of Education on technical functionality that has provided statistical information on technical school cooperation with private industry. There are many designs for providing internship

2

interactions with an actual workplace, including a rotation model, a stepped program, a learning type, a delegate type, an observation type, a part-time type, a scholarships type, a research and development projects type, a walk reading type, an audition mode type, an OEM type, a building lessons type, a quarter type, a staff exchange type, a sandwiches type, and another 15 sub-types. Each has its own specific approach and practice.

Barbara, Ostrowski, Martin et al. claimed that most training methods have no interaction, including on what work is done or what is expected at work. As expected, it is also believed that technological advances have expanded the modes of training and extended them over varying distances [3]. The 13 personal files from this study should help practitioners to determine their needs and particular situation and help identify which training methods are the most suitable for their business.

Table 2.1 Overview of Training Methodologies

Training Method	Definition	Example	Authors & References
Case study	Develop skills to generate a solution	For every bank management course on the list, choose a bank, provide a hypothetical situation, and ask participants to financial analysis application.	Bruner, Gup, Nunnally, and Pettit, 1999; Elam & Spotts 2004; Menkel-Meadow, 2000 [4, 5, 6]
Game-based training	Trainee decision-making	United States team competition in popular reality TV shows, leaving a final winner	Gentry 1990; Brown, 2004 [7, 8]
Internship	Supervised, practical training	Counseling psychology	Ballard & Carroll, 2005; Stedman, 1997 [9, 10]
Job rotation	A limited amount of time while still maintaining the original work	Rotation in five different areas of work so that by the end of the program, a participant can work in work areas of all five companies in a distribution center	Barbian, 2002; Ho, Chang, Shih, and Liang, 2009; Wilson, 2000 [11, 12, 13]
Hidden work	Witness the details of a job and the natural working environment first-hand to perform a specific job	In the United States, opportunities are provided for employees at all levels of work in the hotel franchising industry to gain an understanding of how to be a hotel manager.	Tayler, 2008 [2]

3

Lecture	Involves the dissemination of training material by a trainer to a group of trainees	Interactive electronic classroom instruction for students to watch and listen to lectures automatically displays the appropriate slide or lecture page.	Zhang, Zhao, Zhou, and Nunamaker, 2004 [14]

Table 2.2 Overview of Training Methodologies

Training Method	Definition	Example	Authors & References
Guidance and apprenticeships	Mentorship to provide support and guidance to less-experienced employees; apprenticeship is for the development of job skills.	Organizational Development Learning Center provides a 12-month counseling program at the University of Toronto with more advanced college leaders, helping participants to develop skills and university partner staff experience.	Andrews and Chilton, 2000; http://www.odlc.utoronto.ca/mentoring [15]
Programming instructions	Administered by an electronic program through various types of electronic equipment	A language pronunciation training computer program that uses a built-in, automatic speech recognition component and provides automatic feedback for word and sentence correctness	Gist, Rosen, and Schwoerer, 2006; Neri, Mich, Gerosa, and Giuliani, 2008; Russ-Eft, 2002 [16, 17, 18]
Role modeling	Involves student audience participation	Wheelchair skills training curriculum developed a user's manual for how to safely get a wheelchair up to curb dangerous and difficult rock-climbing skills	Kirby, Bennett, Smith, Parker, & Thompson, 2008; Verma & Singh, 2010; Wang & Hsu, 2008; Sheets, 1998 [19, 20, 21, 22]
Role play	Ask learners to assume a role in a fantasy scene or a series of stories	Developed for Reference Assistants in a library, followed by coached discussions	Sheets, 1998 [22]
Simulation	Involves the use of simulators to develop specific skills through practice and	A Harvey Simulator allows life-size models that can simulate 27 heart conditions to enable trainees to perform various physical tests, including blood	Kneebone, 2003 [23]

4

	imitation conditions of sensory experience	pressure, taking a pulse, impulse and breathing checks, to develop diagnostic skills.	

Table 2.3 Overview of Training Methodologies

Training Method	Definition	Example	Authors & References
Simulation	Involves the use of simulators to develop specific skills through practice and imitation conditions of sensory experience	A Harvey Simulator allows life-size models that can simulate 27 heart conditions to enable trainees to perform various physical tests, including blood pressure, taking a pulse, impulse and breathing checks, to develop diagnostic skills.	Kneebone, 2003 [23]
Based on exciting training	Use some type of stimulus to motivate learners	Using music to eliminate or mitigate failure and induce relaxation or clues to success to promote learning mathematics	Lam, Kolomitro, & Alamparambil, 2011; Kumagai, 2008; Zemke, 1995 [24, 25, 26]
Team training	Can only be used to interactively teach groups of individuals or to improve mutual knowledge within a team	Practice questions, written opinions of team members, and developing team consensus	Wheelan, 2005; Craig, 1996 [27, 28]

An internship is a longer term work experience (several weeks to a year), and it may involve pay or academic credit. Interns work within an organization to support real work functions. Employers and sponsoring organizations select and hire interns.

Hypothesis 2: Does information about the internship and the existence of an internship pipeline affect the desire of a college student to obtain an internship?

Employment following an internship

Employment aspirations The employment aspirations of individuals seeking to enter the workplace are set by the students in the process of performing an internship as they determine their own preferences, attitudes, and decision-making processes and explore their aptitudes, abilities, and interests, as related to the nature of the work, their personal development, and ability to adapt to the corporate culture in response to environment changes.

5

In 2004, Chen, Hsin-Hung suggested that personal employment aspirations are about entering the job market, making professional choices, and a person's decision-making attitude or behavior [1]. In society, an individual's employment aspirations also integrate human resource allocation to solve societal inadequacies. Thus, an individual is often willing to choose employment not only consistent with one's aptitudes, abilities, and interests but also for the sake of society as a whole. This generates changes in an individual's political and economic environment as well as goals of self-growth and adaptation in response to societal needs.

Hypothesis 3: Does being an intern make it easier to find a job?

Methodology

Participants There were 380 participants (218 males and 162 females) in this study with a grade distribution of 4.5% freshman (N = 17), 11.1% sophomores (N = 42), 28.2% juniors (N = 107), and 56.3% seniors (N = 214). Geographically, 84 students came from northern Taiwan, 30 from central Taiwan, 106 from southern Taiwan, 9 from eastern Taiwan, and 151 from outlying islands of Taiwan.

Table 3.1. Demographic Variables Summary Table

Demographic variables	Number (No.)	Percent (%)	Demographic variables	Number (No.)	Percent (%)
Gender			**School location**		
Male	218	57.4%	Northern	84	22.1%
Female	162	42.6%	Central	30	7.9%
Grade			Southern	106	27.9%
Freshmen	17	4.5%	Eastern	9	2.4%
Sophomore	42	11.1%	Outlying islands	151	39.7%
Junior	107	28.2%			
Senior	214	56.3%			

For 315 students, their departments provided internship courses, and for the reaming 65 students, their departments did not. For 342 students, their departments provided actual internship opportunities, and for 38 students, their departments did not. For 280 students, their departments set the hours of the internships, and for 100 students, their departments did not determine the hours of the internship.

Table 3.2 True-false Variables Summary Table

True-False variables	Number (No.)	Percent (%)
Does your department provide a course about internships?		
True	315	82.9
False	65	17.1
Does your department provide internships?		

6

True	342	90
False	38	10
Does your department set the hours for internships?		
True	280	73.7
False	100	26.3

Validity and reliability In quantitative analysis, the internal reliability coefficient (Cronbach's Alpha) for 25 items regarding students' desire for college internships and their autonomy in learning was 0.91. The higher the result is above 0.75, the greater the internal reliability of the scale.

The validity of the questionnaire is based on the integration of academic theory and practical experience in the design. All sources were primary sources of reference literature and practical experience taken from participant interviews. The validity of the questionnaire should be able to meet certain requirements, and the questionnaire used in this study meets the requirements of reliability and validity.

Result

Questionnaire for gender used an independent-samples t test The questionnaire for gender used an independent-samples *t* test that was calculated comparing the mean score of Males with the mean score of Females. The tables demonstrate that Gender within the questionnaire was not significant. That is, equal number of Males and Females participated in all of the questions of the questionnaire.

Confirmation of the hypotheses Table 4 shows the results of the Study's Hypotheses. Because $p < .05$, all of the hypothesis are supported and established.

Table 4.1 Confirmation of hypotheses

The Study of Hypothesis	confirmed
H1. Does a high desire to participate in an internship represent a strong determination to learn?	Yes
H2. Does information about the internship and the existence of an internship pipeline affect the desire of a college student to obtain an internship?	Yes
H3. Does being an intern make it easier to find a job?	Yes

Discussion

Conclusions The following results were determined by this study:

(1) Students in the southern area and outlying islands experience more significant resistance in fulfilling their desires to pursue internships.

7

This study investigated college students' desires to pursue an internship in Taiwan. We discovered that students in the southern areas and outlying islands experience more significant resistance in fulfilling their desire to pursue an internship. Students in the southern areas experience more resistance in their desire to pursue an internship because of dengue fever. Data released by the Centers for Disease Control, R.O.C, showed that the southern areas had the highest number of dengue cases in Taiwan. This is because the main cause of dengue in Taiwan is *Aedes aegypti*, and *Aedes aegypti* is mainly located in southern Taiwan. Students from other locations do not know how to effectively prevent dengue, so they avoid the dengue epidemic in southern Taiwan by pursuing internships and experience in the workplace. Students in outlying islands also experience more significant resistance in fulfilling their desire to pursue an internship.

Suggestions

(1) Suggestions for future employment:

1.   When schools develop professional courses, they should examine market research and feasibility studies, which can enhance the reasonableness of developing a professional course. Schools should also cooperate with large enterprises and concentrate on training talented persons and sending them to the enterprise. This allows a win-win situation for both schools and enterprises.

2.   When students learn in school, they should not only learn theoretical knowledge but should also try to acquire more practical experience; more internships with businesses make students more adaptable to different social settings, thereby helping them to avoid being ignorant when entering society in general.

(2) Suggestions for future studies:

Due to several limitations on time, manpower, information, and other factors that are out of our control, our study is imperfect; therefore, we have some suggestions for following studies:

1.   Most of the current research focuses on the resources provided to the students and students' perceptions on internships and hosting organizations, that is, students are generally the starting point. We suggest that subsequent studies use hosting organizations as a starting point for future research, thus allowing students to understand what enterprises are looking for in interns and employees. Such research would also allow schools to improve the curriculum in accordance with current industry practices.

2.   This study sampled only students in Taiwan. We suggest that subsequent studies make a comparison of the differences in pursuing internships between different countries. This will help facilitate a more effective internship system for students in Taiwan.

References

[1]Chen, H.H. (2004). Study selection of food and beverage department for employment aspirations Students' Work Values. *Catholic University Hospitality Department of Management Thesis.* Taipei.
[2] Tayler, K. (2008, September). 15 ways to train on the job. *HR Magazine*, 105-108.
[3] Barbara, O.M., Klodiana, K, & Tony C. M. Lam (2014). Training Methods: A Review and Analysis. *Human Resource Development Review*, *13*(1) 11–35
[4] Bruner, R. F., Gup, B. E., Nunnally, B. H., Jr., & Pettit, L. C. (1999). Teaching with cases to

8

graduate and undergraduate students. *Financial Practice and Education*, *9*, 138-146.

[5] Elam, E. L. R., & Spotts, H. E. (2004). Achieving marketing curriculum integration: A live case study approach. *Journal of Marketing Education*, *26*, 50-65.

[6] Menkel-Meadow, C. (2000). Telling stories in school: Using case studies and stories to teach legal ethics. *Fordham Law Review*, *69*, 787.

[7] Gentry, J. (1990). *Guide to business gaming and experiential learning*. London, England: Nichols Publishing.

[8] Brown, D. (2004). What do apprentices think of the apprentice? *CBC News Online*. Retrieved from http://www.cbc.ca/arts/features/apprentice/

[9] Ballard, S. M., & Carroll, E. B. (2005). Internship practices in family studies programs. *Journal of Family & Consumer Sciences*, *97*(4), 11-17.

[10] Stedman, J. M. (1997). What we know about predoctoral internship training: A review. *Professional Psychology: Research and Practice*, *28*, 475-485.

[11] Barbian, J. (2002). A little help from your friends. *Training*, *39*(3), 38-41.

[12] Ho, W. H., Chang, C. S., Shih, Y. L., & Liang, R. D. (2009). Effects of job-rotation on job satisfaction and organizational commitment. *BMC Health Services Research*, *9*(8), 1-10.

[13] Wilson, H. C. (2000). Emergency response preparedness: Small group training: Part 2. *Disaster Prevention and Management*, *9*, 180-199.

[14] Zhang, D., Zhao, J. L., Zhou, L., & Nunamaker., J. F., Jr. (2004). Can e-learning replace classroom learning? *Communications of the ACM*, *47*(5), 75-79.

[15] Andrews, M., & Chilton, F. (2000). Student and mentor perceptions of mentoring effectiveness. *Nurse Education Today*, *20*, 555-562.

[16] Gist, M., Rosen, B., & Schwoerer, C. (2006). The influence of training method and trainee age on the acquisition of computer skills. *Personnel Psychology*, *41*, 255-265.

[17] Neri, A., Mich, O., Gerosa, M., & Giuliani, D. (2008). The effectiveness of computer assisted pronunciation training for foreign language learning by children. *Computer Assisted Language Learning*, *21*, 393-408.

[18] Russ-Eft, D. (2002). A typology of training design and work environment factors affecting workplace learning and transfer. *Human Resource Development Review*, *1*, 45-65. Saiyadain, M. S. (2009). *Human resources management*. New Delhi, India: Tata McGraw-Hill. Salas, E., Wildman, J. L., & Piccolo, R. F. (2009). Using simulation-based training to enhance management education. *Academy of Management Learning & Education*, *8*, 559-573.

[19] Kirby, R. L., Bennett, S., Smith, C., Parker, K., & Thompson, K. (2008). Wheelchair curb climbing: Randomized controlled comparison of highly structured and conventional training methods. *Archives of Physical Medicine and Rehabilitation*, *89*, 2342-2348.

[20] Verma, A., & Singh, A. (2010). Webinar—Education through digital collaboration. *Journal of Emerging Technologies in Web Intelligence*, *2*(2), 131-136.

[21] Wang, S. K., & Hsu, H. Y. (2008). Use of the webinar tool (Elluminate) to support training: The effects of webinar-learning implementation from student-trainers' perspective. *Journal of Interactive Online Learning*, *7*(3), 175-190.

[22] Sheets, J. (1998). Role-playing as a training tool for reference student assistants. *Reference Services Review*, *26*(1), 37-41.

[23] Kneebone, R. (2003). Simulation in surgical training: Educational issues and practical implications. *Medical Education*, *37*, 267-277.

[24] Lam, T. C. M., Kolomitro, K., & Alamparambil, F. (2011). Empathy training: Methods, evaluation practices, and validity. *Journal of MultiDisciplinary Evaluation*, *7*(16), 162-200.

[25] Kumagai, A. K. (2008). A conceptual framework for the use of illness narratives in medical education. *Academic Medicine*, *83*, 653-658.

[26] Zemke, R. (1995, October). Accelerated learning: Madness with a method. *Training*, *32*, 93-96.

[27]Wheelan, S. (2005). Promoting effective team performance through training. In D. E Sims, E. Salas, & C. S. Burke (Eds.), *The Handbook of Group Research and Practice* (pp. 407-426). Sage.

[28] Craig, R. L. (1996). *The ASTD training and development handbook: A guide to human resource development* (4th ed). New York, NY: McGraw-Hill Professional.

10