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Research Article

From Paper Trails to Platforms: A Case Study of Manual Process Toward Integrated Industrial Training Information System

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Abstract: *This study examined the current industrial training placement process at UiTM Pahang. The findings reveal that manual, decentralized approaches create significant administrative challenges, including processing delays, inconsistent communication, repeated follow-ups, and limited status visibility. These issues negatively affect student experiences and increase coordinator workload. Students strongly supported an integrated information system featuring automated reminders, centralized dashboards, searchable company databases, and structured submission validation. Overall, digital transformation is necessary to modernize industrial training management. An integrated system can streamline operations, improve communication, minimize documentation errors, and provide a more organized, user-friendly experience for all stakeholders.*

1. INTRODUCTION

Industrial training or internship programmes are widely embedded in higher education curriculum as structured, workplace-based learning experiences intended to complement classroom instruction with authentic practice. Empirical work in Malaysia has consistently framed industrial trainings as mechanisms that allow students to apply academic knowledge in real work settings while developing professional and employability-oriented competencies (e.g., communication, leadership, and job attitudes) that are difficult to cultivate fully through classroom-only delivery (Jamian et al., 2021; Renganathan et al., 2012). Industrial trainings are also discussed within broader experiential and

field-based learning perspectives, in which learning outcomes are produced through "learning by doing" in non-classroom contexts (including industrial trainings and practicums) (Mahmood et al., 2023; Halim et al., 2023). Accordingly, industrial training programme research commonly investigates on educational effectiveness and skill development, stakeholder satisfaction (students and employers/host organisations), and the institutional processes that enable or constrain successful placement and completion (Jamian et al., 2021; Tholibon et al., 2021; Renganathan et al., 2012).

This study is to verify the extent to which manual coordination, decentralized processes, and lack of a centralized system contribute to inefficiencies, delays, and administrative challenges in the industrial training placement process at Pusat Pengajian Pengurusan Teknologi.

2. LITERATURE REVIEW

Most of industrial training programme research focus on evaluate how industrial trainings achieve intended learning and employability outcomes particularly the transfer of classroom learning to practice and the development of professional skills. past studies, evaluates industrial training outcomes from the employer perspective in terms of employer satisfaction or "company contentment" which is to identify the competencies that employers most value and that higher education institutions should prioritise (Jamian et al., 2021; Tholibon et al., 2021). Few studies focus on quality improvement in term of industrial training programme design, curriculum alignment, and support systems (e.g., briefings, guidelines, or digital placement systems) that can improve placement experiences and administrative efficiency (Rashid et al., 2021; Renganathan et al., 2012).

The current industrial training placement process in Pusat Pengajian Pengurusan Teknologi under course Industrial Training (MGT667) requires students to independently secure industrial training opportunities and rely on manual coordination for documentation, has resulted in inefficiencies, delays, and administrative challenges. Issues such as inconsistent submission of company details, dependency on coordinators for application letter preparation, lack of centralized tracking, and fragmented communication channels have affected the overall effectiveness of the industrial training placement process. According to Rashid et al., (2021), previous studies imply that students and coordinators coordinate placements and documents through manual, non-integrated processes, expose to avoidable waiting time, repeated handoffs, and process bottlenecks, reducing overall effectiveness.

Research with undergraduates shows that students often perceive industrial training application as a multi-step process which consist of identifying opportunities, applying, interviewing, and accepting offers that are "complex," emotionally demanding, and shaped by external constraints such as limited opportunities and financial pressures (Shakina et al., 2024). Similar finding found that early barrier is students' limited understanding of the industrial training process which confusion about available options and how to proceed and followed by difficulties with the actual application steps (Zwerling et al., 1997). Research on undergraduates in Malaysia also reports that students experience issues during the industrial training process "even before" attachment, underscoring that barriers arise at the pre-placement application stage as well as during placement (Fowler et al., 1999).

3. METHODOLOGY

This study employed a quantitative survey design to examine issues related to the industrial training placement process among students enrolled in the MGT667 course at UiTM Pahang. A total of 66 out of 80 students participated in the study using a census-based approach. As full participation is

not feasible, a systematic or probability-based sampling method will be applied using available class lists to reduce selection bias (Iyer, 2024). Data were collected through a structured online questionnaire consisting of sections related to manual processing delays, communication issues, tracking visibility, submission errors, and support for digital system improvements. Responses were measured using a five-point Likert scale. The collected data were analysed using descriptive statistics, including frequencies, percentages, mean scores, and ranking analysis, to identify the major challenges and preferred system features among students.

4. FINDINGS

From data analysis, key findings were derived from the survey conducted among 66 students enrolled in the MGT667 industrial training course at UiTM Pahang. The results are organized into three main areas: demographic background and application experience, issues in the current manual process, and student support for digital system improvements. Descriptive statistics, including frequencies, percentages, and mean scores, were used to identify the most significant challenges and preferred features among respondents.

4.1 Demographic Background of Respondents

Table 1 shows that most respondents were female students, representing 95.3% of the sample, while male students accounted for only 4.7%. In terms of industrial training status, almost all respondents were currently undergoing industrial training placement, indicating that the responses were obtained from students with direct and recent experience of the industrial training process.

Table 1. Respondent's gender.

Gender	Percentage
Male	4.7%
Female	95.3%

4.2 Industrial Training Application Experience

The results in Table 2 indicate that students faced considerable difficulty in securing industrial training placements. Only 37.5% of the respondents applied to 5 companies and less. While 23.4% apply to six to ten companies for industrial training. The worst of all, 17.2% apply to eleven to twenty companies and 21.9% apply to more than twenty companies. This suggests that the industrial training placement process is highly competitive and requires substantial effort from students.

Table 2. Numbers of company applied by student for industrial training placements.

Companies Applied	Percentage
1–5 companies	37.5%
6–10 companies	23.4%
11–20 companies	17.2%
More than 20 companies	21.9%

From this study also, email was identified as the primary method used for industrial training applications, with 73.4% of students relying on email communication. The remaining respondents used

a combination of methods such as online forms and other communication channels, reflecting the absence of a standardized application platform.

4.3 Issues in the Current Industrial Training Process

Based on the descriptive analysis of survey responses (Figure 1) which measured students' perceived challenges during the internship application process, several key findings emerged. A notably higher proportion of students (56%) indicated they had to follow up multiple times through visits, calls, or messages to confirm their application or letter status, suggesting that proactive student effort was frequently required to move the process forward. Similarly, just over half (52%) agreed that status updates were not provided in a timely or consistent manner throughout their internship placement journey. 50% reported experiencing delays in receiving official letters due to manual preparation methods and nearly half of the respondents (48%) agreed or strongly agreed that manual checking and verification substantially lengthened the application process. These findings point to a recurring pattern of procedural inefficiency and communication gaps, with the need for repeated follow-up representing the most widespread frustration among students.

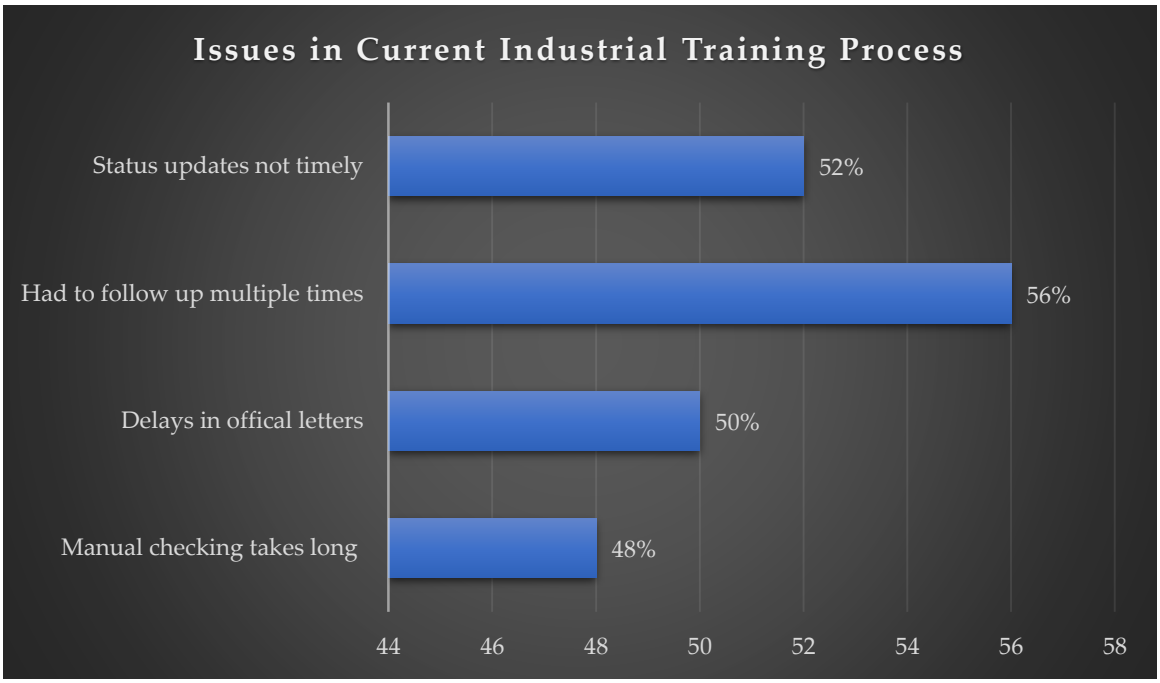

Figure 1. List of issues in the Current Industrial Training Process.

4.4 Communication Fragmentation and Tracking Issues

Figure 2 shows an analysis of student communication experiences during the internship application process revealed that most students received important instructions through both WhatsApp (78%) and email (72%), indicating that coordinators distributed information across at least two primary platforms. Despite this high reach, only 28% of students reported missing or overlooking important messages because they came through multiple channels, while a similar proportion (30%) had trouble locating older messages or files when needed. These relatively moderate percentages suggest that although communication fragmentation exists, most students have developed coping strategies or did not perceive multi-channel communication as a major barrier. These findings indicate that while dual-channel communication successfully reaches most students, it does create manageable

but inefficiencies in information retrieval and message tracking for a notable minority of the student population.

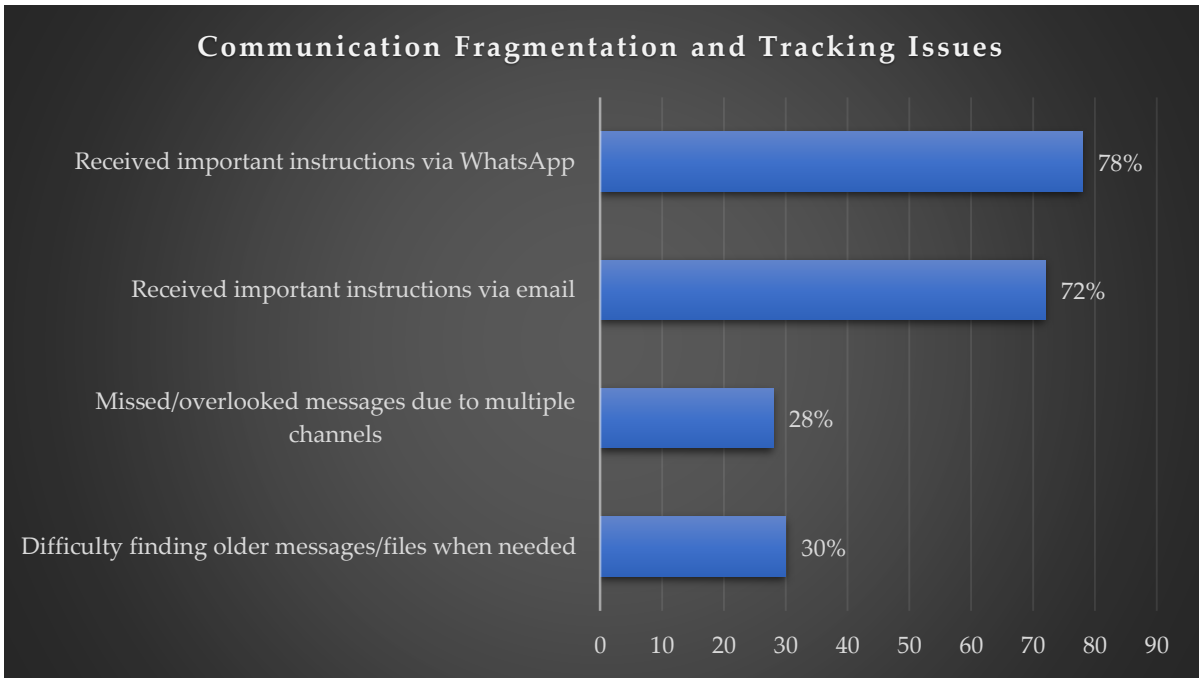

Figure 2. List of Communication Fragmentation and Tracking Issues.

4.5 Support for Digital System Improvements

The findings strongly support the implementation of an integrated industrial training information system (Table 3). All proposed digital features received agreement levels exceeding 80%. Automated reminders achieved the highest mean score of 4.2, followed closely by centralized tracking dashboards, searchable company databases, and FAQ support systems. Students also expressed strong support for systems that can validate incomplete submissions and provide structured checklists to reduce mistakes. These results indicate that students highly value transparency, automation, and self-service support features that can simplify the industrial training process and reduce administrative burden.

Table 3. Proposed digital features in integrated industrial training information system.

Proposed Feature	Agree/Strongly Agree (%)	Mean Score
Structured checklist would reduce mistakes	84.3%	4.0
Prefer system that prevents incomplete submission	82.9%	3.9
Centralized tracking dashboard would help	87.1%	4.1
Automated reminders would prevent late submissions	90.0%	4.2
FAQ page would reduce confusion	87.1%	4.1
Templates/sample documents would be helpful	85.7%	4.0
Searchable company database would be useful	87.1%	4.1

Overall, the findings confirm that the current manual industrial training management process creates inefficiencies, delays, and communication challenges for students. The absence of centralized tracking, systematic reminders, and integrated communication channels contributes to uncertainty and repeated follow-ups throughout the placement process. At the same time, students demonstrated

strong readiness and support for digital transformation initiatives. The results therefore validate the need for an integrated industrial training information system that can streamline administrative processes, improve transparency, and enhance the overall industrial training experience for students and coordinators.

5. DISCUSSION

The findings of this study confirm that the current manual approach to industrial training placement creates a range of operational problems for students. The absence of a centralized system forces students to navigate multiple communication channels, manually track their application status, and repeatedly follow up with coordinators to confirm receipt of documents or letters. This fragmented process not only consumes valuable student time and effort but also increases uncertainty and anxiety during an already stressful period of securing an industrial training placement. Furthermore, coordinators bear an unnecessary administrative burden, as they must respond to repeated inquiries and manually verify submissions that could be automated. These problems are consistent with broader challenges observed in higher education settings where administrative processes have not kept pace with digital transformation.

Despite these challenges, students have clearly articulated what they want in a modern industrial training management system. Students desire a unified digital platform that provides them with real-time visibility over their application status and submission history, eliminating the need for guesswork or repeated follow-ups. They also want automated reminders to help them meet deadlines and avoid missing important documentation requirements. A searchable company database is highly valued, as it would allow students to make informed decisions about where to apply based on relevant criteria such as sector, location, and past placement records. Additionally, students want structured checklists and submission validation features that prevent them from submitting incomplete applications. These preferences reflect a broader desire for transparency, efficiency, and self-service capability in institutional processes.

6. CONCLUSION

The current manual and decentralized approach to managing industrial training placements at Pusat Pengajian Pengurusan Teknologi, UiTM Pahang, has been shown to create procedural inefficiencies that hinder both student experience and administrative effectiveness. The reliance on fragmented communication channels, manual document preparation, and the absence of a centralized tracking mechanism has resulted in repeated follow-ups, inconsistent status updates, and delays in official correspondence. These issues not only increase student anxiety and uncertainty but also place an unnecessary workload on coordinators who must manually address each query and document discrepancy. The evidence clearly indicates that the existing process has reached the limits of its effectiveness and requires fundamental restructuring.

Considering these challenges, this study confirms that digital transformation of the industrial training management process is not merely an enhancement but a necessity. Students have demonstrated strong readiness for an integrated system that provides automation, transparency, and self-service capabilities. Moving from paper-based or semi-digital coordination toward a unified platform represents a strategic opportunity for the institution to improve operational efficiency, reduce administrative friction, and align industrial training management with contemporary expectations of higher education service delivery. Without such a transformation, the persistent inefficiencies will continue to detract from the educational value of the industrial training programme.

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