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Examining employer experiences in the polytechnic sector's industrial training program

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Abstract
Purpose: Industrial training, a structured educational program, provides supervised hands-on training within specified time frames and is available in both the private sector and government settings. Its primary aim was to bridge the gap between theoretical knowledge and practical skills, enabling participants to apply classroom learning in real-world scenarios. This experiential approach fosters competency development and a deeper understanding of industrial practices, teamwork, and professional ethics, ultimately preparing individuals for successful careers in various sectors.
Research Methodology: Data analysis was conducted using a statistical software tool tailored for predictive modeling and analysis. This dedicated software package was employed to scrutinize and interpret the dataset, allowing for the extraction of meaningful insights and predictions. This analytical approach involves a series of statistical techniques, algorithms, and models to uncover patterns, correlations, and trends within the data.
Results: From the perspective of instructors, industrial training has been noted as a catalyst for enhancing students' proficiency in both formal and informal communication, aiding them in identifying suitable research areas for their projects and honing their abilities in socialization and relationship-building.
Limitations: The applicable and functional setting for the findings of this study lies within the realm of educational settings.
Contribution: Our conclusions highlight the pivotal role of industrial training in enhancing students' abilities and knowledge following their training programs. We advocate recognizing industrial training as a valuable instrument for augmenting employees' skills and capabilities.
Keywords: *Industrial training, education sector, probability sampling method*
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1. Introduction

Training constitutes a methodical process through which individuals acquire specialized knowledge or skills for a specific purpose. This purpose often involves attaining the expertise, competencies, and proficiencies required for particular job roles or within an organizational context (M. R. Zahedi & Khanachah, 2020). According to Obasi (2015), industrial training is defined as a structured program offering preprofessional work experiences that entail specific assignments and responsibilities. Similarly, Srinivasan and Ravi (2016) characterized industrial training as a well-defined program crafted to impart practical experience within a specified timeframe. It is conducted under supervision and can be undertaken in either the private sector or government organizations (Thangaru & Kinyua, 2017). These industrial training initiatives are customarily tailored for individuals possessing theoretical

knowledge, exposing them to hands-on real-world insights (M. Zahedi, Akhavan, & Naghdi Khanachah, 2022). The overarching goal of such programs is to bridge the gap between theoretical classroom instruction and the practical experiences commonly encountered in higher education settings (De Wit-de Vries, Dolfsma, van der Windt, & Gerkema, 2019).

The adoption of industrial training as a fundamental component of academic development is a widespread practice embraced by numerous countries worldwide (Nyerinde, 2020). It is recognized by various nomenclatures encompassing terms such as internship programs, cooperative educational experiences, and work study, among others (M. Zahedi, Abbasi, & Khanachah, 2020). The effectiveness of industrial training is maximized when it aligns closely with students' career aspirations, personal interests, and chosen fields of academic study (Ghorbani & Khanachah, 2020b). Ultimately, it serves as a conduit for exposing employees to authentic, real-world work environments, facilitating their transition from classroom theory to practical applications (Spöttl & Windelband, 2021).

In South Korea, the regulatory authority that oversees the industrial training program is known as the "Industrial Training Fund (I. T. F.)," which was established by the South Korean federal government in 1971. This initiative operates in accordance with the provisions of the enabling law Decree 47 of 1971, as amended in the 2011 ITF ACT (Zahedi, 2021). This development also laid the foundation for the creation of the "Employees Industrial Work Experience Scheme" (SIWES) in 1973 (ITF, 2003). According to Aroh (2000), its establishment aimed to complement the efforts of producing well-rounded graduates who are not only academically proficient, but also technologically savvy and practical-oriented (M. R. Zahedi & Naghdi Khanachah, 2020). The funds' objectives have been vigorously and effectively pursued. Industrial training programs have substantial significance in the development of employees' careers. It equips them with practical skills, preparing them for real-world work scenarios they may encounter post-graduation and allowing them to work with equipment not available within their academic institutions (Abubakar, Ibrahim, Zakaria, & Kassim, 2023; Hatami, Seyednaghavi, Alvani, & Hoseinpour, 2021). Furthermore, it instills confidence in employees when they return to their educational institutions, striking a balance between their practical experience and theoretical knowledge (Ghorbani & Khanachah, 2021).

Despite the multitude of training approaches and programs that employees undergo, there remains a notable deficit in their skill enhancement and performance improvement (Adler, 2012; M. Zahedi et al., 2022).

Evidently, a significant gap exists between academia and industry, and several issues have been raised by employees regarding the challenges they face in securing placements (M. R. Zahedi, Naghdi Khanachah, & Papoli, 2023). Numerous impediments hinder employees' improvement during internship programs. These challenges encompass factors such as inadequate supervision, uncomfortable working conditions, safety concerns, accommodation shortages, communication gaps, insufficient training materials, transportation issues, geographical distance, limited opportunities, weak collaboration between academia and industry, and the attitudes of host organizations, among others (Afonja, Sraku-Lartey, & Oni, 2005; Jafari, Zahedi, & Naghdi Khanachah, 2023).

In many instances, when employees receive comprehensive training, they also benefit from academic activities, as they reduce the need to explain certain terms or ambiguities to employees. This is because employees have already encountered and applied these terms in their training programs (M. R. Zahedi & Khanachah, 2019). Another group of beneficiaries includes the construction industry, employers of labor, the Industrial Training Fund (I.T.F), and the nation as a whole (DeCenzo et al., 2016). This is because employees already possess prior knowledge of what needs to be done, when it should be done, and how to execute tasks (Hajizadeh et al, 2024; Hajizadeh et al., 2022). Consequently, this helps eliminate unqualified individuals and promotes professionalism within the industry (Ghorbani & Khanachah, 2020a). Thus, industrial training (IT) not only enhances employees' skills but also contributes to their academic performance when they recognize that it is a means to improve their abilities (M. Zahedi, Akhavan, & Naghdi Khanachah, 2020).

Recent research in the field of Industrial Training (IT) includes a diverse range of studies conducted in various countries and educational institutions. For instance, Nduro, Anderson, Peprah, and Twenefour (2015) conducted a case study on industrial training in polytechnics in Ghana, while Wilson (2016) explored industrial challenges faced by Gweru Polytechnic College in Zimbabwe (Sonnentag et al., 2021). Haolader, Foysol, and Clement (2017) delved into technical and vocational education training systems in Bangladesh, and Ngugi and Muthima (2017) examined female participation in vocational education and training institutions in Kenya.

Other studies explored topics such as the effects of internship programs on employees' perceptions (Yaakob, Ail, & Radzi, 2018), technical and vocational education training in Malaysia (Lam & Hassan, 2018), industrial work experience schemes for private institutions (Bupo & Okiridu, 2018), technical and vocational education training in Uganda (Okumu & Bbaale, 2019), and industrial training institutes in India (Ajithkumar & Pilz, 2019). Shereni (2020) investigated the role of technical and vocational education training in Zimbabwe, whereas Miller (2020) focused on vocational education training in Cambodian restaurants. Neroorkar and Gopinath (2020) examined industrial training institutes of the government in Mumbai, Okolie et al. (2020) studied vocational education and training graduates in South Korea, and Pilz and Regel (2021) explored vocational education and training in India. Finally, Nazarova, Kubrushko, Alipichev, and Gryazneva (2021) investigated the development trends in practical training for college employees. These studies collectively provide valuable insights into the field of industrial training across diverse educational settings and countries (Zahedi, 2021).

Inspired by the insights gleaned from the aforementioned studies, we embark on an evaluation of employees' experiences within an industrial training program, specifically focusing on the polytechnic sector. This research serves as a case study of selected polytechnics in South Korea. The subsequent sections are structured as follows: Section 2 outlines the methodology employed in this study; Section 3 presents the findings; Section 4 delves into the results and discussions; and Section 5 provides concluding remarks.

2. Methodology

Our study population comprised three distinct groups: ND2, HND1, and IT supervisors, all of whom served as respondents. The selection process was performed using stratified random sampling. This approach is a probabilistic sampling method that ensures that each item within the population has an equal opportunity to be included in the sample (Taherdoost, 2016). By employing this method, every student with ND2 and HND1 had a fair chance of participating in the study. The process of stratified random sampling necessitated an initial establishment of the overall population, followed by the division or stratification of the population into its constituent groups, specifically ND2 and HND1 students. Once the population size was determined, the sample size (number of respondents) was calculated as a percentage of the population following the principles outlined by Taherdoost (2016). The formula used for this calculation is as follows: [Include the relevant formula or describe it in more detail if required].

$$\boldsymbol{n} = \frac{N}{1 + \alpha^2 \boldsymbol{N}} \qquad (3.1)$$

where: $\boldsymbol{n}$ = sample size, $\boldsymbol{N}$= no of population, $\boldsymbol{\alpha}$= 0.10.

2.1 Data Collection Tool

2.1.1 Course of Disciplines in Built Environment (School of Environmental Studies)

The internship program serves as a pivotal platform for environmental employees to acquire extensive knowledge and a profound understanding of their respective fields of study. It plays a crucial role in elucidating the roles, responsibilities, and professional obligations that students will undertake upon graduation. The diverse disciplines within the built environment encompass architectural technology, building technology, estate management, surveying, geo-informatics, and quantity surveying, and entail distinct obligations pertaining to the industrial training program. Upon the successful completion of their National Diploma (ND) and Higher National Diploma (HND) programs in their respective fields

of study, this program was strategically designed to produce skilled technicians and technologists, with a specific emphasis on their chosen areas of specialization. These professionals are entrusted with various functions including

1. **Architectural Technology:** Architectural technologists are equipped to design and oversee the construction of buildings, ensuring that they adhere to architectural standards and regulations.
2. **Building Technology:** Building technologists are responsible for managing the construction process, focusing on technical aspects to ensure structural integrity and safety.
3. **Estate Management:** Estate managers specialize in property management, overseeing real estate assets, valuations, and property maintenance.
4. **Surveying** Surveyors are tasked with land surveying, mapping, and property boundary determination, which are critical for land development and construction projects.
5. **Geo-Informatics:** Geo-informatics professionals use geospatial data and technology to analyze and visualize geographic information for various applications such as environmental planning and resource management.
6. **Quantity Surveyors:** Quantity surveyors handle cost management and procurement processes for construction projects, ensuring financial efficiency and project viability.

In essence, the industrial training program equips students in the built environment with practical skills and knowledge essential for their future roles within their respective disciplines, thus bridging the gap between academia and professional practice.

Table 1. Internship program in Built Environment (www.unesco.org)

Department	Obligations relating to the industrial training program
Building	In order to effectively oversee and efficiently manage the construction of buildings of varying sizes, from the initial setting out phase to the final completion stage, Comprehend and decipher a wide array of project drawings, including architectural, services, and structural designs, enabling their successful implementation at the construction site. Create and generate detailed working drawings as well as structural designs tailored for medium-sized buildings. Prepare realistic estimates in terms of cost, materials and labor for all building works including maintenance work Conduct surveys of diverse existing structures and compile schedules outlining necessary repairs and refurbishments.
Surveying and Geo-Informatics	Create and uphold sketches, maps, reports, and legally valid descriptions of surveys, serving the purpose of delineating, certifying, and assuming responsibility for completed work. Validate the precision of survey data, encompassing measurements and calculations conducted during the survey process. Supervise and oversee surveys conducted to establish the legal boundaries of properties in accordance with legal deeds and titles. Compute elevations, depths, relative positions, property boundaries, and various terrain characteristics. Calibrate surveying instruments to ensure and uphold precision.
Quantity Surveying	Measure and prepare bills of quantity and contract documents for construction works Prepare final accounts for construction projects Measured as constructed works Interpret contract document of all types of construction Prepare estimate for construction projects
Architecture	Carry out feasibility studies and options appraisal Preparing of design concept Preparation of tender documents

	Inspection of works Preparation of production information
Estate Management.	Monitoring tenancy agreement Assessing rents Budget and system management Contract negotiation

In this study, 430 questionnaires were distributed to assess the students' experiences in the South Korean industrial training program. Of these, 210 questionnaires, in compliance with British Standard BS 8210, were completed and returned, reflecting an 84% response rate.

Table 2: Category of the respondents

S/N	Category	Frequency	Percentage of Participant
1	Staff	10	4.8
2	Eployee	190	95.2
	Total	**200**	**100.0**

Source: Field Survey (2019)

Referring to Table 2, it is evident that the majority of respondents fell within the student category, comprising 95.2% of the total, represented by 200 individuals. In contrast, staff members constituted a smaller portion, with only ten respondents, equivalent to a 4.8% participation rate.

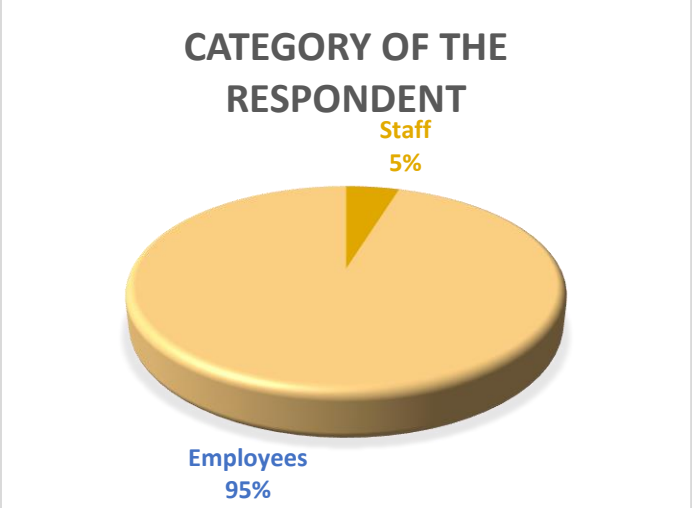

Figure 1: Category of the respondents Demographic characteristic of the staff

Table 3. Year of experience of the staff

S/N	Year range	Frequency	Percentage	Upper Class Boundaries
1	Less than 1 year	0	0	1.5
2	2 - 5 years	3	30.0	5.5
3	6 - 9 years	7	70.0	9.5
4	Above 10 years	0	0	10.5 Above
	Total	**10**	**100.0**	

Source: Field Survey (2019)

The distribution of staff experience is outlined in Table 3. The largest portion of staff members, constituting 70.0%, possess 6-9 years of experience, totaling seven respondents. Respondents with 2-5

years of experience account for 30.0% of the participants. Notably, there are no representatives from the categories of less than one year and more than 10 years in the study.

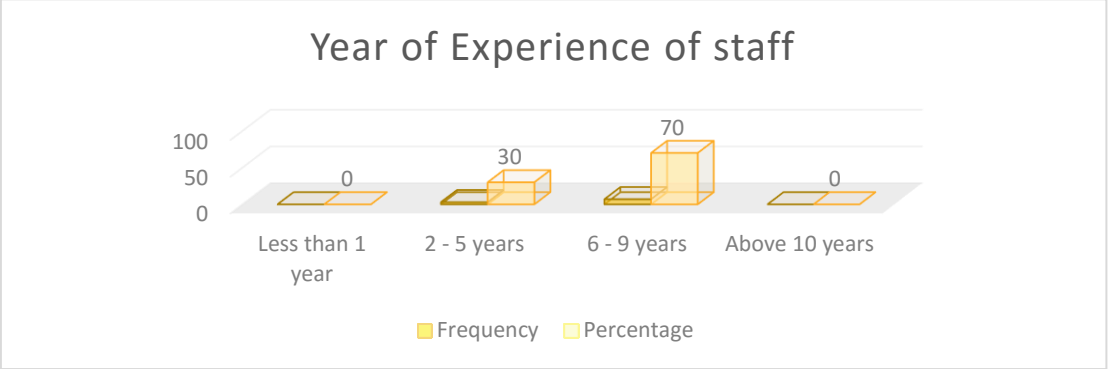

Figure 2: Year of experience of staff

Table 4. Demographic characteristic of the Employees

Department	**Frequency**	**Percentage (%)**
Architecture	2	20.0
Building	1	10.0
Estate Management	3	30.0
Quantity Surveying	2	20.0
Urban and regional planning	0	0.0
Surveying and Geo – informatics	2	20.0
Others	0	0.0
Total	10	100.0
Gender		
Male	130	65.0
Female	70	35.0
Total	**200**	**100.0**
Course		
Architecture	25	12.5
Building	40	20.0
Estate Management	50	25.0
Quantity Surveying	25	12.5
Urban and regional planning	30	15.0
Surveying and Geo – informatics	30	15.0
Others	0	0.0
Total	**200**	**100.0**
Place of Industrial Training		
Consultant	65	32.5
Contractor	54	27.0
Ministry	76	38.0
Others	5	2.5
Total	**200**	**100.0**

Source: Field Survey (2019).

Table 4 provides an overview of the demographic characteristics. Notably, estate management stood out with the highest representation, comprising 30% of the participants, totaling three respondents. Architecture, quantity surveying, surveying, and geo-informatics each contribute 20.0% to the participant pool, with two respondents from each field. A single respondent represented the building department, accounting for 10% of the participants. Conversely, urban and regional planning, as well as other fields, are not represented in this study.

Regarding gender diversity, both males and females were included in the study, with 65% male and 35% female respondents. When analyzing the distribution of students' courses, estate management emerged as the predominant field, constituting 25% of the students, equivalent to 50 respondents. Buildings accounted for 20% of the student population, with 40 respondents. Urban and regional planning, along with surveying and geo-informatics, each contributed 15%, totaling 30 respondents. Only architecture and quantity surveys were represented by 25 students each, accounting for 12.5% of the participant composition in each field.

When examining the distribution of IT placements, the Ministry emerged with the highest placement rate, constituting 38.0% of participants, equivalent to 76 respondents. The consultant category followed closely with 32.5%, representing 65 respondents, while the contractor category accounted for 27% of the placements, involving 54 respondents. The other categories collectively comprised 2.5% of the respondents. Figure 2 illustrates employees' demographic characteristics in this context.

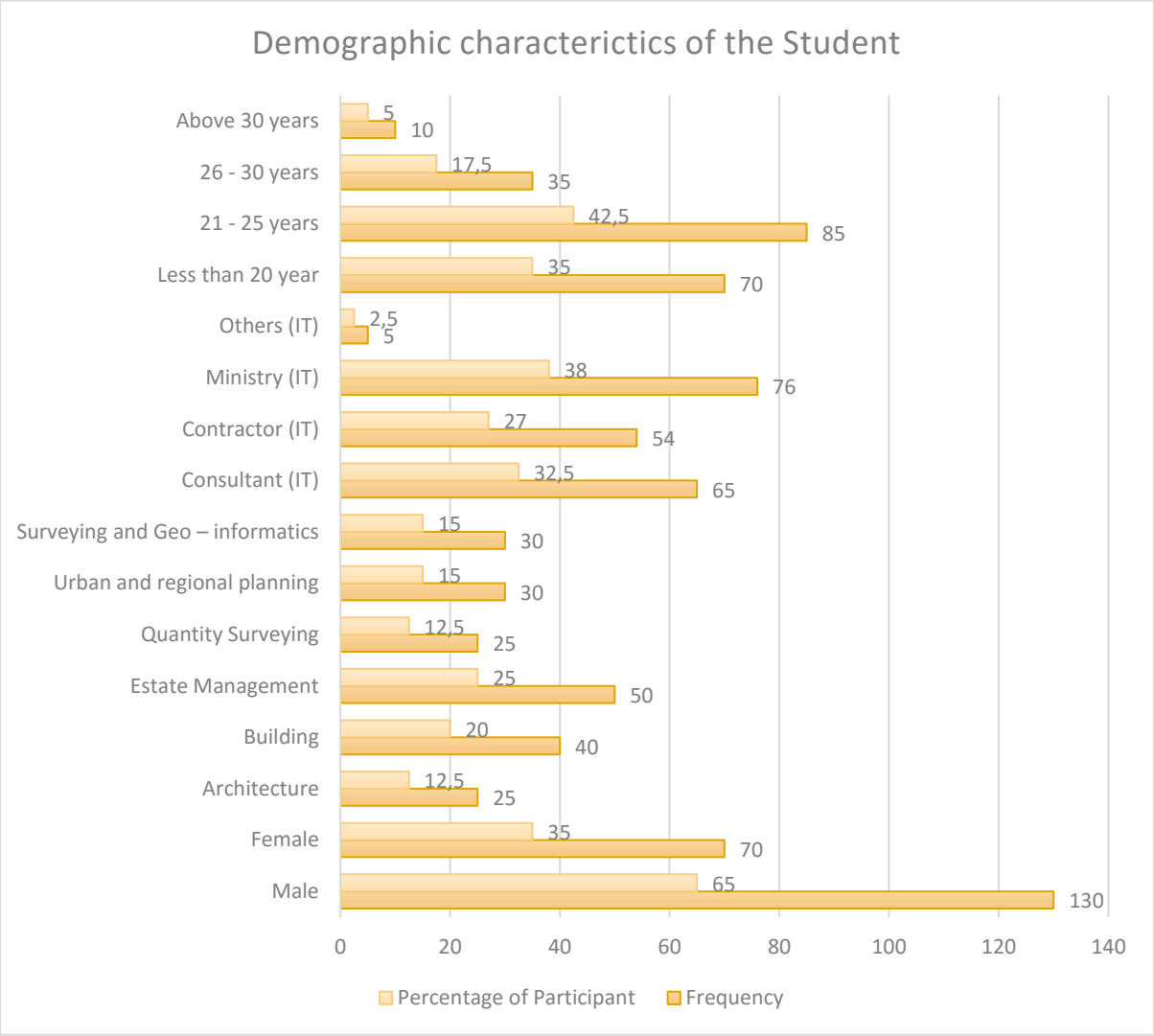

Figure 3: Demographic characteristic of the Employees

Table 5. Age of the respondent

S/N	Age	Cumulative Frequency	Frequency	Percentage	Upper Boundaries	Class
1	Less than 20years	70	70	35.0	20.5	
2	21 - 25 years	155	85	42.5	25.5	

3	26 - 30 years	190	35	17.5	30.5
4	Above 30 years	200	10	5.0	30.5 Above
	Total		**200**	**100.0**	

Source: Field Survey (2019).

As indicated in Table 5, the majority of respondents (42.5 %) fell within the age range of 21-25 years, representing the largest proportion of students. Following closely, 35.0% of the respondents were below the age of 20. Those aged between 26-30 years account for 17.5% of the participants, totaling 35. Conversely, employees aged above 30 years were the least represented, constituting only 5% of the participant pool, as illustrated in Figure 4.

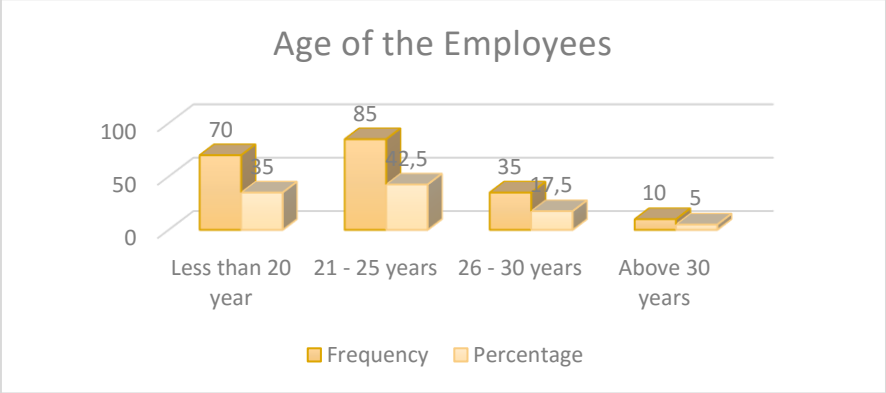

Figure 4: Demographic characteristic of the Employees

3. Result and discussions

3.1 Impact of IT on Employees (staff perspective)

In Table 6, we delve into the staff's perceptions of the profound impacts of Industrial Training (IT) on students. Notably, IT played a pivotal role in guiding students towards identifying suitable research areas for their final-year projects, thus shedding light on the highest-ranked aspect with a relative importance index (RII) of 0.92. Furthermore, IT serves as an invaluable platform for exposing students to realities of life beyond the academic realm, earning it the second-highest rank with a remarkable RII of 0.88. Moreover, it equips students with an understanding of the ever-evolving industry culture and technological advancements while instilling a sense of continuous learning, securing the third rank with an RII of 0.88.

Additionally, Table 6 reveals the staff's perspectives on the array of skills that students acquire during their IT experience. First, IT significantly enhances students' proficiency in both formal and informal written communication, an attribute deemed paramount, achieving the highest ranking with an impressive RII of 0.94. Moreover, it fosters the development of students' ability to meticulously plan and successfully execute assigned tasks, solidifying their second-place position with an RII of 0.92. Furthermore, IT nurtures students' problem-solving skills and their capacity to collaborate effectively with diverse groups, securing a third position with an RII of 0.88. Additionally, it boosts students' creativity, landing in the sixth position, with an RII of 0.86. Finally, IT bolsters students' self-confidence in tackling challenges, garnering the seventh position with an RII of 0.82. These findings underscore the multifaceted benefits that IT bestows on students, encompassing both academic and practical skill development.

Table 6. Impacts of IT on the Employees (staff perspective)

Variables			5	4	3	2	1	RII	Ranking
Knowledge	1	Industrial training improved Employees' knowledge and intellectual capability	2	8	0	0	0	0.84	5th
	2	Industrial training improved Employees' understanding of course of study	2	8	0	0	0	0.92	5th
	3	Industrial training assisted Employees' in finding a research area for their final year project	6	4	0	0	0	0.92	1st
	4	Industrial training exposed Employees' to having an idea of life after school	6	4	1	0	0	0.92	1st
	5	Industrial training exposed Employees to the changing industry culture and developments in technology	4	6	0	0	0	0.84	3rd
	6	Industrial training exposed Employees to the need for continuous learning	5	4	1	0	0	0.88	3rd
Skills	1	Industrial training improved Employees' creativity ability	4	5	1	0	0	0.86	6th
	2	Industrial training developed Employees' ability to identify problems and proffer solution	4	6	0	0	0	0.88	3rd
	3	Industrial training developed Employees' ability to plan and complete any assigned task	6	4	0	0	0	0.92	2nd
	4	Industrial training developed Employees' ability to work effectively with different groups	4	6	0	0	0	0.88	3rd
	5	Industrial training improved Employees' skills in formal and informal written communication	4	6	0	0	0	0.88	3rd
	6	Training improved Employees' skills in formal and informal written communication	8	1	1	0	0	0.94	1st
	7	Industrial training improved Employees' self confidence in tackling problems	2	7	1	0	0	0.82	7th
Attitude	1	Industrial training developed Employees' ability to socialize and sustain the relationship	5	5	0	0	0	0.90	1st
	2	Industrial training improved Employees' self-control and motivation	3	7	0	0	0	0.86	2nd
	3	Industrial training improved Employees' success consciousness	5	2	3	0	0	0.84	5th
	4	Industrial training increased Employees' confident on employment prospects	3	5	2	0	0	0.76	7th
	5	Industrial training improved Employees' perseverance in challenging situations	1	6	3	0	0	0.82	6th
	6	Industrial training improved Employees' time keeping ability	3	7	0	0	0	0.86	2nd
	7	Industrial training improved Employees' ability to work independently	3	7	0	0	0	0.86	2nd

Table 6 sheds light on the perspectives of staff regarding the positive attitudes of employees during their Industrial Training (IT) experiences. Notably, IT plays a pivotal role in fostering employees' ability to establish and sustain interpersonal relationships, earning the highest ranking, with an impressive relative importance index (RII) of 0.90. Furthermore, it contributes significantly to enhancing employees' self-discipline and motivation as well as their punctuality, reflecting their ability to manage time effectively. This vital attribute secured the second-highest position, with an RII of 0.86.

Moreover, IT empowers employees to become more self-reliant and capable of working independently, solidifying its rank as the second-most influential attitude development factor. This attribute, with an RII of 0.86, underscores the importance of self-sufficiency nurtured through IT experience.

Additionally, IT instills a sense of success consciousness in employees, driving them to strive for excellence and self-improvement and securing the fifth position with an RII of 0.84. Furthermore, it cultivates perseverance among employees, equipping them with resilience to thrive in challenging situations, ranking sixth with an RII of 0.82. Lastly, IT bolsters employees' confidence in their employment prospects, positioning it in seventh place with an RII of 0.76. These findings underscore the comprehensive development of positive attitudes that employees gain from their IT experiences, encompassing interpersonal skills, self-motivation, time management, self-reliance, and resilience

The analysis revealed the profound impact of knowledge, skills, and attitudes that employees acquire through Industrial Training (IT). In the realm of knowledge, it is evident that IT plays a pivotal role in guiding employees to identify suitable research areas for their final-year projects and provide them with a glimpse of post-graduation life. These aspects have secured the top rank, as they not only assist employees in selecting pertinent topics for their final projects, but also offer valuable insights into their future careers. These insights serve as a crucial foundation for employees as they embark on their professional journeys.

Turning to the domain of skills, IT has emerged as a transformative force, particularly in enhancing employees' formal and informal written communication skills. This paramount skill improvement ranked first among respondents. IT effectively enhances students' writing abilities and bolsters their overall communication performance. The respondents unanimously agreed that their IT experiences instilled the confidence to express themselves effectively through verbal and written means. This newfound proficiency equips them with success in various professional contexts.

Shifting focus on attitudes, IT's impact is distinctly reflected in employees' enhanced ability to socialize and sustain relationships, securing the top rank in the respondents' view. IT fosters an environment where employees can develop meaningful connections with their colleagues and host workers. It instills a genuine interest in the organization and cultivates the necessary social skills to interact effectively with employers and fellow staff members within the industry. These new abilities empower employees to navigate challenges with grace and poise, ultimately contributing to their personal and professional growth. This comprehensive transformation is graphically depicted in Figure 5, which emphasizes the far-reaching influence of IT on employees' knowledge, skills, and attitudes.

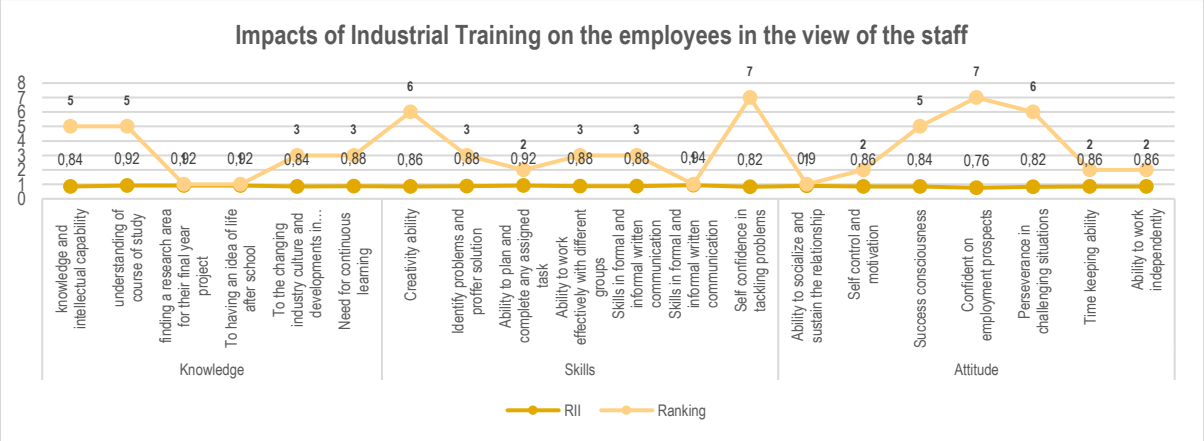

Figure 5: Impacts of IT (staff perspective)

3.2 Impacts of IT on the Employees (Employees' perspective)

Table 7 presents the employees' perspective on the knowledge and skills acquired through Industrial Training (IT). The knowledge component reveals that IT has emphasized the importance of continuous learning, securing the top rank with an impressive Relative Importance Index (RII) of 0.89. Moreover, IT has significantly elevated knowledge and intellectual capabilities, claiming the second position, with an RII of 0.88. Equally important is the improvement in their understanding of their respective courses of study, which stands at third place with an RII of 0.88. Furthermore, IT has provided invaluable insights into dynamic shifts in industry culture and technological advancements, ranking fourth with an RII of 0.87. Additionally, IT equipped them with a realistic perspective on life post-graduation, securing

the fifth position with an RII of 0.86. Remarkably, IT also assisted in identifying suitable research areas for their projects, ranking sixth with an RII of 0.83.

Table 7 presents the skill dimensions acquired through IT. Notably, IT significantly bolstered self-confidence in problem solving, earning the top position with an impressive RII of 0.87. Additionally, IT has developed problem-solving skills, securing the second rank, with an RII of 0.86. Moreover, IT has honed its ability to plan and execute assigned tasks efficiently, ranking third with an RII of 0.86. It also sparked creativity within them, standing in fourth place with an RII of 0.84. Their skills in formal and informal written communication showed substantial improvement, ranking fifth with an RII of 0.82. Furthermore, IT has cultivated its ability to collaborate effectively with diverse groups, claiming the sixth position with an RII of 0.81. Lastly, IT further enhanced their communication skills, ranking seventh with an RII of 0.80. These insights underscore the profound impact of IT on employees' knowledge and skills and ultimately contribute to their personal and professional development.
Lastly, in Table 7, the view of students on the attitude gained from IT indicates that IT improved my time-keeping ability and had the highest ranking with an RII of 0.87. IT improved my self-control and motivation, ranking second, with an RII of 0.83. IT developed my ability to socialize and sustain the relationship, ranking third with an RII of 0.83. IT improved my consciousness of success and ranked fourth, with an RII of 0.82. IT improved my ability to work independently and ranked fifth, with an RII of 0.82. IT increased my confidence in employment prospects and ranked sixth, with an RII of 0.81. IT improved my perseverance in challenging situations and ranked seventh, with an RII of 0.79.

Table 7. Impacts of IT on Employees' (Employees' perspective)

Variables			5	4	3	2	1	RII	Ranking
Knowledge	1	Industrial training improved my knowledge and intellectual capability	94	100	0	6	0	0.88	2nd
	2	Industrial training improved the understanding of my course of study	83	113	0	4	0	0.88	2nd
	3	Industrial training assisted me in finding a research area for my project	55	120	25	0	0	0.83	6th
	4	Industrial training exposed me to having an idea of life after school	77	111	8	4	0	0.86	5th
	5	Industrial training exposed me to the changing industry culture and developments in technology	86	100	8	6	0	0.87	4th
	6	Industrial training exposed me to the need for continuous learning	97	95	8	0	0	0.89	1st
Skills	1	Industrial training improved my creativity ability	72	101	23	4	0	0.84	4th
	2	Industrial training developed my ability to identify problems and proffer solution	91	79	30	0	0	0.86	2nd
	3	Industrial training developed my ability to plan and complete any assigned task	80	98	22	0	0	0.86	3rd
	4	Industrial training developed my ability to work effectively with different groups	43	132	21	4	0	0.81	6th
	5	Industrial training improved my skills in formal and informal written communication	56	110	30	4	0	0.82	5th
	6	Training improved my skills in formal and informal written communication	50	111	31	8	0	0.80	7th
	7	Industrial, Industrial training improved my self-confidence tackling problems	84	104	31	8	0	0.87	1st
Attitude	1	Industrial training developed my ability to socialize and sustain the relationship	58	115	21	6	0	0.83	3rd
	2	Industrial training improved my self-control and motivation	56	117	25	2	0	0.83	2nd
	3	Industrial training improved my success consciousness	60	104	36	0	0	0.82	4th
	4	Industrial training improved my success consciousness	60	104	36	0	0	0.82	4th

5	Industrial training increased my confident on employment prospects	52	114	30	4	0	0.81	6^{th}
6	Industrial training improved my perseverance in challenging situations	38	126	26	10	0	0.79	7^{th}
7	Industrial training improved my ability to work independently	37	144	19	0	0	0.82	4^{th}

Source: Field Survey (2019).

From the indications of IT variables on knowledge, IT exposed me to the need for continuous learning was ranked based on the respondent's perception, based on the view that IT has widened their horizon and way of reasoning. It has helped the development of more interest in their course of study and helps to understand clearly what academia is trying to impact them. From the variable of skills, it was observed that IT improved my self-confidence in tackling problems based on the view of the respondent, and it was observed that participating in an IT program exposed the employees to the likely challenges they will meet after graduation, what to expect when working, it has given them an overview of the industry will look like, and how to improve the aspects the tends to fit in. From the variable of attitude, it was indicated that IT improved my timekeeping ability was ranked 1st based on the perception of the respondents because IT has made them realize the benefits of time management to study will enhance them academically and make them fully understand what the program is all about and its importance.

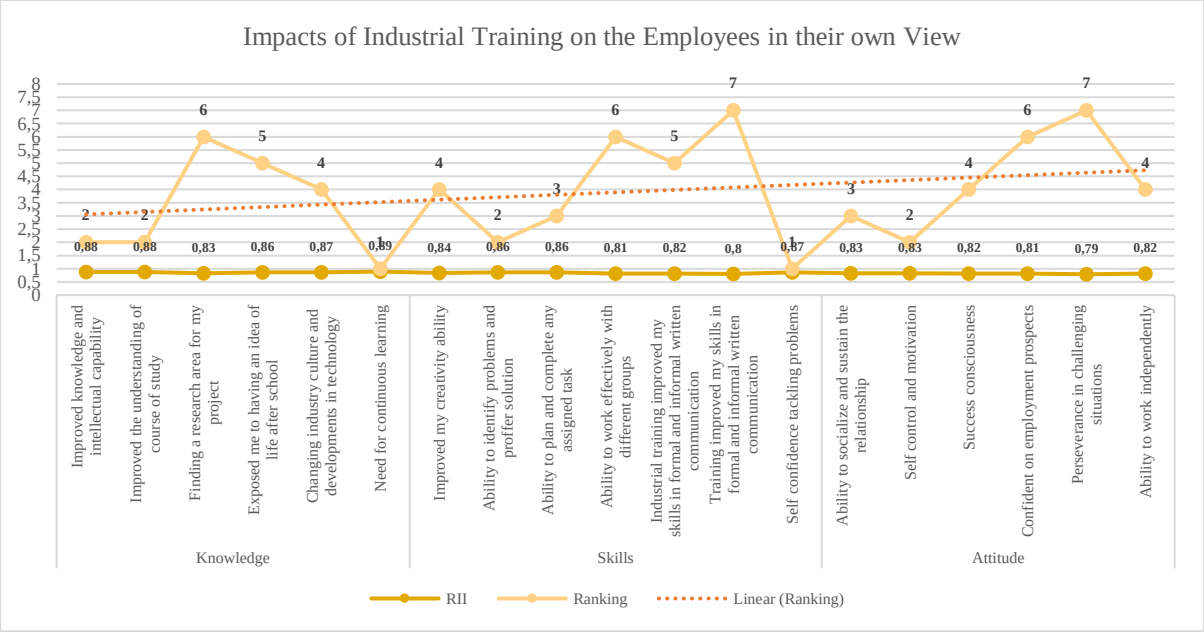

Figure 6: Impacts of IT on Employees (Employees's perspectives)

3.3 Challenges during IT

Table 8 offers valuable insights into the challenges perceived by respondents during their Industrial Training (IT) experiences. The top five challenges, as ranked by the respondents, were safety (R = 0.725), commitment of supervisors (RII = 0.705), distance between residence and training location (RII = 0.695), polytechnic policies (RII = 0.685), and transportation (RII = 0.685). Conversely, the least ranked challenges included the lack of training materials (RII = 0.56), trainees assigned menial tasks (RII = 0.55), and a poor partnership between academia and industry (RII = 0.55).

Safety has emerged as the most significant challenge faced by employees during their internships. This encompasses various hazards in the workplace, often attributable to the host organization, necessitating safety measures, such as wearing helmets to protect against head injuries, safety boots to prevent nail penetration, gloves for electrical work, and goggles for eye protection. Safeguarding employees, including the machines and tools they operate, is imperative to mitigate risks.

The commitment of supervisors ranked second in perceived challenges. Adequate and dedicated supervision is vital for successful tasks. The absence of proper monitoring and supervision leaves employees uncertain about their assigned responsibility. Collaborative supervision ensures that students understand their roles and responsibilities and facilitates the achievement of training objectives.

The third-ranked challenge, the distance between residence and workplace, is a common issue for many students. Lengthy commutes to placement locations often incur transportation and accommodation costs, discouraging participation in IT programs. Proximity to the training location may significantly affect an employee's choice of placement.

Polytechnic policies, ranked fourth, also contribute to discouragement among employees because the duration of the program, course assessment, and the requirement to defend acquired knowledge may be perceived as ambiguous or demanding.

The fifth is transportation, which can be a significant barrier for students. A lack of stipends for transportation expenses may lead to absenteeism and dropout rates. Providing stipends for transportation could serve as a motivating factor for students to continue their IT programs regardless of their location.

Conversely, trainees assigned menial tasks, ranked 25th, indicating that some students were required to perform non-academic duties during their training. This practice is often based on the premise that students do not pay for acquiring knowledge. However, it can be counterproductive and affect the quality of the learning experience.

Lastly, the perceived poor partnership between academia and industry, according to respondents, primarily impacts students. Inadequate preparation by academia before students embark on internships can hinder their understanding of industry-specific terms and concepts, affecting their performance during IT.

These insights underscore the importance of addressing these challenges in enhancing the quality of students' IT experiences.

Table 8. Challenges Employees' face during IT

S/N	Variables	5	4	3	2	1	RII	Ranking
1	Distance from residence to place of training	33	40	121	16	0	0.695	3rd
2	Duration of industrial training	9	77	110	14	0	0.685	7th
3	Attitude of host organization	7	89	94	20	0	0.685	7th
4	Remuneration during industrial training	7	78	89	32	4	0.655	10th
5	Commitment of supervisor	23	71	105	6	5	0.705	2nd
6	Polytechnic policies	18	71	100	21	0	0.685	6th
7	Transportation	20	66	103	21	0	0.685	7th
8	Safety	27	84	88	11	0	0.725	1st
9	Accommodation	26	48	97	35	4	0.655	9th
10	Lack of social activities	20	56	101	30	3	0.66	8th
11	Inadequate training opportunity	20	34	137	0	19	0.63	12th
12	Ambiguous program grading system	20	37	125	24	4	0.64	11th
13	Lack of communication	14	25	128	43	0	0.61	17th
14	Uncomfortable working environment	4	42	137	24	3	0.62	14th
15	Limited opportunity and lack of responsibility	4	35	145	23	3	0.61	17th
16	Documentation with the Industrial Training Fund (ITF)	6	51	123	27	3	0.63	13th
17	Time spent in getting a place for industrial training	9	39	131	24	7	0.62	15th

18	Poor supervision by supervisors	8	26	120	46	10	0.58	23rd
19	Lack of training materials	0	44	109	44	13	0.58	24th
20	Gender inequality	4	43	126	28	9	0.61	19th
21	Poor partnership between academia and industry	0	7	163	27	13	0.56	26th
22	Employees in host organizations feel endangered due to the presence of interns	4	59	95	42	10	0.61	19th
23	Supervisors from school request that interns to bring their logbooks for assessment rather than visiting the intern's workplace	13	30	109	50	8	0.60	21st
24	Sexual harassment and intimidation of Employees	3	44	114	33	16	0.59	22nd
25	Trainees are made to do menial jobs	3	12	144	40	11	0.56	25th
26	High industrial expectation	7	46	112	45	0	0.61	16th

Source: Field survey (2019)

3.4 Ways to overcome challenges during IT

Table 9 provides valuable insights into respondents' perceptions of overcoming challenges during their Industrial Training (IT) experiences. Ranking analysis, based on the Relative Importance Index (RII), highlights several key strategies to effectively address these challenges.

The top three strategies, as identified by their RII rankings, are as follows.

1. **Issuing Certificates/Recommendation Letters:** This strategy ranks highest, with an RII of 0.88. To mitigate challenges during IT, respondents emphasized the importance of host organizations providing certificates or recommendation letters to deserving employees upon completion of their training. Such recognition can enhance employee prospects in the job market and serve as a testament to their skills and capabilities.
2. **Viewing Trainees as Prospective Assets:** The second-ranked strategy, with an RII of 0.876, emphasizes the need for host organizations to perceive trainees as potential assets rather than threats. This shift in perspective can lead to more supportive and collaborative environments, allowing trainees to contribute effectively to the organization's goals.
3. **Timely and Adequate Compensation:** The third-ranked strategy, with an RII of 0.87, underscores the importance of host organizations providing timely and sufficient compensation to trainees. Regular and early payments can alleviate financial burdens and motivate trainees to participate actively in IT programs.

Conversely, the least-ranked strategies, according to the analysis, are as follows:

1. **Orientation for Supervisors:** This strategy, with an RII of 0.83, involves providing adequate orientation to industry supervisors regarding their roles in supervising trainees. Although not ranked as highly as other strategies, it remains an essential component in ensuring effective IT experiences.
2. **Disclosure and Discussion of Host Responses:** Ranking slightly lower, with an RII of 0.82, this strategy suggests that responses from host organizations regarding trainees should be shared and discussed with students. Open communication can help address challenges and improve overall IT experience.
3. **Adjusting the Timing of IT:** This strategy, with an RII of 0.80, implies considering changes in the timing of IT programs. While it ranks lower, it is worth exploring flexible scheduling options to accommodate students' needs and enhance their IT experience.

Overall, the RII rankings indicate that there is no significant disparity among the various strategies for overcoming challenges during IT. These strategies collectively emphasize the importance of effective communication, recognition, fair compensation, and a positive perspective on trainees. Implementing these approaches can contribute to more successful and rewarding student IT experiences.

Table 9. Ways to overcome challenges during IT

S/N	Variables	5	4	3	2	1	RII	Ranking

1	Employees should be well paid regularly and early	104	88	14	0	4	0.87	3rd
2	Employees on training should be viewed as prospective assets and not threats	110	73	23	4	0	0.87	2nd
3	Relevant stakeholders meeting should be organized regularly	76	123	11	0	0	0.86	9th
4	Outstanding Employees should be identified, and their progress should be monitored	88	83	39	0	0	0.84	13th
5	Industrial Training Fund should assist Employees in getting placement	92	100	10	8	0	0.86	5th
6	Adequate monitoring and supervision of Employees by the industry and academia	95	96	15	4	0	0.86	6th
7	Supervisors in the industry should be given adequate orientation regarding student's supervision	67	109	30	4	0	0.83	16th
8	Responses from student's host should be disclosed and discussed with Employees	51	130	29	0	0	0.82	17th
9	Supervisors in the industry should be monitored	68	122	20	0	0	0.84	14th
10	Employees should be monitored early and regularly	86	117	4	3	0	0.87	4th
11	There should be synergy and cooperation between industry and academia	83	108	19	0	0	0.86	10th
12	Industrial training should be a major requirement for graduation	101	75	34	0	0	0.86	7th
13	The duration of industrial training should be adjusted	92	81	28	9	0	0.84	15th
14	Time of industrial training should be changed	75	74	51	4	6	0.80	18th
15	The academia should recommend places where Employees should go for industrial training	93	83	31	3	0	0.85	12th
16	Employees should defend their reports when they complete industrial training	92	94	24	0	0	0.86	6th
17	Host should issue a certificates/ recommendation letters to deserving Employees after completing training	106	86	18	0	0	0.8	1sh
18	Employees with outstanding course(s) should be allowed to register such course(s) during industrial training	104	71	28	7	0	0.85	11th

This study endeavors to provide a summary of the salient issues that represent its focus. This study assesses the impact of IT on Employees from both staff and employees' perspectives. The focus was primarily on knowledge, skills, and attitudes. Thereafter, we assessed the challenges faced by IT Employees during the training exercise, and finally looked at ways to overcome the identified challenges.

The findings of this study sparked an intriguing discussion from both the staff and employees' perspectives. Among IT staff (as seen in Table 6), there is a consensus that IT exposes employees to the concept of life beyond academia and guides them in identifying researchable areas for their final-year projects. This perspective differs somewhat from that of the students (as indicated in Table 7). However, both groups agreed on a transformative impact. They believe that IT exposure fosters recognition of the need for continuous learning, enhances their understanding of their respective courses of study, and augments their intellectual capabilities. Interestingly, there is a convergence of opinions among both staff and students regarding the influence of cultural and technological advancements in the industry.

These findings align with Rodzalan and Saat (2012), who noted that the job market increasingly values work experience alongside academic qualifications when hiring new employees. Consequently, industrial training has become a prerequisite for education institutions. During this training period,

which typically spans approximately six months, the goal is to equip individuals with the skills required by the industry, thus playing a pivotal role in cultivating a high-quality professional workforce. The development of general skills poses a challenge in this context.

From the staff's perspective, IT plays a pivotal role in enhancing employees' skills in both formal and informal written communication, encompassing both written expressions and verbal means of communication pertinent to their courses of study. Conversely, employees believe that IT boosts their self-confidence when addressing problems. However, this study underscores that the influence of IT extends beyond academic activities. It permeates various facets of life, including social relationships, self-control, motivation, and the ability to plan and complete assigned tasks within specified timeframes.

Regular and timely stipends for employees have emerged as a critical concern. This study highlights that inadequate financial support can lead to difficulties for employees in sustaining themselves during their internships. Furthermore, the absence of remuneration can result in reduced employee motivation, increased student absenteeism, and higher dropout rates. Consequently, offering regular and early stipends is instrumental to motivating employees.

To ensure effective employee development, comprehensive monitoring and supervision should be implemented, involving both industry-based supervisors, the Industrial Training Fund (ITF), and academia. This robust monitoring system would enable close evaluation of employee progress and participation during their industry internships. Such monitoring engenders employee confidence and provides assurance that what employees learn during their internships is valuable.

In conclusion, adequate monitoring and supervision coupled with IT exposure are essential elements that can greatly enhance employee participation and contribute to the success of government policies aimed at improving employee training programs.

4. Conclusion

The study was carried out to assess the students' experience in the IT program for Employees in ND2 and HND1 to determine their level of experience after the internship, since the aim of the scheme is to bridge the gap between theoretical experience and practical inclined courses in higher institutions and to expose employees to the real working situation. From the view of an industrial-based supervisor, it was indicated that industrial training assists students in finding a research area for their final-year project, exposing them to real-life challenges, and developing employees' abilities to identify problems and provide solutions to problems. From the perspective of employees, it was indicated that industrial training exposed employees to continuous learning, improved knowledge, intellectual capability, and understanding of their course of study. From this indication, it was observed that industrial training is beneficial to employees and should be a major criterion and part of the curriculum for employees before graduation. It was also observed that safety was a challenge faced by students during their internships, and the commitment of supervisors, distance, transportation, and accommodation were also part of the challenges. The study was carried out to assess the students' experience in the IT program for Employees in ND2 and HND1 to determine their level of experience after the internship, since the aim of the scheme is to bridge the gap between theoretical experience and practical inclined courses in higher institutions and to expose employees to the real working situation. From the view of an industrial-based supervisor, it was indicated that industrial training assists students in finding a research area for their final-year project, exposing them to real-life challenges, and developing employees' abilities to identify problems and provide solutions to problems. From the perspective of employees, it was indicated that industrial training exposed employees to continuous learning, improved knowledge, intellectual capability, and understanding of their course of study. From this indication, it was observed that industrial training is beneficial to employees and should be a major criterion and part of the curriculum for employees before graduation. It was also observed that safety was a challenge faced by students during their internships, and the commitment of supervisors, distance, transportation, and accommodation were also part of the challenges.

The efficient transfer of information and knowledge, both at the macro and micro levels within individuals and organizations, relies heavily on individuals who facilitate and expedite this transfer. Consequently, any factor that either encourages or impedes interpersonal communication will invariably influence how individuals exchange information (Jafari et al., 2023; M. R. Zahedi & Naghdi Khanachah, 2019). This underscores the critical importance of fostering trust-based communication and interactions among individuals in the creation and application of knowledge (Jafari et al., 2023; M. R. Zahedi & Khanachah, 2020). When an organization successfully enhances effective interactions among its employees, whether within teams or across organizational units, it can instill greater confidence in the efficacy of information exchanges among its personnel. This, in turn, leads to more effective management of organizational knowledge. Therefore, establishing and cultivating a corporate culture and environment that promotes communication and interaction are fundamental requirements for effective knowledge management (Ghorbani & Khanachah, 2021).

In the management literature, it is evident that knowledge management lacks a fixed and universally clear-cut definition. Existing definitions primarily center on an organization's capacity to generate wealth from knowledge-based assets, with knowledge management revolving around the discovery, collection, and utilization of technical knowledge to enhance processes and facilitate effective employee training (Ayoko, 2021). Knowledge management is essentially the process of defining, maintaining, disseminating, and accessing the knowledge produced within an organization. This process aims to increase productivity and efficiency, while facilitating easier access to the wealth of content and knowledge generated (Mazaheri & Fazli, 2023). Consequently, knowledge management leaves a significant impact on various facets of organizational software, spanning from accounting and human capital management to production software (Mahmoudi, Fazli, & Morad, 2018).

References

Abubakar, A. H., Ibrahim, B. Y., Zakaria, N. N. B., & Kassim, S. F. B. M. (2023). Board attributes, risk management and financial performance: Insights from Iraq. *Annals of Management and Organization Research,* 5(2), 115-126.

Adler, P. S. (2012). Perspective—the sociological ambivalence of bureaucracy: from Weber via Gouldner to Marx. *Organization Science*, 23(1), 244-266.

Afonja, A., Sraku-Lartey, K., & Oni, S. (2005). Engineering education for industrial development: case studies of Nigeria, Ghana and Zimbabwe.

Ajithkumar, U., & Pilz, M. (2019). Attractiveness of Industrial Training Institutes (ITI) in India: A study on ITI students and their parents. *Education+ Training*.

Aroh, I. (2000). Practical Industrial Training (PIT) For Tertiary Institutions: Enugu: Rich Richmond Publishers.

Ayoko, O. B. (2021). SMEs, innovation and human resource management. *Journal of Management & Organization,* 27(1), 1-5.

Bupo, G. O., & Okiridu, F. O. (2018). Challenges faced by business education students during their students industrial work experience scheme: suggestions for institutionprivate sector partnership. *Nigerian Journal of Business Education (NIGJBED),* 4(1), 300-310.

De Wit-de Vries, E., Dolfsma, W. A., van der Windt, H. J., & Gerkema, M. P. (2019). Knowledge transfer in university–industry research partnerships: a review. *The Journal of Technology Transfer,* 44, 1236-1255.

Ghorbani, S., & Khanachah, S. N. (2020a). Investigating the reasons for failures and delays in R&D projects with the project management approach. *Annals of Management and Organization Research,* 1(4), 319-334.

Ghorbani, S., & Khanachah, S. N. (2020b). Provide a model for establishing a comprehensive knowledge management system in knowledge-based organizations based on success factors. *Annals of Management and Organization Research,* 2(1), 1-12.

Ghorbani, S., & Khanachah, S. N. (2021). Providing a framework for knowledge sharing in knowledge-based organizations according to social capital indicators. *Annals of Management and Organization Research,* 1(4), 271-284.

Haolader, F. A., Foysol, K. M., & Clement, C. K. (2017). Technical and Vocational Education and Training (TVET) in Bangladesh–Systems, curricula, and transition pathways. *Vocational education and training in times of economic crisis: Lessons from around the world*, 201-227.

Hatami, S., Seyednaghavi, M., Alvani, S. M., & Hoseinpour, D. (2021). A Model for the Social Responsibilities Architecture of Human Resource Management on the Basis of Strategies. *Journal of Research in Human Resources Management*, 13(3), 9-38.

ITF. (2003). Students industrial work experience in human resources development in Nigeria, ITF, Jos, Nigeria (www.itf-nigeria.com). .

Jafari, M., Zahedi, M., & Naghdi Khanachah, S. (2023). Identify and Prioritize the Challenges of Customer Knowledge in Successful Project Management: An Agile Project Management Approach. *Journal of Information & Knowledge Management*, 2350060.

Lam, K. W., & Hassan, A. (2018). Instructional technology competencies perceived by technical and vocational education and training (TVET) students in Malaysia. *International Journal of Academic Research in Business and Social Sciences*, 8(5), 343-366.

Mahmoudi, A., Fazli, M., & Morad, M. (2018). A recent review of waste heat recovery by Organic Rankine Cycle. *Applied Thermal Engineering*, 143, 660-675.

Miller, A. (2020). Development through vocational education. The lived experiences of young people at a vocational education, training restaurant in Siem Reap, Cambodia. *Heliyon*, 6(12), e05765.

Nazarova, L., Kubrushko, P., Alipichev, A., & Gryazneva, S. (2021). *Development trends in practical training of college students in the context of digital transformation of education.* Paper presented at the E3S Web of Conferences.

Nduro, K., Anderson, I. K., Peprah, J. A., & Twenefour, F. B. (2015). Industrial Training Programmes of Polytechnics in Ghana: The Pertinent Issues. *World Journal of Education*, 5(1), 102-113.

Neroorkar, S., & Gopinath, P. (2020). Impact of Industrial Training Institutes (ITIs) on the employability of graduates—a study of government ITIs in Mumbai. *Journal of Vocational Education & Training*, 72(1), 23-46.

Ngugi, M., & Muthima, P. (2017). Female participation in technical, vocational education and training institutions (TVET) subsector. The Kenyan experience. *Public Policy and Administration Research*, 7(4), 9-23.

Nyerinde, F. N. (2020). *Field industrial training in construction of a Solar Powered Deep Production Borehole System for safe water supply in Kikumbo Parish Kirugu Sub county.* Makerere University.

Obasi, R. (2015). The Impact of Industrial Training on Students' Academic Performance. *Advances in Social Sciences Research Journal*, 2(6).

Okolie, U. C., Nwajiuba, C. A., Binuomote, M. O., Osuji, C. U., Onajite, G. O., & Igwe, P. A. (2020). How careers advice and guidance can facilitate career development in technical, vocational education, and training graduates: The case in Nigeria. *Australian Journal of Career Development*, 29(2), 97-106.

Okumu, I. M., & Bbaale, E. (2019). Technical and vocational education and training in Uganda: A critical analysis. *Development Policy Review*, 37(6), 735-749.

Pilz, M., & Regel, J. (2021). Vocational education and training in India: Prospects and challenges from an outside perspective. *Margin: The Journal of Applied Economic Research*, 15(1), 101-121.

Rodzalan, S. A., & Saat, M. M. (2012). The effects of industrial training on students' generic skills development. *Procedia-Social and Behavioral Sciences*, 56, 357-368.

Shereni, N. C. (2020). The role of technical and vocational education and training (TVET) in restoring hospitality sector specific skills in Zimbabwe: a students' perspective. *Journal of Hospitality & Tourism Education*, 32(3), 133-141.

Spöttl, G., & Windelband, L. (2021). The 4th industrial revolution–its impact on vocational skills. *Journal of Education and Work*, 34(1), 29-52.

Srinivasan, M., & Ravi, M. (2016). Effect of Yogic Practice and Saq Training on Selected Coordinative Abilities of Students with Hearing Impairment. *American Journal of Art and Design*, 1(1), 15-20.

Taherdoost, H. (2016). Sampling methods in research methodology; how to choose a sampling technique for research. *How to choose a sampling technique for research (April 10, 2016)*.

Thangaru, M., & Kinyua, G. (2017). Influence of Organizational Competence on Corporate Governance Practices in National Industrial Training Authority. *International Journal of Education and Research*, 5(3), 83-90.

Wilson, M. (2016). Industrial attachment challenges: lessons drawn from Gweru polytechnic college in Zimbabwe. *International Journal of Business and Management Invention,* 5(9), 37-42.

Yaakob, H., Ail, K. M., & Radzi, N. F. (2018). The effect of internship on job performance: An assessment of students' perception.

Zahedi, M., Abbasi, M., & Khanachah, S. N. (2020). Providing a lean and agile supply chain model in project-based organizations. *Annals of Management and Organization Research*, 1(3), 213-233.

Zahedi, M., Akhavan, P., & Naghdi Khanachah, S. (2020). Identifying the key barriers to knowledge management and lessons learned in the project-based military organizations. *Military Management Quarterly*, 19(76), 29-68.

Zahedi, M., Akhavan, P., & Naghdi Khanachah, S. (2022). Evaluation of knowledge sharing and its role in organisational innovation using structural equation modelling: a case study of Civil Aviation Organisation. *Technology Analysis & Strategic Management*, 1-15.

Zahedi, M. R., & Khanachah, S. N. (2019). The impact of customer assisted knowledge production capacity on customer capital in a knowledge-based center. *Annals of Management and Organization Research*, 1(2), 107-121.

Zahedi, M. R., & Khanachah, S. N. (2020). The effect of knowledge management processes on organizational innovation through intellectual capital development in Iranian industrial organizations. *Journal of Science and Technology Policy Management*, 12(1), 86-105.

Zahedi, M. R., & Naghdi Khanachah, S. (2019). Measuring the impact of organizational social capital on organizational innovation (Case study: Iran Khodro Industrial Group). *Quarterly journal of Industrial Technology Development*, 17(37), 37-44.

Zahedi, M. R., & Naghdi Khanachah, S. (2020). Designing and implementing a model of organizational readiness assessment to become a knowledge-based organization: Case study an Iranian research center. *Quarterly journal of Industrial Technology Development*, 18(40), 65-76.

Zahedi, M. R., Naghdi Khanachah, S., & Papoli, S. (2023). Identifying and prioritizing the factors affecting the knowledge flow in high-tech industries. *Journal of Science and Technology Policy Management*.