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Exploring Strategic AI Adoption and Entrepreneurial Opportunities Through University Industry Ecosystem Learning

Gautama Sastra Waskita[1*], Denny Rakhmad Widi Ashari[2], Pries Winka Sajida[3], Sawal Sartono[4], Samlatul Izzah[5]
[1,3,4]Faculty of Economics, Universitas Tulungagung, Indonesia
[2,5]Faculty of Islamic Studies, Nahdlatul Ulama University of Blitar, Indonesia
[1]sastrawaskita@unita.ac.id, [2]drwashari@unublitar.ac.id, [3]prieswinkasajida@gmail.com, [4]sawalsartono@unita.ac.id
[5]samlatul.izzah@gmail.com
***Corresponding Author**

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ABSTRACT

University industry collaboration is increasingly used to connect higher education with changing workplace demands, yet less is known about how participants interpret and translate such encounters into learning and future possibilities. **An exploratory qualitative design was employed**, drawing primarily on 118 open-ended responses from university students, complemented by selected key informant accounts and contextual field materials. Data were interpreted using reflexive thematic analysis. **The findings identify** three interconnected patterns industry exposure was interpreted through academic knowledge digital learning, particularly around AI, was increasingly understood in terms of purposeful and strategic application and exposure to industry and digital practices opened emerging possibilities for business ideas and career portfolios. The study implies that universities should move beyond event-based industry engagement toward learning designs that connect industry cases, critical digital application, and follow-up opportunities for business and career development. These insights contribute to understanding how experiential encounters may connect university learning with evolving professional contexts. **The study also** highlights the importance of interpreting participant perspectives when examining the educational value of university industry engagement. **Further research** could investigate how repeated encounters and structured follow-up activities influence participants' learning trajectories, digital practices, and entrepreneurial or career development over time.

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1. INTRODUCTION

Higher education is increasingly expected to prepare graduates for professional environments shaped by rapid technological change, digital transformation, and entrepreneurial activity. Beyond disciplinary knowledge, students are expected to develop the capacity to interpret emerging technologies, respond to evolving work practices, and recognise opportunities for value creation [1]. In this context, University Industry Collabo-

ration (UIC) has become an important mechanism for connecting academic learning with professional practice, technological innovation, and entrepreneurial development. UIC provides opportunities for students to encounter industry knowledge and practices that may be difficult to reproduce in conventional classroom settings, while enabling universities to respond more effectively to changing industry demands [2]. However, the significance of UIC cannot be fully understood through institutional and organisational outcomes alone. Previous research has primarily examined UIC in relation to knowledge transfer, innovation, employability, collaboration performance, and organisational development. Although these perspectives provide valuable insights into the outcomes of collaboration, they offer comparatively limited understanding of the learning processes occurring during specific encounters, particularly how participants interpret industry exposure, connect practical experiences with academic knowledge, and develop an understanding of emerging technologies. Consequently, the processes through which participants construct meaning from interactions between academic and industry environments warrant further investigation. From this perspective, a university industry encounter can be understood not merely as an occasion for transferring knowledge but also as a temporary learning space where diverse forms of knowledge, experience, and professional expectations intersect [3].

The relationship between UIC, digital learning, and entrepreneurship becomes increasingly important as AI and digital technologies reshape professional practices and business opportunities [4]. This relationship aligns with the United Nations Sustainable Development Goals (SDGs), particularly SDG 4 (Quality Education), SDG 8 (Decent Work and Economic Growth), and SDG 9 (Industry, Innovation and Infrastructure), emphasizing relevant education, entrepreneurial development, and technological innovation. Digital competence extends beyond technical skills to include the purposeful application of technologies in professional contexts, while entrepreneurial orientations may emerge through academic learning and industry exposure. Nevertheless, digital and entrepreneurial learning are often examined separately, leaving their intersection within UIC encounters relatively underexplored [5]. Contemporary UIC involves diverse stakeholders, including students, educators, industry practitioners, consultants, and technology communities, highlighting the need to understand how participants integrate different forms of knowledge. To address this gap, the study examines a university–industry learning encounter at Tulungagung University, Indonesia, involving 170 university students, five vocational students from SMKN 1 Tulungagung, educators, administrative staff, and industry and technology representatives. The encounter integrated academic perspectives, business cases, consulting insights, and digital practices. Using an exploratory qualitative case study approach, this research investigates how participants interpret industry exposure, AI applications, and emerging entrepreneurial and career opportunities rather than measuring changes in competence or behaviour [6].

Accordingly, this study addresses the central research question of how participants interpret a university and industry encounter in relation to industry exposure, digital learning, and emerging entrepreneurial and career possibilities. This question is explored through three interconnected areas, namely how participants connect industry practices with academic knowledge, how they interpret the potential applications of digital technologies, particularly AI, and how these interpretations relate to future business and career opportunities [7]. The investigation focuses on participants' perceptions and intentions rather than measurable improvements in digital competence or entrepreneurial capabilities. The primary contribution of this research is to extend the understanding of UIC beyond conventional knowledge transfer by emphasizing interpretive processes within university and industry learning encounters. Specifically, the study conceptualises these encounters as temporary ecosystem learning spaces where academic knowledge, industry practices, and digital technologies intersect through participants' processes of meaning construction [8]. Furthermore, the joint construction of capabilities is introduced as a potential theoretical direction rather than an empirically established outcome, requiring further longitudinal investigation. By connecting industry exposure, digital interpretation, and possibilities for the future, this research contributes to discussions on UIC, digital transformation, and entrepreneurship while informing future studies on collaborative learning environments [9].

2. LITERATURE REVIEW

2.1. University–Industry Collaboration as an Ecosystem Learning Space

University–industry collaboration has become an important mechanism for connecting academic knowledge with professional practices, technological innovation, and entrepreneurial development [10]. Through collaborative activities, universities can provide students with opportunities to understand industry challenges and relate theoretical concepts to practical business environments. Such interactions may involve students,

educators, industry practitioners, business consultants, and technology communities, creating a learning environment where different forms of knowledge and experience intersect [11]. From an ecosystem perspective, university–industry collaboration extends beyond institutional partnerships by emphasizing the interactions through which participants interpret professional knowledge and identify its relevance to their academic and future career contexts.

The concept of ecosystem learning highlights the importance of knowledge exchange, contextual understanding, and interaction among multiple stakeholders. Industry exposure may help students recognize the practical relevance of academic concepts, while educational institutions provide theoretical foundations for interpreting professional experiences [12]. However, the presence of industry representatives does not automatically produce meaningful learning or measurable capability development. The educational value of university–industry encounters depends partly on how participants connect external knowledge with their existing understanding and potential applications. Consequently, these encounters can be conceptualized as temporary learning spaces that facilitate academic and professional meaning making rather than as activities that necessarily generate immediate educational or entrepreneurial outcomes [13].

2.2. Digital Competence and Strategic Interpretation of AI

Digital competence represents an increasingly important dimension of higher education as technological transformation influences professional activities, organizational processes, and business practices [14]. Digital competence involves not only the technical ability to operate digital tools but also the capacity to interpret, evaluate, and apply technologies appropriately within specific contexts. AI has become particularly relevant because of its potential applications in information processing, problem-solving, productivity improvement, and strategic decision-making. Within university industry learning environments, exposure to AI and related practices, including prompt engineering, may encourage students to consider how emerging technologies can support academic activities and professional responsibilities [15].

The strategic interpretation of AI emphasizes the distinction between technological familiarity and purposeful application [16]. Students may initially encounter AI as a technical instrument, but interaction with industry practitioners can introduce broader perspectives concerning its potential organizational and professional value. Understanding how digital technologies may contribute to productivity, operational efficiency, and problem-solving can provide students with additional perspectives on technology-enabled activities [17]. Nevertheless, recognizing these potential applications does not necessarily indicate measurable improvement in digital competence. An exploratory learning encounter is therefore more appropriately understood as an opportunity for participants to develop interpretations of technological possibilities rather than as direct evidence of sustained digital capability development [18].

2.3. Entrepreneurial Mindset and Emerging Career Possibilities

Entrepreneurial mindset refers to an individual's orientation toward recognizing opportunities, exploring innovative ideas, responding to uncertainty, and considering possibilities for value creation [19]. Within higher education, entrepreneurial learning can involve academic instruction, practical experiences, exposure to industry environments, and interaction with professionals who demonstrate how business opportunities emerge. University industry collaboration may provide students with examples of business challenges, entrepreneurial practices, and technological applications that encourage them to consider possible future initiatives. These experiences can support early reflections on entrepreneurship by connecting academic knowledge with practical situations and potential business applications [20].

Industry connected learning may also shape how students interpret professional opportunities and career development. Exposure to digital technologies, business consulting practices, and industry perspectives can encourage participants to consider possible applications of their knowledge in developing business ideas or preparing career portfolios. In this context, entrepreneurial and career orientations may emerge alongside digital learning because technological knowledge provides additional possibilities for professional and business activities [21]. However, expressing an intention to develop a business idea or career portfolio should not be interpreted as evidence that entrepreneurial behavior or professional development has already occurred. Such expressions primarily reflect emerging possibilities and future-oriented interpretations that may require additional learning experiences, institutional support, and subsequent action.

3. RESEARCH METHOD

3.1. Research Design

This study employed an exploratory qualitative design with an interpretive orientation to examine how participants made sense of a university industry encounter as a learning experience [22]. The study did not treat the encounter as a causal intervention intended to produce measurable changes in digital competence or entrepreneurial mindset. Instead, it focused on how participants interpreted industry exposure, connected practical cases with academic knowledge, made sense of emerging digital technologies, and articulated possible applications for future business and career development. This positioning is consistent with qualitative inquiry concerned with meaning-making within a situated social and educational context [23].

3.2. Research Setting and Participants

The study was conducted in the context of a university industry learning encounter at Tulungagung University, Indonesia, involving actors from higher education, vocational education, industry, business consulting, and the technology community. The wider learning encounter involved 170 university students, five vocational students from SMKN 1 Tulungagung, four UNITA educators, one lecturer from Universitas Nahdlatul Ulama Blitar, and three administrative staff members [24]. Industry- and technology-related contributions involved representatives associated with Indosat Ooredoo Hutchison, Tataniaga Business Consulting, and Google Developer Group. These figures describe the broader participants present in the encounter rather than the qualitative response pool. For the present analysis, open-ended qualitative responses were obtained from 118 university students, comprising 11 Regular Management students in semester 3, 67 Bidikmisi Management students in semester 3, 25 Bidikmisi Accounting students in semester 3, and 15 Regular Management students in semester 5. Thus, the 118 responses constitute the principal empirical corpus for examining participants' interpretations of the encounter.

3.3. Data Sources and Collection

The qualitative material was complemented by researcher field notes and documentary materials associated with the learning encounter, including presentation materials and participant outputs. The open-ended responses provided the primary empirical basis for understanding participants' reflections on industry exposure, academic learning, digital technologies, AI, business possibilities, and career development [25]. Field notes and documentary materials were used to situate these accounts within the context of the encounter and to support the interpretation of the emerging patterns. Three key informant accounts were also used illustratively in the findings a university student (Informant 1), a vocational student (Informant 2), and an industry practitioner (Informant 3). These accounts were not treated as representative of the wider participant population; rather, they were used to illuminate particular patterns identified across the qualitative material [26].

3.4. Reflexive Thematic Analysis

The analysis followed a reflexive thematic approach informed by Braun and Clarke's framework. The process involved repeated familiarisation with the qualitative material, generation of initial codes, identification of recurring patterns, literative review and refinement of themes, and development of an interpretive narrative [27]. Coding was primarily data-led while remaining sensitised to the study's central concerns with industry-connected learning, digital learning, and emerging entrepreneurial and career possibilities. Consistent with the reflexive nature of thematic analysis, these stages were treated as iterative rather than strictly linear, allowing interpretations to be revisited as relationships among participant accounts became clearer [28].

The analysis generated three interconnected patterns that correspond directly with the research questions. The first concerns how participants connected exposure to industry practices and business cases with academic learning. The second concerns how participants interpreted digital technologies, particularly AI and prompt engineering, in relation to possible strategic and operational applications [29]. The third concerns how industry and digital learning were associated in participants' accounts with emerging business ideas and career-portfolio possibilities. These patterns were subsequently interpreted as a movement from exposure, to interpretation, to possible application and future orientation. The analytical emphasis therefore rests on how participants made meaning from the encounter rather than on establishing that the encounter objectively changed their competence, entrepreneurial mindset, or subsequent behaviour [30].

3.5. Interpretive Rigour and Researcher Reflexivity

Several steps were taken to maintain interpretive rigour. The analysis distinguished participants' direct statements from the researchers' interpretations and from the broader theoretical implications subsequently

developed [31]. Attention was also given to similarities and differences across the available participant groups and data sources rather than treating isolated quotations as representative evidence. Given the researchers' involvement in the university setting and the institutional context of the encounter, reflexive attention was maintained to the possibility that participants' responses could have been shaped by the educational setting, perceived expectations, or the presence of academic and industry actors. The reporting was informed by the Standards for Reporting Qualitative Research (SRQR), particularly its emphasis on transparency regarding research design, data sources, analytical procedures, and researcher reflexivity [32].

The analytical process involved an exploratory qualitative design, collection of participant responses and contextual materials, reflexive thematic analysis, and procedures for maintaining interpretive rigour [33]. These interconnected components provided a systematic foundation for examining how participants interpreted the university industry encounter and connected their experiences with emerging digital, entrepreneurial, and career possibilities. The overall analytical process is illustrated in Figure 1.

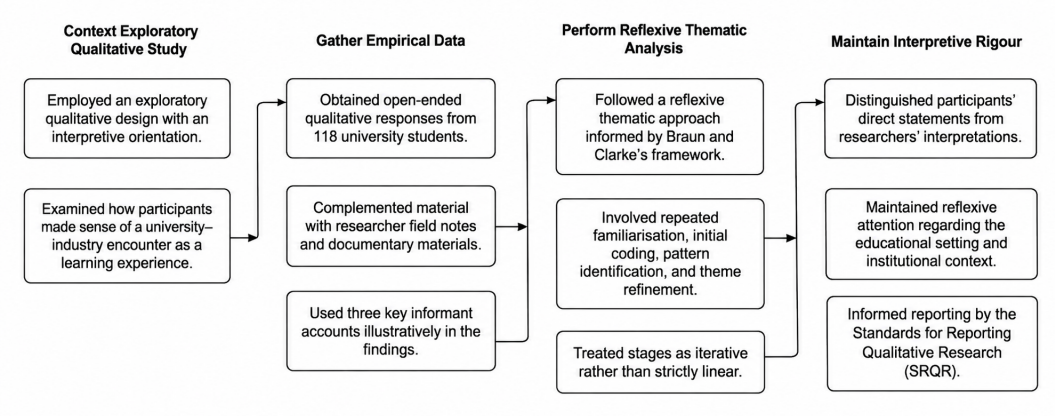


Figure 1. Analytical Process Framework

Figure 1 illustrates the analytical process employed in this study, integrating an exploratory qualitative research design, empirical data collection, reflexive thematic analysis, and interpretive rigour. The framework demonstrates how 118 open-ended student responses, supported by field notes, documentary materials, and selected key informant accounts, were systematically examined to identify recurring patterns of meaning-making [34]. Through iterative coding and theme refinement, the analysis explored participants' interpretations of university industry encounters, digital learning, and emerging entrepreneurial and career possibilities. This process supports a transparent and context-sensitive interpretation of the qualitative findings without assuming measurable changes in participants' competencies or behaviour.

3.6. Scope and Methodological Limitations

The interpretation remains bounded by the characteristics of the case and the timing of data collection. The study captures participants' interpretations surrounding a single, time-bounded university industry encounter and therefore does not establish sustained changes in digital competence, entrepreneurial mindset, career behaviour, or business performance [4]. The presence of multiple stakeholder groups demonstrates the multi-actor character of the learning setting, but the principal qualitative evidence analysed in this study comes from the 118 university student responses, supplemented by selected accounts and contextual materials. Accordingly, the findings are interpreted as evidence of emerging learning orientations and perceived possibilities, rather than as evidence of established capability development. The notion of potential capability co-construction is therefore positioned as a theoretical implication of the observed pattern rather than as a directly measured outcome. This distinction provides the basis for interpreting the encounter as a potential ecosystem learning space while avoiding claims that exceed the empirical scope of the study [35].

4. RESULT AND DISCUSSION

4.1. Overview of Qualitative Findings

The analysis of 118 open-ended student responses, complemented by selected key informant accounts, researcher field notes, and documentary materials, revealed three interconnected patterns in how participants

interpreted the university industry encounter at Tulungagung University. The findings indicate that participants connected industry exposure with their existing academic knowledge, interpreted AI and digital technologies in relation to potential strategic applications, and identified emerging possibilities for business development and career preparation [36]. These patterns suggest that the encounter functioned as a temporary learning environment in which academic, professional, and technological perspectives became connected through participants' interpretations.

The findings do not establish that the encounter directly improved digital competence or produced measurable changes in entrepreneurial mindset. Instead, the qualitative evidence provides insights into how participants understood the learning experience and considered its possible relevance to their future activities. The analysis therefore focuses on participants' meaning-making processes rather than evaluating the encounter as a causal educational intervention [37].

4.2. Connecting Industry Exposure with Academic Learning

The analytical pattern highlights how participants connected industry exposure with academic knowledge. Business cases and professional perspectives helped participants understand the application of theoretical concepts in real-world environments. These experiences encouraged reflection on academic learning and its relevance to organizational practices. The findings suggest that university industry collaboration facilitates meaningful connections between theoretical understanding and practical experience through participants' interpretation of industry knowledge.

This interpretation was illustrated by Informant 1, a university student, who described gaining valuable industry insights and practical business knowledge from Tataniaga Business Consulting that could be connected with academic learning at Tulungagung University. The account highlights how industry exposure enabled participants to relate professional practices to familiar academic concepts, strengthening their understanding of theoretical knowledge in real world business contexts. Thus, the university industry encounter can be interpreted as a temporary boundary space where academic and professional knowledge intersect, encouraging meaningful connections between theoretical learning and practical experiences.

Table 1 summarizes how participants connected industry exposure with academic knowledge and interpreted practical business cases through theoretical perspectives. The findings suggest that university industry encounters encourage reflection on potential academic, professional, and entrepreneurial applications. However, these interpretations reflect expressed intentions rather than demonstrated competence development or behavioral change.

Table 1. Analytical evidence of industry-connected academic meaning-making

Analytical pattern	**Evidence from the qualitative material**	**Interpretive reading**	**Implication**
Industry exposure connected with academic learning	Informant 1 described gaining "insight From the industry" and a business case that was "Integrated with academic knowledge"	Industry knowledge was interpreted through an existing academic frame rather than received as isolated information	University–industry encounters may function as boundary spaces where practical and academic knowledge are connected
Business cases provided contextual reference points	Responses referred to industry insight and business cases as valuable learning experiences	Practical examples gave participants a context in which academic ideas could be considered in relation to business practice	The educational value of collaboration may depend partly on participants' interpretation of practical cases
Learning was oriented toward possible application	Participants linked exposure to knowledge that could be used beyond the immediate event	The encounter was interpreted not only retrospectively but also in relation to possible future use	Industry engagement can create conditions for application-oriented learning

As presented in Table 1, the qualitative findings indicate that industry exposure acquired educational relevance when participants connected professional experiences and business cases with their academic knowledge. Practical examples provided contextual references through which students could consider how theoretical concepts might relate to professional activities. These findings suggest that university industry collaboration

may create opportunities for contextual learning and future-oriented interpretation. However, the evidence represents patterns identified within the qualitative material rather than demonstrating that all 118 respondents experienced the encounter in the same way.

4.3. Strategic Interpretation of AI and Digital Learning

The analytical pattern highlights how participants interpreted digital technologies, particularly AI and prompt engineering, within the university industry learning environment. The qualitative responses suggest that exposure to AI-related practices encouraged participants to recognize the relevance of digital technologies beyond their basic technical functions, particularly in supporting productivity, problem-solving, and organizational efficiency. This pattern emphasizes the distinction between understanding digital tools and recognizing their potential strategic value in professional contexts. The perspectives of Informant 2 and Informant 3 further illustrate these interpretations. Informant 2, a vocational student, emphasized the educational value of prompt engineering and the conceptual framework introduced during the encounter, highlighting its relevance to practical learning. Meanwhile, Informant 3, an industry practitioner, described the potential of AI to enhance productivity, streamline work processes, and support organizational activities. These contrasting perspectives demonstrate how university industry collaboration provides opportunities for integrating technical knowledge with organizational interpretations of emerging technologies. However, the findings primarily reflect participants' perceptions and interpretations of AI applications rather than providing evidence of measurable improvements in digital competencies.

Among the 118 open-ended student responses, seven explicitly referred to intentions to use AI more strategically, representing approximately 5.9% of the qualitative response pool. This finding indicates that a subset of participants articulated possible future applications of AI following their involvement in the university industry learning encounter. These responses suggest an emerging awareness of how AI technologies could be utilized beyond routine technical functions, particularly in supporting productivity, improving problem-solving processes, and facilitating more effective academic or professional activities. Although the proportion was relatively small, these expressions provide qualitative insights into how industry-related exposure may encourage participants to reconsider the practical and strategic relevance of digital technologies. Nevertheless, this proportion should not be interpreted as evidence of a population-level shift, measurable behavioral change, or sustained improvement in digital competence, as the findings reflect self-reported intentions rather than demonstrated technological capabilities. Instead, the responses highlight the interpretive significance of university industry collaboration in introducing potential applications of emerging technologies and stimulating reflection on their future relevance. Table 2 summarizes the available qualitative evidence related to emerging strategic interpretations of AI.

Table 2. Evidence of emerging strategic interpretations of AI

Participant/data source	**Evidence**	**Immediate meaning expressed**	**Analytical interpretation**
Vocational student (Informant 2)	"ilmu yang bermanfaat untuk prompt engineering"	Learning how to formulate/use prompts	AI was interpreted as a capability requiring purposeful interaction rather than passive exposure
Industry practitioner (Informant 3)	AI can support productivity and accelerate work "lebih efisien dan efektif"	AI linked to operational efficiency	AI was framed as a potential organisational resource rather than only a technical tool
Open-ended responses	7 of 118 responses mentioned an intention to use AI more strategically	Future-oriented intention	A subset of participants began articulating AI in terms of possible strategic application

As presented in Table 2, participants interpreted AI through both technical and organizational perspectives. The vocational student account emphasized the practical understanding of prompt engineering, while the industry practitioner connected AI with potential improvements in operational efficiency. The seven student responses mentioning strategic AI use further indicate that some participants began considering the technology

in relation to future activities. These findings suggest an emerging orientation toward purposeful digital application, although the study does not establish sustained technological competence or subsequent behavioral change.

4.4. Emerging Entrepreneurial and Career Development Possibilities

The analytical pattern highlights how participants connected industry exposure and digital learning with possible future entrepreneurial and professional activities. The qualitative responses indicated that some students viewed the encounter as an opportunity to consider how acquired knowledge could be applied beyond the university environment. These emerging interpretations included the possibility of developing business ideas, exploring entrepreneurial opportunities, and strengthening digital career portfolios. Participants also demonstrated an emerging awareness of how practical industry knowledge and digital competencies could contribute to their future professional development and entrepreneurial aspirations. Rather than demonstrating immediate entrepreneurial action, the responses reflected future-oriented considerations associated with participants' academic experiences and exposure to professional and technological practices. This pattern suggests that university industry collaboration may encourage participants to recognize potential pathways for translating academic knowledge and digital learning into future entrepreneurial initiatives and professional opportunities.

Five of the 118 student responses referred to potential applications of the learning experience in developing new business ideas, while three responses specifically emphasized the importance of digital or career portfolios. These findings suggest that selected participants were beginning to connect industry knowledge, digital practices, and academic experiences with possible professional and entrepreneurial pathways. The responses also indicate an emerging awareness of how practical knowledge acquired through university industry collaboration could inform future career planning, entrepreneurial exploration, and professional development. Such interpretations highlight the potential role of industry connected learning in encouraging students to recognize opportunities beyond conventional academic activities. However, expressing such possibilities does not establish that participants subsequently developed businesses, completed career portfolios, or experienced measurable changes in entrepreneurial mindset. Instead, these responses should be understood as preliminary indications of future-oriented thinking rather than evidence of actual entrepreneurial outcomes. Table 3 summarizes the relationship between the qualitative evidence and the emerging future-oriented possibilities identified in the analysis.

Table 3. From learning experience to future-oriented possibilities

Emerging orientation	**Evidence in the qualitative corpus**	**What the evidence supports**	**What it does not establish**
Business possibility	5 of 118 responses	Participants articulated possible applications to new business ideas	That participants subsequently created or launched businesses
Career-portfolio possibility	3 of 118 responses	Participants recognised the relevance of digital records/portfolios for future career development	That portfolios were actually developed or improved after the encounter
Strategic AI possibility	7 of 118 responses	Participants expressed an intention to use AI more strategically	That sustained AI competence or behavioural change occurred

As presented in Table 3, the findings identify three emerging orientations involving business development, career portfolios, and strategic AI applications. Five participants' responses referred to possible business ideas, three emphasized career-portfolio development, and seven mentioned intentions to use AI more strategically. These expressions indicate that some participants interpreted the learning encounter in relation to future professional and entrepreneurial possibilities. Nevertheless, the findings remain limited to articulated intentions and perceived opportunities, rather than demonstrating subsequent business creation, portfolio development, or sustained digital capability improvement.

4.5. Integrated Interpretation of Ecosystem Learning Processes

The integration of the three analytical patterns provides a broader understanding of how participants interpreted the university industry encounter as an ecosystem learning experience. Industry exposure introduced participants to practical business cases and professional perspectives, which became meaningful when connected with existing academic knowledge. Digital technologies, particularly AI, were subsequently interpreted in relation to possible strategic and operational applications. Some participants extended these interpretations toward future business ideas and career development. These interconnected experiences highlight how university industry collaboration may facilitate knowledge integration, encourage reflective learning, and support participants in recognizing the relevance of technological developments within broader academic, professional, and entrepreneurial contexts. These patterns suggest an interpretive movement from industry exposure to academic understanding, strategic digital interpretation, possible application, and future orientation.

This movement should not be understood as a linear causal process because the study did not measure changes in participants' competencies or behavior over time. Instead, it represents an analytical synthesis of recurring meanings identified through reflexive thematic analysis, emphasizing the relationships among participants' interpretations rather than establishing sequential developmental outcomes. The encounter provided a temporary context in which participants could connect different forms of knowledge, reflect on professional experiences, and imagine possible applications within academic and organizational environments. Such interactions illustrate how university industry collaboration may create opportunities for integrating theoretical understanding, technological awareness, and future-oriented perspectives through meaningful engagement with industry practices. These interpretations further highlight the importance of contextual learning experiences in shaping participants' emerging perspectives on academic relevance, digital engagement, and future professional development opportunities. Nevertheless, the findings remain grounded in participants' reported experiences and should be interpreted as context-specific insights rather than generalizable evidence of educational or entrepreneurial transformation. Table 4 presents the integrated analytical synthesis, including the central evidence, emerging interpretations, and boundaries of the claims supported by the qualitative material.

Table 4. Integrated analytical synthesis

Stage of meaning-making	Central evidence	Emerging interpretation	Boundary of the claim
Exposure	Industry cases, practitioner perspectives, AI/prompt-engineering content	Participants encountered knowledge beyond conventional classroom instruction	Exposure alone does not demonstrate learning
Interpretation	Academic alignment; prompt engineering; AI productivity	Participants connected external knowledge with existing academic or practical frames	Interpretation is evidenced through accounts, not measured competence
Possible application	Strategic AI intentions; business ideas; career-portfolio references	Some participants projected learning toward potential future uses	Intentions do not demonstrate subsequent action
Future orientation	Business and career possibilities	The encounter opened a space for imagining professional and entrepreneurial applications	Long-term outcomes remain unknown

As presented in Table 4, the integrated analysis identifies four interconnected dimensions of meaning-making exposure, interpretation, possible application, and future orientation. Industry cases and digital practices provided opportunities for participants to encounter knowledge beyond conventional classroom instruction, while academic interpretation helped connect external experiences with existing understanding. Some participants subsequently considered possible applications involving AI, entrepreneurial initiatives, and career development. Nevertheless, these findings demonstrate emerging interpretations rather than established competence development or observable behavioral outcomes. The synthesis therefore supports understanding university industry encounters as temporary ecosystem learning spaces in which different forms of knowledge may become connected through participants' experiences.

4.6. Potential Capability Co-Construction within the University Industry Ecosystem

The findings provide a conceptual foundation for understanding potential capability co-construction within university industry learning environments. The encounter involved participants and contributors from

higher education, vocational education, industry, business consulting, and technology communities, bringing together different forms of academic, professional, and technological knowledge. This multi-actor environment created opportunities for students to interpret practical experiences through academic perspectives and consider how emerging digital technologies might relate to future professional activities. Such interactions suggest that university industry collaboration may support conditions for shared learning and the development of possible applications beyond conventional classroom experiences.

However, the evidence does not establish that capabilities were jointly developed among participating stakeholders. The principal qualitative material consisted of 118 university student responses, complemented by selected informant accounts and contextual materials, rather than longitudinal observations of reciprocal learning among all actors. Consequently, capability co-construction should be regarded as a theoretical possibility associated with the observed learning environment rather than a confirmed empirical outcome. The contribution of the study lies in identifying how participants interpreted the encounter and connected academic knowledge, industry practices, digital technologies, and future opportunities within a temporary ecosystem learning space.

5. MANAGERIAL IMPLICATIONS

The findings offer practical implications for university administrators and academic programme managers seeking to strengthen the educational value of university industry collaboration. Rather than positioning industry engagement as an isolated guest lecture or ceremonial activity, universities should integrate industry encounters into structured learning processes that connect professional practices with academic knowledge. This integration can be achieved through industry-based case discussions, reflective assignments, collaborative problem-solving activities, and curriculum-aligned projects. Academic managers should also establish mechanisms for evaluating how students interpret industry knowledge and relate it to their academic development. Such approaches may help transform temporary industry exposure into more meaningful learning experiences while strengthening the relevance of university programmes to evolving professional environments.

For industry partners and digital transformation managers, the findings highlight opportunities to support more purposeful engagement with AI and emerging digital technologies. Industry representatives should move beyond introducing technological applications by demonstrating how digital tools contribute to operational efficiency, strategic decision-making, innovation, and business development. Collaborative activities involving AI-based business scenarios, digital problem-solving exercises, and practical technology demonstrations may provide students with opportunities to critically interpret the relevance of digital technologies in professional contexts. University and industry managers can also jointly develop learning activities that connect technological knowledge with real organizational challenges. However, these initiatives should be understood as potential mechanisms for supporting digital learning rather than evidence that sustained digital competencies have already been achieved.

From an entrepreneurial and career development perspective, university leaders, entrepreneurship centres, and industry stakeholders should consider creating opportunities for students to translate learning experiences into business concepts, innovation projects, and professional portfolios. Structured mentoring, interdisciplinary project development, industry feedback sessions, and portfolio-based assessments may help students explore the practical relevance of academic and digital knowledge. Managers should also consider implementing follow-up evaluations to determine whether students' initial intentions develop into measurable learning outcomes, entrepreneurial initiatives, or career-related activities. By coordinating academic, industrial, and entrepreneurial resources, universities may establish a more supportive ecosystem for continued learning and opportunity exploration, although the long-term effectiveness of these managerial interventions requires further empirical evaluation.

6. CONCLUSION

This study investigated how participants interpreted a university industry encounter as a learning experience, particularly in relation to industry exposure, digital technologies, and emerging entrepreneurial and career opportunities. Drawing on 118 open-ended student responses, supported by selected key informant accounts and contextual materials, the findings identified three interconnected patterns of meaning-making. First, participants connected industry practices and business cases with existing academic knowledge. Second, they interpreted AI and digital technologies as resources for potentially more purposeful and strategic applications.

Third, they associated their learning experiences with possible business ideas and career-portfolio development. These findings suggest that university industry encounters can provide meaningful contexts in which students connect academic understanding with professional practices and future possibilities.

The study contributes to the literature on university industry collaboration by emphasizing participants' interpretive processes rather than focusing exclusively on institutional collaboration outputs or knowledge transfer. The findings indicate that an industry-connected learning encounter may function as a temporary ecosystem learning space where academic knowledge, industry experience, and digital technologies intersect through individual meaning-making. This interpretation also provides a conceptual basis for exploring capability co-construction, although the present evidence does not demonstrate that sustained capabilities were jointly developed among participating actors. Accordingly, the contribution of this research lies in identifying emerging learning orientations and possible pathways from industry exposure toward interpretation and prospective application, rather than establishing direct improvements in digital competence, entrepreneurial performance, or career outcomes.

Despite these contributions, the findings should be interpreted within the limitations of a single, time-bounded university industry encounter and a qualitative dataset primarily consisting of student responses. The research cannot determine whether participants' expressed intentions resulted in sustained behavioural changes, technological competencies, entrepreneurial initiatives, or professional achievements. Future studies should employ longitudinal designs, include more extensive perspectives from educators and industry representatives, and investigate how collaborative learning experiences influence observable outcomes over time. Comparative research across institutions and industry sectors could further clarify the conditions under which university industry engagement supports sustained capability development. Overall, the study concludes that the educational significance of university industry collaboration extends beyond exposure to external expertise by creating opportunities for participants to interpret academic, industrial, and digital knowledge as interconnected resources for future learning and professional development.

7. DECLARATIONS

7.1. About Authors

Gautama Sastra Waskita (GS) https://orcid.org/0009-0003-6479-7936

Denny Rakhmad Widi Ashari (DR) https://orcid.org/0000-0003-2251-6393

Pries Winka Sajida (PW) -

Sawal Sartono (SS) https://orcid.org/0000-0002-5182-8129

Samlatul Izzah (SI) -

7.2. Author Contributions

Conceptualization: DR; Methodology: PW; Software: GS; Validation: SI and SS; Formal Analysis: GS; Investigation: PW; Resources: SS; Data Curation: SI; Writing Original Draft Preparation: DR and GSK; Writing Review and Editing: SS and GS; Visualization: SI; All authors, GS, DR, PW, SS and SI have read and agreed to the published version of the manuscript.

7.3. Data Availability Statement

In line with our commitment to research transparency, the dataset underlying this study has been archived in the Zenodo Repository https://doi.org/10.5281/zenodo.23493891.

7.4. Funding

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7.5. Declaration of Conflicting Interest

The authors declare that they have no conflicts of interest, known competing financial interests, or personal relationships that could have influenced the work reported in this paper.

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